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MORRIS FISHBEIN, M.D.

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FOLIC ACID THERAPY

Its Effect as Observed in Two Patients with Pernicious Anemia and Neurologic Symptoms

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The antianemic properties of folic acid have been demonstrated repeatedly,[1] and this work has been summarized by Berry and Spies.[2] It has also been emphasized that folic acid is effective in those patients with macrocytic anemia who also exhibit megaloblastic erythropoiesis in the bone marrow.[3] It is still not known, however, whether folic acid therapy is able to produce and maintain in patients with addisonian pernicious anemia complete hematologic and clinical remission, nor are the optimum dosage of folic acid and the preferable method of administration definitely established.

In the course of an investigation of the therapeutic role of folic acid, the details of which will be reported at a later date, 2 patients with addisonian pernicious anemia were encountered whose clinical course while they were receiving folic acid was characterized by a symptomatic relapse. The histories of these patients are reported now because of their clinical interest.

REPORT OF CASES

CASE 1.—H. W., a 78 year old white woman, was well until eight months before admission, at which time she began to notice gradually increasing malaise, anorexia, generalized weakness and exertional dyspnea. She also noticed numbness and tingling of the toes and the fingers. These symptoms continued until ten weeks before admission, when she had an infection of the upper respiratory tract, for which her physician prescribed symptomatic therapy. Following the acute infection, the symptoms of malaise and weakness became so severe that she was confined to bed. The numbness and tingling of the fingers and the toes increased. Four weeks before being admitted to the hospital she lost all desire for food. The rest of the past history was not contributory.

Examination revealed an obese, elderly, white female who appeared apathetic. The skin was pale, and the scleras were icteric. The ocular fundi exhibited moderate arteriosclerosis. The mucous membranes of the mouth were pale. The edges of the tongue were smooth. The lungs were clear. The heart was slightly enlarged to the left. A blowing systolic murmur was heard over the entire precordium. The blood pressure was 90 systolic and 50 diastolic. The liver, the kidneys and the spleen could not be palpated. Knee and ankle reflexes were absent bilaterally. Vibratory sensation was absent over both lower extremities to the level of the iliac crests. Sense of motion and sense of position were intact.

Roentgenologic examination of the chest and of the upper gastrointestinal tract revealed nothing significant.

The serologic tests were negative. The urine was normal. Chemical analysis revealed the blood urea to be 68 mg. per hundred cubic centimeters. No free hydrochloric acid was demonstrated in the gastric juice after histamine stimulation.

The initial examination of the peripheral blood revealed 3.3 Gm. of hemoglobin per hundred cubic centimeters. The red cell count was 980,000 per cubic millimeter. The red cells showed anisocytosis, poikilocytosis and polychromasia. The white cell count was 6,200, with a differential count of 16 per cent polymorphonuclear cells, 33 per cent band forms, 38 per cent lymphocytes, 10 per cent monocytes, 3 per cent eosinophils and 1.8 per cent reticulocytes. The platelets numbered 33,000. The mean cell diameter was 7.7 microns. The mean corpuscular volume was 138 cubic microns; the mean corpuscular hemoglobin was 34 micrograms; the mean corpuscular hemoglobin concentration was 25 per cent. Examination of material obtained by sternal aspiration revealed hyperplastic megaloblastic marrow.

A diagnosis of addisonian pernicious anemia in relapse was made.

The patient was given a hospital ward diet containing approximately 300 Gm. of carbohydrate, 65 Gm. of protein and 70 Gm. of fat. In addition she was given 25 mg. of synthetic folic acid by intramuscular injection daily for eleven consecutive days. A total of 275 mg. was thus given. The hematologic response is summarized in chart 1. An increase in reticulocyte count was noted on the fifth day of therapy. A maximum reticulocyte response of 57.5 per cent was observed on the ninth day. The hemoglobin concentration and the red blood cell count also began to increase.

The dose was then changed to 65 mg., taken orally daily, and this dosage was continued for the next thirty days. The patient's appetite and clinical appearance improved. By the fifteenth day of therapy she was mentally alert and cheerful. As is indicated, the hemoglobin concentration and the red blood cell count continued to improve. The numbness and tingling of the fingers and the toes disappeared. The aspiration of sternal marrow was repeated on the fifteenth day, and examination revealed marked hyperplasia, with the previously megaloblastic erythropoiesis reverting to normoblastic erythropoiesis.

The dose of folic acid was changed to 195 mg., taken orally twice weekly for three and one-half weeks. When the patient

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The synthetic folic acid was supplied by the Lederle Laboratories, Inc., New York.

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[1] (*a*) Moore, C. V.; Bierbaum, O. S.; Welch, A. C., and Wright, I. D.: The Activity of Synthetic Lactobacillus Casei Factor as an Antipernicious Anemia Substance, J. Lab. & Clin. Med. **30**: 1056-1069, 1945. (*b*) Spies, T. D.; Vilter, C. F.; Koch, M. B., and Caldwell, M. H.: Observations on the Antianemic Properties of Synthetic Folic Acid, South. M. J. **38**: 707-709, 1945. (*c*) Doan, C. A.; Wilson, H. E., and Wright, C. S.: Folic Acid, an Essential Pan-Hematopoietic Factor: Experimental and Clinical Studies, Ohio State M. J. **42**: 139-144, 1946. (*d*) Spies, T. D.: Effect of Folic Acid on Persons with Macrocytic Anemia in Relapse, J. A. M. A. **130**: 474-477 (Feb. 23) 1946. (*e*) Amill, L. A., and Wright, M.: Synthetic Folic Acid Therapy in Pernicious Anemia, ibid. **131**: 1201-1207 (Aug. 10) 1946.

[2] Berry, J. L., and Spies, T. D.: The Present Status of Folic Acid, Blood **1**: 271-306, 1946.

[3] Berman, L.; Jacobson, S. D., and Vonder Heide, E. C.: Observations on Response of Macrocytic Anemias to Folic Acid Therapy, Am. J. Clin. Path. **16**: 550-563, 1946.

was discharged from the hospital, her hemoglobin was 10.9 Gm.; the red cell count was 3,950,000; the white cell count was 6,500; the platelet count was 120,000, and the mean cell diameter was 7.3 microns.

The patient was discharged to the outpatient clinic on a daily oral dose of 10 mg. of synthetic folic acid. At weekly intervals she reported for clinical evaluation. She remained symptomatically well, and her red cell count averaged about 4,000,000 for approximately two months after her discharge. At this time she began to complain again of numbness and tingling of the fingers and the toes. Her appetite and sense of well-being at this time were good. The dose of folic acid was *increased to 25 mg., taken orally for one week. The numbness* and tingling became worse. The daily oral dose was then increased to 50 mg. for another week. Despite the increased dose, her neurologic complaints were again more disturbing, and she again became irritable and mentally confused, although the objective neurologic findings remained essentially unchanged. The hemoglobin at this time was 9.75 Gm., and the red cell count was 3,820,000. It was thought advisable to change the therapy by substituting liver extract of known potency, and she received 20 units intramuscularly three times weekly.

Case 2.—H. P., a white man aged 62, was admitted to the hospital after complaining of progressive weakness for one year. In addition he had experienced exertional dyspnea, numbness and tingling of his toes, and anorexia. The weakness and the exertional dyspnea had become so severe that he was confined to bed several weeks before admission. He said that there had not been nausea or vomiting. A review by systems showed nothing contributory.

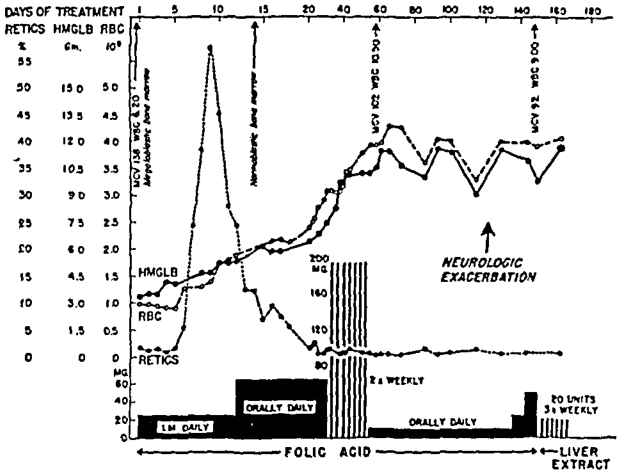

Chart 1 (case 1).—Hematologic curves observed in relation to the course of treatment of H. W., a 78 year old white woman suffering from pernicious anemia. *Retics* stands for reticulocytes; *HMGLB*, for hemoglobin, *RBC*, for red blood cells; *WBC*, for white cells; *IM*, for intramuscular injection; *MCV*, for mean corpuscular volume.

On examination the patient appeared drowsy, somewhat confused and irrational. The skin was icteric, as were the scleras. The mucous membranes were pale. The tongue was smooth and pale. A firm, tender liver edge was palpated 3 fingerbreadths below the right costal margin. The spleen was not palpable. Weakness of the extremities was noted. There was a loss of vibratory sense in the lower extremities. The sense of motion and that of position were intact. There was a positive Babinski response. The reflexes were generally hyperactive.

The initial examination of peripheral blood (after a transfusion of 200 cc. of whole blood) revealed a red cell count of 730,000 cells per cubic millimeter; the hemoglobin content was 2.7 Gm. per hundred cubic centimeters of blood; the reticulocyte count was 1.7 per cent; the white cell count was 5,800; the differential count was myelocytes 1 per cent, metamyelocytes 1 per cent, band forms 36 per cent, polymorphonuclear cells 44 per cent, lymphocytes 19 per cent and occasional monocytes. The platelets numbered 16,000. The mean cell diameter was 7.95 microns; the mean corpuscular volume was 122 cubic microns; the mean corpuscular hemoglobin was 34 micrograms; the mean corpuscular hemoglobin concentration was 31 per cent. The initial examination of marrow revealed megaloblastic erythropoiesis.

Chemical examination of the blood showed the urea to be 68 mg. per hundred cubic centimeters. The serum albumin was 2.7 Gm. and the serum globulin 4.0 Gm. per hundred cubic centimeters. Serologic tests were negative. The urine was normal. Gastric analysis showed achlorhydria after injection of histamine. The stool showed no occult blood. Roentgenograms of the upper gastrointestinal tract revealed no abnormality.

A diagnosis of addisonian pernicious anemia in relapse was made.

Because of his critical condition the patient was given a transfusion of 200 cc. of whole blood. Two days after admission he had a chill followed by fever. Signs of bronchopneumonia were elicited clinically and confirmed by roentgenogram of the chest. He was given penicillin by intramuscular injection, and after nine days his pulmonary signs cleared and he became afebrile.

Two days after his admission a course of daily intramuscular injections of synthetic folic acid was started. After four days the dose was decreased to 20 mg. The dosage was revised after nine days, 20 mg. being injected intramuscularly three times a week, and this dosage was maintained until the patient was discharged from the hospital, at which time his dose was changed to 10 mg., taken by mouth daily. An increase of the reticulocyte count was noted on the fourth day of folic acid therapy. A maximum reticulocyte response of 45.1 per cent was observed on the seventh day. Within two weeks after therapy was instituted the patient was mentally alert, rational and able to be up and around the ward. At this time neurologic *examination revealed that vibratory sense was not present in the* knees and the left ankle but present, although diminished, in the right ankle.

The sense of motion and that of position were intact. The reflexes were not as active as initially. At the time of his discharge the red cell count was 3,540,000; the hemoglobin content was 8.26 Gm.; the white cell count was 4,100. The mean corpuscular volume was 88 cubic microns, and the mean cell diameter was 7.5 microns.

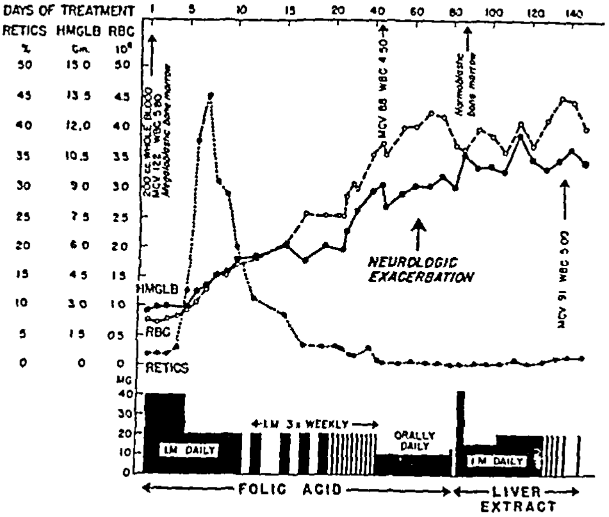

Chart 2 (case 2).—Hematologic curves observed in relation to the course of treatment of H. P., a white man aged 62, suffering from pernicious anemia. (See chart 1 for an explanation of the abbreviations.)

The patient was discharged to the outpatient clinic, taking 10 mg. of folic acid daily by mouth. He remained symptomatically well, and his red cell count remained close to 4,000,000 per cubic millimeter for approximately two weeks. At this time he again noted increasing difficulty in walking, progressing to a point where he required considerable support. He became unable to button his clothes, and there was a recurrence of numbness and tingling of the fingers and the toes. These symptoms became so severe that he required hospitalization five weeks after having been discharged.

On readmission the patient was found to be well oriented. There were fine rales at the base of the right lung. The patellar reflexes were hyperactive. The ankle reflexes were absent. The reflexes of the upper extremities were slightly hyperactive. Vibratory sensation was absent in the lower extremities. There was ataxia of both arms and legs. Despite the exacerbation of neurologic findings, the peripheral blood showed no hematologic relapse. The red cell count was 3,630,000; the hemoglobin content was 10.7 Gm.; the reticulocyte count was 0.2 per cent; the white cell count was 3,800. The mean corpuscular volume was 89 cubic microns, and the mean cell diameter was 7.3 microns. Examination of the marrow at this time revealed a hyperplastic marrow, with the previously megaloblastic erythropoiesis reverting to normoblastic erythropoiesis. However, the presence of pathologic neutrophils pointed to an incomplete hematologic remission.

Because of the severity of the neurologic signs and symptoms, liver therapy was started immediately. Fifteen U.S.P. units of potent liver extract was given by intramuscular injection daily for three weeks. The dosage was then changed to 20 units three times per week until discharge. Two weeks after this therapy was begun muscle coordination began to improve so that he was able to walk, although with difficulty. He also noticed greater agility of his fingers, and he was again able to button his clothes. The numbness and tingling began to decrease. His appetite increased impressively, and he gained 11 pounds (5 Kg.) in weight. At the time of his second discharge neurologic examination revealed that the patellar reflex and the reflexes of the upper extremities were slightly hyperactive. The ankle reflexes were diminished. There was no Babinski response. Vibratory sense was present but diminished at both wrists. Motion sense and position sense were present but uncertain. At discharge his red cell count was 4,400,000; the hemoglobin content was 10.4 Gm.; the white cell count was 5,000, and the platelets numbered 230,000. The mean corpuscular volume was 91 cubic microns, and the mean cell diameter was 7.3 microns.

COMMENT

In both cases an initial satisfactory hematologic response to folic acid occurred in that both patients exhibited maximum reticulocytosis as compared with the standards for maximum reticulocyte response to adequate liver therapy. In addition the hemoglobin concentration and the red cell count rose progressively in both patients, and the bone marrow reverted to a normal pattern. However, after four months of therapy in case 1 and after two months of therapy in case 2 the peripheral blood values had still not reached their optimal levels in spite of the fact that the doses used were well above those required to produce the maximal reticulocytosis.[4]

In both cases there was an initial clinical improvement, manifested by increase of appetite, general strength and mental alertness, and the numbness and tingling of the fingers and the toes disappeared. However, after four months of therapy in case 1, and while the hematologic picture was still improving in case 2, there was a reappearance of numbness and tingling and mental confusion, and in case 2, a marked increase of difficulty in locomotion.

Several possibilities must be considered to explain the exacerbation of the neurologic symptoms. The factor of nutritional deficiency, particularly deficiency of the vitamin B complex, does not appear to be important here, because both patients had good appetites while the clinical relapses were developing, and as far as can be determined by questioning, both ate an adequate amount of foods containing the components of the vitamin B complex. This factor is further minimized by the observation that there is a lack of demonstrable therapeutic response on the part of all of the neurologic symptoms of pernicious anemia after the administration of the common components of the vitamin B complex.[5]

There is a question also as to whether these patients were treated with adequate doses of folic acid. In our experience a reticulocyte crisis and an increase of the number of red cells and of the hemoglobin concentration can be produced by a daily oral dose of 5 mg. in cases of pernicious anemia.[3] Doan, Wilson and Wright[1c] accomplished the same results with 1 mg. daily. In our cases the doses administered were in excess of those required to initiate a clinical and hematologic remission. Even if we assume that an adequate dose of folic acid can produce a complete hematologic remission in pernicious anemia, and this point is by no means certain, it does not follow that the same dose will ward off neurologic relapse. Certainly, in the 2 cases reported, 10 mg. daily was not able to prevent such a relapse. It may be that, as with liver extract, folic acid must be administered in amounts in excess of that which is necessary to produce hematologic remission to insure neurologic remission as well.

Unfortunately, the clinical deterioration of our patients was such as to preclude further trial of folic acid. It will be important to see whether large doses of folic acid given each for many months will be more effective in preventing neurologic relapse.

SUMMARY

Two cases in which addisonian pernicious anemia was treated with synthetic folic acid are presented.

Although an initial satisfactory clinical response was obtained during treatment, neurologic exacerbations developed.

Daily doses of 10 to 50 mg. of synthetic folic acid were not adequate for maintaining hematologic improvement after the patients' blood had reached a level of over 4,000,000 red cells per cubic millimeter, nor was this dose adequate for the prevention of neurologic exacerbations.

It is suggested that a daily dose of 50 mg. or more of synthetic folic acid be given a thorough clinical trial for both treatment and maintenance of patients with pernicious anemia in order that the question whether folic acid is useful in the prevention of neurologic exacerbations may be answered.

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[4] Moore and others.[1a] Spies and others.[1b] Doen and others.[1c] Spies.[1d] Amill and Wright.[1e] Berman and others.[3]

[5] Rundles, W. B., Prognosis in the Neurologic Manifestations of Pernicious Anemia, Blood 1: 209-219, 1946.

Blunder in Pelvic Mensuration.—Although the principles of clinical measurement of the pelvis were established by William Smellie in 1754, the subsequent introduction by other practitioners of certain fallacious assumptions postponed any correct acquaintance with that discipline for a hundred years and, even after that, many of the more deeply rooted errors continued to persist. The evidence seems clear, indeed, that there is no phase of obstetrics which has been so fraught with blunder, oversight and floundering as has pelvic mensuration; and in view of the present status of the subject—diverse notions as to what constitutes disproportion, conflicting opinions about the value of x-ray mensuration, and so forth—it would appear that this old legacy of error is still with us.—Eastman, Nicholson J., *Obstetrical and Gynecological Survey,* June 1948.

RADICAL ORCHIECTOMY FOR TUMORS OF THE TESTIS

LLOYD G. LEWIS, M. D.
Washington, D. C.

The varied cellular structure of testicular tumors suggests that no single method of treatment is universally applicable. Simple orchiectomy can cure in but a small percentage of cases because of the frequency of early metastasis. The combined therapy of simple orchiectomy and radiation therapy, which is employed by the members of the profession throughout the country, using the standard 250,000 volt roentgen equipment, has proved adequate only for seminoma. Radical orchiectomy, as described by Chevassu,[1] was abandoned by Young, and limited to teratomas by Hinman[2] because of the relative frequency with which inoperable metastasis was found in their patients. I shall try to show that a clinical-pathologic classification of testicular tumors indicates that surgical treatment should be extended and radiation therapy rationalized.

DIAGNOSIS

The cure of testis tumors depends on control of the retroperitoneal metastatic areas, and the operability depends primarily on early diagnosis. The differential diagnosis of a testicular tumor by means of bimanual palpation, a measure which my associates and I must insist on, is not difficult. Varicocele, hydrocele of the cord, spermatocele and epididymitis can be ruled out readily. Thus, the only difficulty encountered is in differentiating a tumor from thickened walled or calcified hydrocele, gumma and hematocele, About 25 per cent of our patients had been treated for epididymitis or traumatic orchitis. Tapping of the hydrocele is permissible to facilitate palpation. When the diagnosis is in doubt, exploration of the scrotum is indicated. Biopsy of the testis is in our opinion contraindicated. Roentgen examination of the scrotum sometimes affords differentiation of peripheral calcification from the central or scattered calcification of tumor growth.

As soon as the diagnosis of testicular tumor is made, simple orchiectomy should be done without delay. In our opinion inguinal orchiectomy has no advantage over scrotal orchiectomy. Further definitive therapy then depends on the pathologic diagnosis.

Hormone bio-assays are in our opinion only confirmatory evidence of tumor. Since both the chorionic gonadotropins and the follicle-stimulating hormones are reported together, the test has little value. If differentiation is to be made, complicated laboratory tests must be carried out on hypophysectomized animals, and such investigation is not now practicable. Thirty-five per cent of our patients with seminoma had positive reactions to Friedman tests. This incidence is identical to that in the control series for the presence of combined hormones. All the reactions were strongly positive in patients with chorionic tumors. Nevertheless, hormone bio-assays should be done to confirm the pathologic picture.

ROENTGEN THERAPY

Prophylactic as well as definitive roentgen therapy consists of delivering the full lethal tumor dose to the frequently involved metastatic areas. Dr. Milton Friedman[3] of New York carried out tests to determine the radiosensitivity of intact testicular tumors at Walter Reed General Hospital. Although such studies on inoperable and late metastases would not be informative, this study was of value because the results showed that seminoma can be completely destroyed by roentgen rays in a dosage of 600 to 800 roentgens delivered in six to seven days. Thus one sees that the adequate prophylactic dose for the retroperitoneal area is about 1,000 roentgens in divided dosage. This dose can be delivered with the 250,000 volt machine and requires about six weeks of treatment, whereas the same dose, delivered with the 1,000,000 volt machine, requires two weeks. In carcinoma, undifferentiated, the lethal tumor dose is about 2,000 roentgens, while in some adenocarcinomas the dose is about 3,000 roentgens. Chorioepitheliomas and tumors of trophoblastic tissue require a dose of 5,000 to 6,000 roentgens. Since tumors composed of adult teratomatous structures cannot be affected by ''safe'' dosage, it is obvious that roentgen therapy with the standard 250,000 volt machine is inadequate for both the prophylactic and the definitive treatment of any tumors except seminomas.

The dosage by 250,000 volt therapy is limited by cutaneous reactions. The skin offers no protection from overdosage to the patient when the 1,000,000 volt machine is used. When required, we have used the 5,000 roentgen dose. The patients withstood the impact of this high dosage without serious damage to the skin but the incidence of late gastrointestinal complications confines the use of such high dosage to those cases with known inoperable metastases. Fourteen of our patients treated by dosage in excess of 5,000 roentgens had perforations of the stomach or bowl which occurred from one and one-half to two years following therapy. Six of these patients recovered after difficult and immediate surgical intervention but the remaining 8 died and at autopsy no viable tumor was found. In 3 additional patients paralysis of the lower extremities

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Read before the Section on Urology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

[1] Chevassu, M.: Traitment chirurgical des cancers du testicule, Rev. de Chir. 30:628, 1910.

[2] Hinman, F.: Radical Operation for Teratoma Testis, Am. J. Surg. 28:16 (April) 1935.

[3] Friedman, M.: Supervoltage Roentgen Therapy at Walter Reed General Hospital, S. Clin. North America 24:1424 (Dec.) 1944.

recently developed as a result of such high dosage.

CLASSIFICATION OF TUMORS

A great deal of difficulty has arisen because no generally accepted pathologic classification of tumors of the testis exists. Tumors of the supporting tissues of the testis, sarcomas and hemangiomas, are rare and were not seen in our series of patients of military age. Two benign interstitial cell tumors found in well masculinized persons were treated. Tumors of germ cell origin —and I think that seminoma can be included in this group—comprise 99.5 per cent of our cases. Although Ewings'[4] theory of the development of these tumors from a totipotent cell deserves serious consideration, it does not indicate that all tumors should be treated alike. Embryonal carcinoma, according to the classification of the Army Institute of Pathology,[5] includes embryonal carcinomas undifferentiated, adenocarcinoma and papillary adenocarcinoma, choriocarcinoma, and chorioepithelioma in a subgroup. The radiosensitivity studies, as shown, indicated that chorionic tumors must be differentiated because of the wide variation in the response to roentgen rays. The term teratocarcinoma does not specify the particular type of maligant cell involved and, therefore, I suggest the following clinical-pathologic classification:

Tumors of Germ Cell Origin

	Number	Percentage
Seminoma	110	44.0
Undifferentiated or adenocarcinoma	28	11.2
Trophocarcinoma from cytotrophoblast	17	6.8
Chorioepithelioma from syncytotrophoblast	12	4.8
Teratoma with undifferentiated or adenocarcinoma	35	14.0
Teratoma with trophocarcinoma	28	11.2
Teratoma with chorioepithelioma	12	4.8
Teratoma	8	3.2
	250	100

Seminoma is a relatively slowly growing, rounded or lobulated tumor, occurring in any part of the testis and found in the older age group in particular. It is the common tumor of cryptorchids and those patients with atrophic testes. This tumor metastasizes rather late, by way of the lymph channels. It is highly radiosensitive and the prognosis is good. Although seminoma cells are found in association with trophocarcinoma and teratoid tumors, the seminoma may be regarded as a unicellular tumor in most instances. The cells are rather uniform with clear cytoplasm and darkly staining nuclei and grow in sheets or strands, occasionally suggesting an acinar pattern. The remaining testis tubules are compressed rather than invaded. There is a remarkable tendency to spontaneous necrosis, and since these necrotic areas are unaffected by roentgen rays, we were able to make a diagnosis in 6 cases in which the viable tumor was destroyed by radiation. The metastases from seminoma may involve solitary lymph nodes, but this tumor tends to lay down a sheet of metastatic tumor cells over the iliac vessels and the vena cava with the result that resection of the retroperitoneal metastases is frequently impossible. Radical orchiectomy is not definitely indicated in seminoma because of the high radiosensitivity of the tumor and the frequent inoperability of metastases.

Classification of those tumors of definite embryonic cells, undifferentiated or in acinar or papillary pattern without chorionic elements seems necessary. These tumors grow rapidly, metastasize early and invade testis tubules. Undifferentiated carcinoma requires a roentgen dose of 2,000 to 3,000 roentgens. The metastases usually involved one or more lymph nodes in the retroperitoneal area, a situation which makes for operability. We believe that all tumors in need of a roentgen dose of more than 1,000 roentgens, lethal tumor dose, should be treated by surgical resection of the retroperitoneal nodes whenever the preoperative roentgenographic studies have ruled out pulmonary or inoperable metastases.

The Army Institute of Pathology recognizes the frequency of occurrence of chorionic tissues in what they have termed "embryonal carcinoma." Definitely cytotrophoblastic cells, the precursor of the syncytotrophoblastic cells of choriophithelioma, are readily recognized. They appear in an acinar pattern and in a papillary form as in choriopapillary adenocarcinoma. These tumors grow rapidly and metastasize early. They are, along with chorioepitheliomas, the hemorrhagic tumors of the testes. Any rapidly growing tumor of the testis which suddenly decreases in size is suggestive of choriocarcinoma. These tumors invade blood vessels and metastasize by way of the blood stream as well as by way of the lymphatic system.

Chorioepithelioma is a well recognized tumor which is composed of Langhans cells and syncytium. This tumor is characterized by early metastasis, and many patients present themselves for treatment because of metastatic symptoms. In 4 of our patients there was no palpable testicular tumor, and serial sections were necessary to locate the microscopic primary lesion. This tumor also metastasiz by way of the blood stream and lymphatics. It is radioresistant and most frequently inoperable.

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[4] Ewing, J.: Neoplastic Disease: A Treatise on Tumors, ed. 4, Philadelphia, W.B. Saunders Company, 1940, chap. 40.

[5] Friedman, N.B.: Atlas of Genitourinary Pathology, Army Institute of Pathology, United States War Department, Surgeon General's Office, 1946.

Teratocarcinoma implies the presence of adult or embryonic structures derived from more than one primitive germ layer, in addition to the carcinomatous element. These tumors are the cystic tumors which may be easily recognized on gross examination. Lethal tumor cells in teratocarcinoma may take the form of seminoma, embryonal carcinoma, choriocarcinoma, chorioepithelioma, or the differentiated tissue itself may become malignant. In view of this variety of possibilities, the type of the malignant cell occurring with teratoid elements should be described in the diagnosis so that definitive treatment can be undertaken. At first we thought that the teratomas should be differentiated into immature and mature types, but since there is so little difference in the end results and since these immature and mature structures are so frequently mixed, there is no point in differentiating them.

In a few instances one finds tumors composed of various adult teratomatous structures without evidence of malignant change. These tumors are relatively slowly growing and are late to metastasize. Radical orchiectomy alone is indicated because of their high radioresistance and delayed but definite tendency to metastasize.

Although tumors of the interstitial cells of Leydig are usually benign, malignancy is noted in a small percentage of cases. The radiosensitivity of these tumors has not been studied. In both of our cases, radical orchiectomy was done because, on gross section, these reddish brown tumors, occupying the entire testis in each case, appeared to be malignant. Frozen section is of no value in differentiating this tumor, and therefore it is wise to wait for the report on permanent sections before radical resection of the retroperitoneal nodes is attempted.

RESECTION

Radical resection of the retroperitoneal nodes and spermatic cord is best done with the patient under spinal anesthesia, using an incision which extends from the tip of the eleventh rib to the external inguinal ring. It is not necessary to continue the incision to the costovertebral angle. When large nodes must be removed around the renal pedicles, extension of the incision medially, in the form of a figure 7, facilitates their removal. After incision of the skin and subcutaneous tissues, the external oblique fascia and muscle are split. The internal oblique and transversalis muscles are sharply divided in order to expose the retroperitoneal space. The internal spermatic vessels are exposed in their sheath between the transversalis fascia and the peritoneum, triply clamped, divided and doubly ligated at their origins on the aorta and the vena cava or renal pedicle. The dissection is carried downward to the point where the vas leaves the vessels. Downward dissection avoids accidental opening of the peritoneum, but if the dissection is carried upward from the scrotum, the peritoneum frequently is opened accidentally at the point where the vas turns to pass down over the posterior surface of the bladder. Occasionally lymph nodes are removed along the spermatic cord. The external inguinal nodes are never involved in a testicular tumor unless the scrotal wall has been invaded. The first involved node is situated at the internal inguinal ring on the anterior surface of the external iliac artery. The lymph vessels then pass along the surface of that vessel to a node lying medial to it, just below the bifurcation of the hypogastric artery. The lymphatics then cross the common iliac artery to an elongated node lying between the common iliac artery and genitofemoral nerve. On the right side the lymphatics pass to nodes on the anterior surface of the vena cava and to nodes which lie between the vena cava and the aorta. The most frequently involved node is located below the entrance of the internal spermatic vein into the vena cava. On the left side the nodes lie laterally to the aorta, and here the most frequently involved node is situated just below the point where the internal spermatic vein drains into the renal vein. Crossed retroperitoneal metastases may occur, but we observed them in selected cases only in instances of extensive metastatic involvement above the renal pedicle. These cases are inoperable. We sacrificed the left kidney in order to remove metastases around the renal pedicle in 2 patients with extremely radioresistant tumors.

One hundred and sixty-nine out of 250 patients were selected for radical retroperitoneal resection. There was no operative mortality and the morbidity was unexpectedly low. Complications occurred in 4 patients. In one patient atelectasis developed which was cleared by bronchoscopic suction, and in another pulmonary embolism developed following accidental opening and suture of the vena cava. We would not hesitate to ligate the vena cava if such an accident should occur again. The third patient had a superficial wound abscess, and in the fourth patient a large, sterile retroperitoneal abscess developed six months after radiation therapy.

Although we have done retroperitoneal resection on a number of patients with seminoma in order to establish the frequency, mode of metastatic involvement and operability of these tumors, we do not recommend this procedure for seminoma. This study enabled us to limit the fields for radiation therapy, thus permitting the delivery of adequate dosage with minimum radiation of the bowel. Radical resection seems indicated for all tumors which require more than 1,000 roentgens lethal tumor dose, and radical resection, as advised by

Hinman, should be carried out on all adult tumors.

COMBINED THERAPY

Prophylactic radiation therapy is definitely indicated in seminoma and undifferentiated carcinoma. The dose for seminoma is about 1,000 roentgens and for undifferentiated carcinoma and adenocarcinoma about 3,000 roentgens. Prophylactic irradiation is contraindicated for those tumors requiring between 5,000 and 6,000 roentgens because of the late, serious complications which follow this large dosage. We would, therefore, reserve radiation therapy of large dosage for those patients who are known to have inoperable metastatic involvement.

It would be unfair to compare our results from radical surgical treatment in the 169 selected cases with those in the remaining series, *many of which were inoperable. The* results of combined therapy are presented in the accompanying table. Sixty-six per cent of our patients had no retroperitoneal metastatic involvement. In 24 per cent metastatic nodes were removed and in the remaining 10 per cent the metastic nodes were inoperable.

Results of Combined Therapy

	Number	Demonstrated Metas. %	Living 1½ to 5 Yr. %	Died %	Not Followed %
Interstitial cell tumors	2	0	100	0	0
Seminoma	109	23	74	10	16
Undifferentiated and adenocarcinoma	28	60	36	50	14
Trophocarcinoma, Carcinoma Cytotrophoblast	17	70	30	65	5
Chorioepithelioma from syncytotrophoblast	12	92	0	100	0
Teratoma with undifferentiated adenocarcinoma	34	38	67	24	9
Teratoma with trophocarcinoma	28	75	36	53	11
Teratoma with chorioepithelioma	12	7!	8.3	82.6	0
Teratoma	8	0	100	0	0
	250	43	55	32	13

CONCLUSIONS

1. Simple orchiectomy, either through a scrotal incision or an inguinal incision, with ligation of the cord at the internal inguinal ring, is not sufficient treatment for the cure of testis tumors.

2. Orchiectomy followed by 250,000 volt roentgen therapy is inadequate treatment for any tumor except seminoma.

3. Early diagnosis by means of bimanual palpation or scrotal exploration will increase the rate of cure.

4. Accurate clinical-pathologic diagnosis, after simple orchiectomy, will make possible the proper selection of definitive treatment, irradiation, extended surgical treatment or combined therapy.

5. Simple orchiectomy alone is required for benign tumors.

6. Radical orchiectomy is indicated in apparently benign teratomas because of their high radioresistance and the incidence of late metastases.

7. Simple orchiectomy followed by prophylactic or definitive radiation therapy appears to be sufficient for seminoma. The fact that only 5 of the 25 patients with known metastases have died of the tumor demonstrates the efficacy of roentgen therapy in this particular tumor.

8. Radical resection of the retroperitoneal nodes is definitely indicated for all malignant testicular tumors which require more than 1,000 roentgens lethal tumor dose; i.e., for all malignant tumors except seminomas.

ABSTRACT OF DISCUSSION

DR. HAROLD P. McDONALD, Atlanta, Ga.: The unusual opportunity afforded Dr. Lewis of seeing and treating so large a number of tumors of the testicle at the Walter Reed Hospital during the recent war should be of great value to urology. His experience has caused him to reclassify tumors of the testis on the basis of sensitivity of the tumor to roentgen radiation. This would put seminomas in one group and embryonal carcinomas, choriocarcinomas, chorioepitheliomas and some teratomas in another group. This latter group is made up of cells resistant to roentgen radiation and is hopeless unless radical resection of all metastatic retroperitoneal lymph nodes can be done. The seminoma group, responding to roentgen therapy, is treated by radiation and simple orchiectomy For roentgen therapy to be effective the inguinal, abdominal and lower thoracic regions must each receive adequate dosage of roentgen rays. This must be given during the first series of treatments, as it has been shown that when later nodes appear the roentgen therapy is not as effective as formerly. Since the seminoma group comprises almost half the testicular tumors this is of great importance. We have not subjected any patients to the radical resection of lymph nodes Our patients with embryonal carcinoma or choriocarcinoma or epithelioma have all died within two to three years. Simple orchiectomy and roentgen therapy have been combined. Patients who have lived beyond a five year period have been those with teratoma or seminoma. This experience bears out the findings expressed here today. The report of Lowry, Beard, Hewitt and Barner of 100 cases of testicular tumors seen in an army general hospital indicated better results from simple orchiectomy and roentgen therapy than those obtained by Lewis or ourselves. The last word has not yet been said about therapy of testicular tumors. Although it is a formidable procedure, it would seem rational to remove all retroperitoneal nodes along with the tumor in selected cases, and whenever possible. The 8 or 10 per cent increase possible in five year cures justifies this radical procedure. More careful pathologic diagnosis as well as classification of testicular tumors must be done in order properly to differentiate between those who should have the radical procedure done and those in whom roentgen therapy can be utilized with hope of cure.

DR. JOHN ORMOND, Detroit: I would like to find out whether I should adopt the radical operation. I should have to be thoroughly convinced that the results would be better than those which my associates and I have been obtaining. In our 40 cases which I have reviewed recently, every patient in whom there were no demonstrable metastases who was treated by simple orchiectomy followed by roentgen radiation is alive today. It is too early to tell about some of these patients; the time since operation is too short. Our series includes 3 patients with so-called chorioepithelioma, 2 of whom are living, 1 for about three years. The important thing to know is whether this operation is of use when there are demonstrable metastases. As to metastases, we took occasion to divide our patients arbitrarily into two groups, two age groups, taking age 30 as our arbitrary division point. Four fifths of those under 30 are dead, and the majority of those over 30 are still living. The interval between the onset or at least the apparent onset of the disease and the time that they consulted a physician was just half as long for the younger patients as it was for the older patients; yet the incidence of metastases in the younger patients was far greater than in the older patients. The profession and the laity have to be educated to the fact that any enlargement of the testis should be seen by a skilled man just as soon as it is discovered, and every case of hydrocele in the adult scrutinized carefully. The importance of this is evidenced by the following case: Two years ago, I removed a hydrocele on a man and, unfortunately, some bleeding occurred in the hematoma formation. We were following it rather closely. He came back this year and his testicular mass did not seem any larger than it was before, but as we lifted it up, it seemed just a little heavier. So with a good deal of trouble we persuaded the man to allow us to explore, and we found a malignant tumor and excised it, and I am sure we saved his life.

DR. LLOYD G. LEWIS, Washington, D.C.: Our statistics show that the results of radical orchiectomy for seminoma are little better than those of simple orchiectomy. We have not been able to cure any cases of chorioepithelioma. There are, however, in this series, 12 patients who had chorionic tumor of the cytotrophoblastic cells who had retroperitoneal glands removed, and these patients are living two years following surgical treatment. These are radioresistant tumors. I am glad that Dr. Ormond brought up the question of disproportionate weight of testicular tumors. That is an important sign. In the diagnosis of testicular tumor, we must insist on gentle bimanual palpation. The advantages of a million volt roentgen therapy machine lie in the fact that one can deliver the lethal tumor dose more rapidly than with the lower voltage machine. The lethal tumor dose for seminoma (1,000 roentgens) can be delivered to the retroperitoneal area in two weeks with the million volt machine, whereas it takes six weeks with the 250,000 volt machine. When radiation has to be prolonged, estimation of depth dosage cannot be accurately determined.

TOOTH DECAY IN RELATION TO DIET AND GENERAL HEALTH

NILS P. LARSEN, M.D.
Honolulu, Hawaii

Hawaii with its groups of people of many different racial backgrounds and varied food habits, its unusually mild, even climate and the abnormally high percentage of tooth decay in some groups and the freedom from decay in others presents an opportunity for dental observation that is rather unusual. The good health organization on the sugar plantations and the conditioning of the children over many years to medical examinations are a great aid to any human study.

Tooth decay is the most prevalent disease in the world. It is present at all ages, in all races and has been present throughout history. The Iron Age skulls show immunity to tooth decay; the Bronze Age skulls show 37 per cent with decay and 11 per cent of all the teeth decayed or missing; the ancient Egyptians' skulls showed 51 per cent with decay, and 5 per cent of the teeth decayed or missing, and the skulls of the Roman colonists show 85 per cent with decay and 29 per cent of the teeth decayed or missing.[1] At the present time Polynesians in Samoa show 4 per cent with tooth decay,[2] people in Tripolitania 49.89 per cent[1] and one group in Hawaii 99.9 per cent.[3]

In a study of 74 infants[4] on a rice diet almost 100 per cent showed tooth decay and almost 50 per cent of all erupted teeth were decayed. Of another group of 42 infants whose rice (acid residue starch) had been *replaced by taro and potatoes (alkaline residue starch)* only 7 per cent showed decay, and 4 per cent of the erupted teeth were decayed. Another observation[3] indicated that 22 Polynesian children eating their traditional poi and fish diet had almost perfect teeth (95.41 per cent free from decay), whereas 55 Polynesian children eating rice as their main food showed 98.2

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Evelyn Schoen organized the many clinics; Doris Larsen did the typing and checking, and nurses and teachers cheerfully helped with the work. The Medical Group Research Fund helped finance the project, which was under the jurisdiction of the Hawaiian Sugar Planters' Association Health Committee.

1. Schottky, J.: Rasse und Krankheit, Munich, J. F. Lehmanns, 1937, pp. 364 and 371.
2. Ferguson, R. A.: J. Am. Dent. A. **21:** 534, 1934.
3. Jones, M. R.: Larsen, N. P., and Pritchard, G. P.: Dent. Cosmos **72:** 439, 1930.
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per cent with decay. It was also reported[5] at that time from the Island of Tristan da Cunha that among 156 miscegenetic persons eating largely potatoes and fish, 89 per cent had teeth free from decay. In another study on children with rampant decay in Hawaii the daily addition of carotene definitely reduced decay activity.[6] In a group of 779 Japanese children examined in Hawaii in 1930 only 2 had noncarious teeth.[3] In a group of 109 white children examined at the same time, 55.6 per cent were free of decay. They were of comparable ages. The white children ate much more of fruit and vegetables and less of the cereal starches. The water was the same for both groups.

These observations seemed to leave little doubt that diet was the cause of tooth decay, and it seemed logical, since a change from a high acid residue starch diet to a high alkaline starch diet almost completely corrected tooth decay, that the alkaline and acid factor of diet were important. This opinion seemed verified by certain experiments on dogs in which tooth decay became pronounced with the mere addition of acid radicals to the diet.[7] It was concluded in 1930:

> The evidence indicated that dental decay is primarily a systematic disorder, an imbalance perhaps in the tissue fluids and oral secretions, in the direction of a decrease of basic ions, either relative or absolute. . . . It is believed that any type of diet, any factor or combination of factors which tend to decrease the relative or absolute amount of base in the tissue fluids will proportionately increase the liability of the teeth to decay.

MATERIAL

The present study is based on the findings in 866 children between the ages 6 months to 18 years living on sugar plantations and examined in 1946, 180 children studied in 1947 in three selected kindergartens and 104 children recently arrived from the war-torn Philippines. Table 1 presents the number in each racial group. Although on the plantations the Japanese are the most numerous, present vital statistics show that Caucasians lead among the population groups in Hawaii, with 173,533 as compared with 168,463 Japanese.[8] There are only 10,000 surviving Hawaiians.

TABLE 1.—*Tooth Decay by Nationalities*

Nationality	No of Children	No of DMF*	Decay-Free Teeth	Percentage DMF* All Teeth	Percentage of Children with Decay-Free Teeth
Japanese	556	6,565	6,525	50	1.0
Filipino	226	2,147	4,111	34	5.6
Miscegenetic	102	905	1,441	38—	8.8
Chinese	44	430	552	43	6.3
Caucasian	44	286	641	31	11.3
Porto Rican	15	254	100	71	6.6
Korean	5	61	55	52	0.0
Hawaiian	4	68	28	70	25.0
New Filipinos	104	239	1,926	11	49.0
Totals	1,140	10,955	15,479	40	7.9

* Teeth decayed, missing or filled.

The Dental Research Committee[9] of the Honolulu Dental Association with the use of tongue blades, explorers, mouth mirrors and natural light made the dental examinations. Each had a secretary recording on a dental chart the type, location and degree of decay activity. Most of the children were given a general physical examination by the late Dr. H. Best and by me. A number had roentgen examination of the chest and other laboratory tests. Dietary histories were taken by trained personnel with the use of dietary forms.

The children were from three plantation groups and all except the new Filipinos were in a condition of vivacious health. Plantation group 1 was resident on a large sugar plantation. Group 2 was on a similar plantation, 8 miles (12.9 kilometers) away, but on which there had been a daily teaching diet clinic involving over 250 children since 1930. Group 3 was a selected plantation group in an English-speaking school located near group 1. Group 4 were newly arrived Filipinos who were undernourished, anemic and heavily infested with intestinal parasites.

RESULTS OF PHYSICAL EXAMINATION

The pertinent findings of the physical examination are given in table 2. The height and weight figures of the poorly nourished Filipino children actually show 10 per cent fewer in the underweight group for height than were found in the healthy children. However, when the figures are corrected for age, 75 per cent of the Filipinos are undersized compared with 34 and 44 per cent of the others.[10] The Filipinos have a high percentage of distended abdomens; more are rated thin; fewer have firm muscles, and most of them have large cervical glands. Yet the majority have normal-appearing tonsils, and 89 per cent of their teeth are free from decay. The local, and by comparison, healthy children's teeth are extremely poor. This suggests that general poor or good health is not related to tooth health, also that large cervical glands are possibly an indication of general poor health.

TABLE 2.—*General Physical Examination*

Condition	Percentages Plantation I	Plantation II	New Filipinos
Underweight by height	44	30	34
Underweight by height and age	34	44	75
Pathologic changes of skin	5	13	31
Rated thin	8	18	27
Firm muscles	62	66	9
Decayed teeth	99.2	95.9	51
Tonsils 1+ to 4+	43	73	37
Large cervical glands	2	17	66
Heart murmurs: total, 3.5			
Belly circumference larger than chest	0.8	7	23
Hemoglobin under 75	0	22	50
Preventive Inoculations (more than five)	50	90	0

Other findings of interest were 2 cases of mild rickets and 68 cases of Harrison's groove. The latter is frequently considered a sign of rickets, but in Hawaii, where children can be exposed to seven and one-half hours of sunshine daily, rickets is rare. It does occur in some young infants when racial fears and superstition keep them indoors. Harrison's groove is probably not an indication of rickets, but more likely an accompaniment of nasal obstruction or other breathing difficulty in the early years.

RESULTS OF DENTAL EXAMINATIONS

The dental examination indicated that of 20,492 teeth of plantation children 8,473, or 41 per cent, were decayed, missing or filled. The 180 kindergarten children had 3,677 teeth, of which 2,042, or 55 per cent were decayed, missing or filled. Among the 104 immigrant Filipinos only 11 per cent of the teeth were decayed, missing or filled (table 3). The percentage of decay in the permanent teeth in relation to age is given in table 4. This table also compares the Hawaii figures with those presented in the studies of Knutson,[11] as well as in a study from Panama.[12] The Hawaiian children have more tooth decay than any of the other groups.

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[6] Larsen, N. P.; Pritchard, G.; Wilbar, C., Jr., and Ward, A. L.: Proc. Pacific Sc. Cong. **6**: 569, 1939.

[7] Jones, M. R., and Simonton, F. V.: Am. J. Physiol. **79**: 694, 1927.

[8] Annual Report of the Board of Health, Territory of Hawaii, 1946, p. 35.

[9] Drs. D. H. Uyeno, H. L. Houvener, Arthur Luhr, S. W. Glynn, Y Nakata, J. M. Marnie, F. W. Davidson, A. Brash, George Pritchard, A Richardson, J. Richardson and T. Uyeno.

[10] Faber, H. K.: Weight Range Table for Children from 5 to 15 Years of Age, Am. J. Dis. Child. **38**: 758 (Oct.) 1929.

[11] Knutson, J. W.: Pub. Health Rep. **59**: 253, 1944.

[12] Chapin, R. W., and Mills, C. A.: J. Dent. Research **21**: 55, 19

Tooth Decay by Race.—Tooth decay by race is shown in table 1. Thirty-seven per cent of the teeth in 278 Filipino children reared in Hawaii were decayed against 11 per cent of the teeth in the newly arrived. Of the latter 48 per cent of the children were free of decay, whereas of the local Filipinos only 4.7 per cent had no decay. This observation changed an opinion which had been expressed in a previous paper [4]; namely: "A condition of excessive dental decay can be used as an indicator of a dietary fault. This fault is associated with a high infant mortality and morbidity." The Japanese with 50 per cent of all erupted teeth decayed and only 1 per cent with decay-free teeth are in sharp contrast to the Caucasians with 31 per cent decayed teeth and 11.3 per cent of whom have decay-free mouths. Both groups used the same water and both came from a temperate climate to a subtropical climate.

TABLE 3.—*Tooth Survey, Plantation Children*

Total Teeth Examined 26,285
Total Teeth Decay-Free 15,560
Total Teeth DMF* 10,727

Divided into groups as follows:

	Children	Decayed	Filled	Missing	Total DMF*	Total Decay-Free	Total Teeth
Plantation 1	399	2,802	1,142	485	4,429—45%	5,384	9,813
Special group, plantation 1	98	449	237	58	744—34%	1,420	2,164
Plantation 2	369	2,272	771	230	3,273—38%	5,193	8,466
Kindergartens	180	1,684	242	116	2,042—55%	1,635	3,677
New Filipinos	104	233	4	2	239—11%	1,926	2,165

* Decayed, missing or filled

TABLE 4.—*Age Incidence of Decay in Permanent Teeth*

	6	7	8	9	10	11	15
Hawaii							
No. children	95	160	26	5	45	69	155
DMF* per child	1.04	2.0	2.8	4.4	4.2	5.8	11.8
Percentage DMF*	71	75	96	100	95	100	99.3
Maryland							
No. children	327	403	487	493	529	531	651
DMF* per child	0.29	0.73	1.20	2.02	2.51	2.84	6.64
Percentage DMF*	15.9	36.2	53.4	70.6	78.3	81.9	95.4
Minnesota							
No. children	259	252	276	282	276	265	159†
DMF* per child	0.51	1.43	2.30	2.86	3.39	4.16	7.69
Percentage DMF*	24.3	53.6	75.7	84.0	86.2	89.8	94.3
Panama							
No. American children							174†
DMF* per child							8.4
No. natives							659†
DMF* per child							8.09

* Teeth decayed, missing or filled.
† Fourteen year age group.

Location of Decay in the Mouth.—Regarding the location of decay in the mouth (fig. 1) it is evident that the upper incisor and canine teeth were more frequently decayed than the lower (upper incisors 82 per cent with decay to 17 per cent of the lower; upper canine teeth 64.5 per cent to 35.5 per cent of the lower). In the molars 5.4 per cent more lower teeth were decayed than upper. Although this latter seems a small difference, the chi square value indicates that the finding has a definite significance. The cleansing action of the tongue rubbing constantly against the lower incisors, less against the canine teeth and not at all on the molar, may be a factor to account for the differences. This may also account for the more frequent decay of the buccal surface than the labial.

GENERAL HEALTH

The health of the Hawaiian children, as shown by such criteria as infant and maternal mortality, general morbidity rate, deaths from beriberi and general appearance of well-being, had improved a great deal since 1930,[13] but their teeth were still poor. The forms for the mass diet survey were analyzed in toto by two physicians. However, the information as to how much each child drank of milk or ate of protein, fruit, vegetable, sweet and cereal came from the people in terms of times a day consumed or in cupfuls. Figure 2 contains a tabulation of the food eaten by 44 children with excellent teeth (0.7 decayed, missing or filled per mouth) and 60 children with poor teeth (17.3 decayed, missing or filled per mouth). As has been indicated, it is a comparison of times per day eaten rather than the measured amount consumed. The sweets and cereals are the only two food groups showing a striking difference. Considerably more of these were eaten by the group with poor teeth than by the other group. One surprising finding was the occasional inclusion of one to three bottles of "coca-cola" per day. Recent studies on rats, dogs and monkeys have shown cola drinks with a pH of 2.6 readily etching enamel, possibly the initial lesion of tooth decay. The addition of sugar to an acid greatly increases the damaging effect of the acid on enamel.[14] McCay and associates concluded, "Acid foods and beverages may be an important factor in the little understood phenomenon of human tooth erosion." A small amount of fluorine reduced this activity.

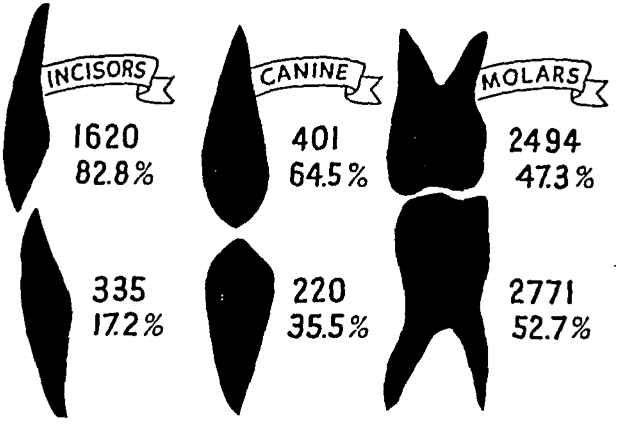

Fig. 1—Percentage of decay in upper and lower teeth, plantations 1 and 2.

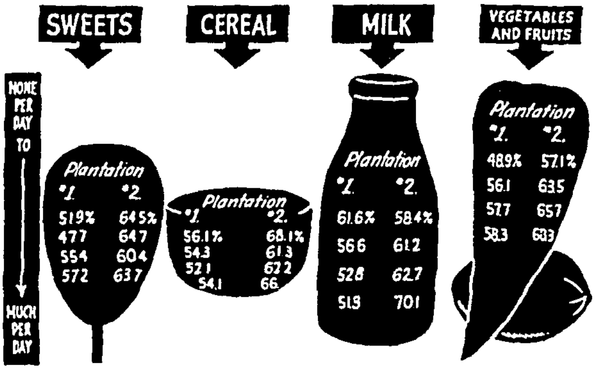

Fig. 2—Percentages of decay-free teeth on varying quantities of food

Figure 3 contains a tabulation of a careful one year diet study of ten Japanese plantation families on a low intake of protective food and ten families on a higher intake of protective food. Both groups (83 children) had poor dental health. However, when a measles epidemic struck, the children on the higher protective foods had half as many days of illness in bed and no serious complications. The other group had 3 deaths.[15] This may also suggest that immunity to decay is not related to ordinary resistance to disease. These diets are compared with a proposed minimum adequate diet as suggested by authorities in nutrition. The local Oriental diets are shown to be low in vegetables, legumes, fruits, milk and even sweets. They are high in cereals and proteins. Even those children whose diet in their early years was prepared by the Health Center (poi, milk and vegetable soup) soon reverted to their high rice diet. An examination was made of 239 children who were over 6 years of age and who had been fed in the first year or two at the Health Center. They had 5,824 teeth of which 2,377 were decayed, 40.81 per cent. There was only 1 perfect set. Four hundred and five children on the nonclinic plantations over 6 years old with 10,283 teeth showed 4,283 with decay, 41.65 per cent, a mathematically *insignificant* difference. Although these children get fruits and vegetables, they also get an abundance of bread and rice. An alkaline residue diet with daily excess in the ash equal to 80 to 100 cc. of normal solution (our previous recommendation for sound teeth) cannot be accomplished on rice three times a day. Although the daily Health Center feeding, along with a general increased intake of fruit and vegetables in the plantation diets and a decrease in rice,[16] helped the general well-being, the effect on tooth decay was negligible. The diet of the early years which produced a lowering of decay in the teeth did not produce a decay-resistant enamel. The "diet" plantation produced 66 per cent with perfect sets of teeth in the group 6 years of age and younger; 87 per cent of all the teeth were free from decay. In the same age group on the "nondiet" plantation 9 per cent of 127 children had perfect sets and 41 per cent of the teeth were free of decay.

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[13] Filipino infant mortality was 220.3 in 1929, 29.5 in 1945; maternal mortality 6.87 in 1930 and 0.8 in 1945. Total death rate from beriberi was 18.8 in 1930, and 0.8 in 1945.[5]

[14] McCay, C. M.; Restarski, J. S.; Gortner, R. A., and Schlack, C. A.: Research Project X-418, Reprints 1, 2 and 4, Bethesda, Md., U. S. Naval Medical Research Institute, 1946.

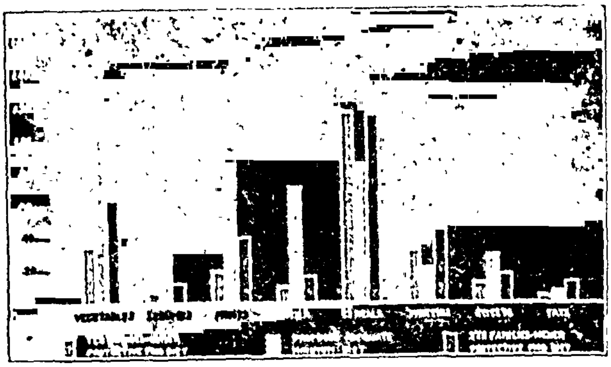


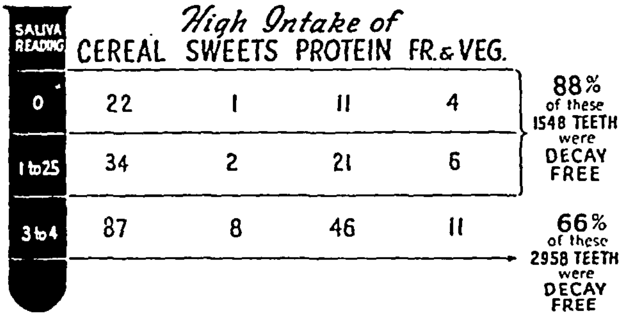
Fig. 3.—Comparison of diets; pounds of food as purchased per adult male unit per day.

POLYNESIAN AND ORIENTAL DIETS.

In a previous study the extreme dietary differences between the Polynesian and the Oriental was compared.[3] Here the difference seemed largely in the type of starch, rice being acid residue and taro being alkaline residue. In these groups there was a striking difference in tooth decay. The children on Polynesian diets had almost no decay, whereas the Polynesians on an Oriental or high rice diet showed 98.2 per cent with decay. Between these two extremes there was a mixture of these diet factors and also a rather mixed condition of tooth decay. The diets that fell between these two extremes were associated with a combination of good and bad teeth in varying percentages. This was shown in another study[6] in which the food eaten was carefully tabulated. Increasing amounts of taro, fruits and vegetables were called good, and increasing amounts of rice or bread were called bad. The children on "good" diets had 19 per cent of their teeth decayed, whereas those on "bad" diets had 47 per cent. Although there is a certain amount of variability in human beings there does come a point in dietary intake which in spite of other conditions (climate, sunshine, heredity, tooth structure, tooth cleanliness, water, etc.) is associated with excellent teeth and another level of dietary intake which is associated with almost 100 per cent tooth decay. Either of these diets is compatible with general good health.

FLUORINE AND OXALATES

Recent studies in Hawaii have shown that the water of the Territory is low in fluorine, 0.02 to 0.2 parts per million. According to Nekomoto,[17] "More serious development of caries by men enlisted at Scofield (Hawaii) than any other army post is consistent with low fluorine intake there—0.16." It has been shown that sea foods[18] are high in fluorine. It has also been shown that the oxalates present in taro and absent in rice give a form of surface protection (in rats) that apparently provides as much decay resistance as fluorine.[19] The possible importance of these two factors were unknown when the earlier observations were made. Perhaps their value in the role of prevention of tooth decay is as important as the previously mentioned acid-base factor.



High Intake of

SALIVA READING	CEREAL	SWEETS	PROTEIN	FR.&VEG.
0	22	1	11	4
1 to 25	34	2	21	6
3 to 4	87	8	46	11

88% of these 1548 TEETH were DECAY FREE
66% of these 2958 TEETH were DECAY FREE

Fig. 4.—Saliva study on 321 children; aciduric bacteria in relation to diet.

ACIDURIC BACILLI

A bacteriologic study was conducted on 321 of these children by Dr. Floyd Hartmann of the University of Hawaii.[20] The studies were based on two or more samples of saliva. The child chewed paraffin for three minutes before spitting into a clean glass container. This was taken to the laboratory where 0.2 cc. was cultured in 5 cc. of bromocresol green dextrose agar. The cultures were read on each of the following four days. Specimens of sputum were cultured for types of bacteria, and the color test was checked with actual counts of the number of aciduric micro-organisms. The results verified the concept[21] that the simple color test is a good indicator of the number of aciduric bacilli present. Enright reported [22] :"The only micro-organism commonly found in food debris that can tolerate and produce additional acid in an environment below pH 5 . . . is a lactobacillus . . . its final pH . . . ranges from 3.6 to 4.8." Such acidity readily dissolves enamel. The color test was not found to be an index of production of acid by yeasts. When the color reading was low (0 to 2), indicating a low percentage of aciduric bacteria, 88 per cent of the teeth were free from decay. When the reading was high (3 to 4) 66 per cent of the teeth were free from decay (fig. 4).

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[15] Larsen, N. P.: Compt. rend. Cong. de F. E. A. T. M. **1**: 133, 1939.

[16] Rice importation in 1930 was 92,000,000 pounds; in 1946 it was 67,000,000 pounds.

[17] Nekomoto, R. S.: Fluorine in Hawaiian Water, Honolulu, University of Hawaii Library, 1945.

[18] Tsuji, F.: Fluorine and Florides and Relation to Dental Caries, Honolulu, University of Hawaii Library, 1947 Sognnaes, R. F.: J. Dent. Research **20**: 303. 1941 Sognnaes, R. F., and Armstrong, W. D.: ibid. **30**: 315, 1941.

[19] Gortner, R.; Restarski, J. S.; Schlack, C. A., and McCay, C. M.: Research Project X-418, Reprint 3, Bethesda, Md., U. S. Naval Medical Research Institute, 1946. Gortner, R. A., Jr., McCay, C. M.; Restarski, J. S., and Schlack, C. A.: J. Nutrition **32**: 121. 1946.

[20] Hartmann, F. W.: A Bacteriological Caries Survey Method Applied to Plantation Children, J. Am. Dent. A., to be published.

[21] *Snyder, M. L.: J. Am. Dent. A.* **28**: *44, 1941.*

Correlations were attempted relative to diet and the salivary study. Forty-seven per cent of the children had high salivary counts, and the majority were high cereal eaters. Sixty per cent of 143 children on a high cereal diet had high aciduric counts. The numbers in the other groups were too low to be significant, although the 11 high sugar eaters did have the highest aciduric percentages, 72. Fulton [23] stated that less than 1,000 lactobacilli per cubic centimeter indicates immunity to tooth decay; counts up to 15,000 moderate susceptibility, the higher the count the greater the susceptibility. This has been repeatedly verified but always with exceptions. Twelve per cent of the teeth in the present study associated wth low counts showed decay, and 66 per cent of the teeth with high counts showed no decay. Many observers have reported that lowering the intake of carbohydrate lowers the count and decreases decay. The Hawaiians with 50 to 80 per cent of their calories in the form of a soft, sticky carbohydrate showed a pronounced immunity to decay. Francis reported from Tripoli: "Although the natives in Tripoli have a higher carbohydrate diet than the whites, they have less caries." [1] Perhaps the acid-base values of the carbohydrates are important in relation to tooth decay. This evidence suggests that the term "carbohydrate" has been too loosely used in dental literature. From diet studies it was evident that the immigrant Filipinos had eaten freely of raw sugar with their food. They also ate rice as often as three times a day. It was a home threshed rice. Nevertheless the diet associated with such a low percentage of decay was high in carbohydrate and did contain considerable sugar. Did it contain sufficient protective elements?

COMMENTS

Collins and his associates [24] indicated that caries-immune students averaged an intake of 10.5 teaspoonfuls of sugar a day. (That would allow each per day one Hershey bar, three sticks of chewing gum, one marshmallow, one "life saver" and a tablespoonful of maple syrup). Caries-susceptible students averaged 18.2 teaspoonfuls. He reported that some of the high sugar eaters were immune to caries and some of the low sugar eaters had active caries. This would suggest that it was not the sugar, per se, but the excess of sugar when protective factors were absent. Excess intake of sugar tends to lessen the intake of other food, probably including protective substances. Further evidence is added by Percy Howe's 8 monkeys which were fed adhesive sugar balls twice daily for eight months with no caries developing.[22] Were protective factors, inhibitors of aciduric bacteria (oxalates, fluorine, acid neutralizers or vitamin K) present in sufficient amounts in these caries-immune mouths?

The reported observations in Hawaii suggest that other factors than the acid-base balance or vitamin A may account for the striking difference in decay in various groups of children observed. Heredity does not seem to play an important role in this condition. Hawaiians on the Polynesian diet for eight hundred years had excellent teeth, while first generation Hawaiians on the Oriental diet had poor teeth. Filipino children in Hawaii had much tooth decay, while Filipino children in the Philippines had little.[25] It did not seem to be a climate or "tropical" factor, since Hawaiians had excellent and poor teeth, Orientals extremely bad teeth and Caucasians fair teeth. It was not a roughage food factor, since Hawaiian poi is a soft, sticky, starch paste, more so even than rice. It also suggests that carbohydrates per se were not the causative factor. Sugar per se did not seem to be the factor, since many with severe decay were low sugar consumers, and vice versa. It was not a vitamin D deficiency since the Oriental as well as the Polynesian was exposed to seven and one-half hours of sunshine daily. Vitamin C did not seem to be a factor in the control of tooth decay. Scurvy is rare in Hawaii, where fruits are plentiful. Vitamin A seemed to have some influence but was not the whole factor. It is still recommended in pregnant women to affect favorably the development of the enamel organs.[26]

Fluorine may be a factor, since, although the water is the same for all races, the Hawaiians on their ancient diets consumed much sea food which is high in fluorine. They probably also swallowed more ocean water, which is high in fluorine. A Hawaiian brakish well showed 2.22 parts per million of sodium fluoride. They also ate much taro and poi, which is high in oxalate, a possible preventive of tooth decay, as might be vitamin K, present in raw sugar cane.[16] Perhaps the excellence of Eskimo teeth also came from the high fluorine content of their sea food. Sognnaes has added proof to that possibility in a recent report from Tristan da Cunha. The water of Tristan is low in fluorine, 0.2 parts per million; yet in 1938 when a potato shortage forced the people to eat a greater amount of fish, 15.8 per cent of the young people had white spots on their teeth (mild fluorosis), and teeth analyzed from Tristan were high in fluorine. A previous study [6] had shown no white spots. Coast natives of New Guinea eating more fish had less decay than inland natives, said Kilpatrick.[22] It indicates that sufficient and even excessive fluorine can at times be obtained from seat foods in sections where fluorine in the water is extremely low.

One hundred and fifty children with rampant decay are at present being studied with the ingestion of tablets [27] containing 2 mg. of calcium fluoride plus vitamins C and D.[28] At the end of four months there was little or no change in the aciduric color test, and the dentist's report was not convincing. More study is necessary.

Is it possible that high alkaline residue diets fill the enamel canals with alkaline dental lymph? With the addition of oxalate and fluorine to inhibit the growth of aciduric bacteria and prevent the resultant acid from etching the enamel, the tooth gets further protection. A rice diet producing dental lymph with a pH of 5 could enhance the growth of aciduric bacteria. The addition of oxalate and fluorine alone may be able to inhibit deleterious acid action, although in studies in cities[29] with water high in fluorine (caries experience rate 240) as against cities with water low in fluorine (caries experience rate 740), it would seem that something more than fluorine is needed to attain the perfection of the Hawaiian and Filipino teeth, and something besides the lack of fluorine seems necessary to account for the extremely decayed teeth of the Japanese. Recently the members of the dental profession have recommended painting each child's teeth twice a year with 2 per cent sodium fluoride solution. This, it is said, will reduce decay 40 per cent.[30] However, Ast cautioned, "Let us be patient to await conclusive evidence before we make up our minds on the merits of fluorine therapy."[31]

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[22] Dental Caries, Research Committee of American Dental Association, New York, 1939.

[23] Fulton, J. T.: Connecticut Monthly Health Bull., 1946.

[24] Collins, R. V.; Jensen, A. L., and Becks, H.: J. Am. Dent. A. **29**: 1169, 1942.

[25] In the appendix a sample diet of postwar Filipinos is given.

[26] Boyle, P. E.: J. Dent. Research **13**: 39, 1933. Wolbach, S. B., and Howe, P. R.: Am. J. Path. **9**: 275, 1933.

[27] The tablets were supplied by Ayerst, McKenna & Harrison, Ltd.

[28] Strean, L. P., and Beaudet, J. P.: New York State J. Med. **45**: 2183, 1945.

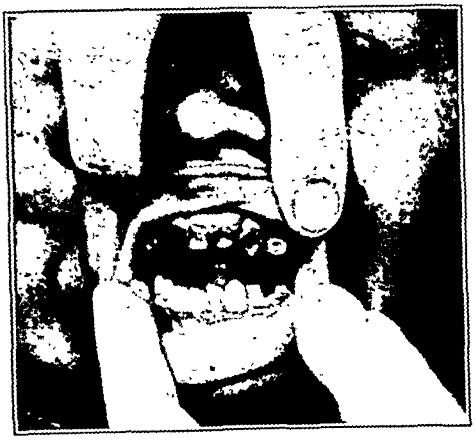

Fig. 5.—Odontoclasia, rampant enamel decay common in Hawaii.

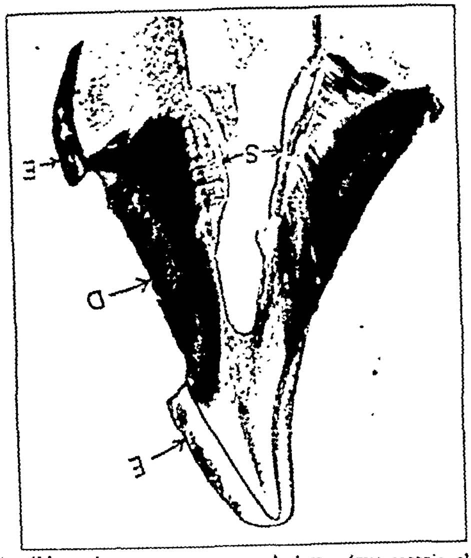

Fig. 6.—Odontoclasia, rampant enamel decay (microscopic slide prepared by Dr. C. Boedecker).

Factors which allow the uninhibited growth of aciduric bacteria and allow their products to etch enamel could be a starting point for decay. The deciduous teeth with larger canals in dentin and enamel and more protein substance in these canals allow a more rapid destruction of teeth, odontoclasia. This form of rampant enamel decay is frequently seen in Hawaii (figs. 5 and 6)

In the diet studies it sometimes took two months on a changed diet before the excretary fluids became alkaline. With some children the change occurred more rapidly; with others, more slowly.

To correct tooth decay by diet, the correction must be quantitative as in a change from large amounts of rice to large quantities of taro, or else there must be present the optimum of a protective factor. This protective factor must inhibit aciduric bacteria or the enzymes or neutralize the acid produced. Although the diet was greatly improved in the clinic children, rice was not eliminated, foods containing sufficient protective substance were not eaten, and no protection was obtained from the water with its low fluorine content. In spite of the improvement in the general health, there still remained a high percentage of tooth decay. The cause of tooth decay is not yet solved, but the quest is narrowing to fewer variables.

SUMMARY

Conditions producing good general health were found to be associated with severe tooth decay, and conversely, poor health was associated with excellent teeth. Harrison's groove is probably not caused by rickets, and height and weight values must be related to specific age levels to be of most value.

Heavy carbohydrate eaters (Polynesians on taro) had excellent teeth, and heavy carbohydrate eaters (Orientals on rice) had extremely poor teeth.

Hawaiian waters are low in fluorine; sea foods are high in fluorine and can affect teeth. Hence, people in areas with water low in fluorine may have good teeth with high fluorine content.

Oxalates high in taro and low in rice may be one of the factors favoring immunity from decay.

The observations in Hawaii tend to verify the role of aciduric bacteria as an index of decay immunity and that oxalates and fluorides, as well as the alkaline residue food values in the Hawaiian diet, might account for decay resistance in certain groups in Hawaii. These factors are more important in preventing decay than climate, heredity, cleanliness of the teeth or specific food factors including sugar.

APPENDIX

Diet of 2 Postwar Filipinos.—Two postwar Filipinos aged 3 years and 7 months and 4 years and 7 months, respectively, each had twenty perfect deciduous teeth. They ate rice (three times a day), had a sweet cake of rice flour and molasses rolled in banana leaves (twice a week), taro (three times a week), fruit and vegetables (four times a day), meat (twice a week) and candy (once a day); they chewed sugar cane frequently They drank no milk.

ABSTRACT OF DISCUSSION

Dr. William Wolf, New York: I should like to ask the essayist whether in the treatment of these children with the fluoride tablets it is not the menstruum which prevented the good results which he could have gotten perhaps by using it in different form. Dr. Samuel Charles Miller in New York has done considerable study in this line, and I was wondering what the essayist's experience has been in using fluorine in a different form, such as in solution without sugar content. It seems, according to Dr. Miller, that the sugar content of the tablets nullifies much of the good effects of the fluorine.

Dr. Sixto Y. Orosa, Manila, Philippine Islands: Allow me to extend to you the greetings of over 5,000 Filipino physicians in active practice. Now coming to the paper, may I say that the pictures shown of 2 Filipino children are hardly typical of the ordinary Filipino children. It is true that during the Japanese occupation and even now after we have been liberated by America, we still have undernutrition and the effects of undernutrition, such as tuberculosis. During the occupation the Japanese got every particle of food and other things that they could get hold of from us, and I really do not know how we have managed to live up to now. It is easy to understand why malnutrition was common during the Japanese occupation and, as I said, following malnutrition were diseases such as beriberi, tuberculosis and heart disease.

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[29] Dean, H T.; McKay, F. S.; Armstrong, W. D.; Bibby, B. G. and Ast, D., in Symposium on Fluorine in Dental Public Health, New York, Institute of Oral Pathology, 1944, p. 25.
[30] Treatment to Check Decay, Science New Letter **51**: 180, 1947.
[31] Ast, D B., New York J. Dentistry **15**: 8, 1946.

Dr. Nils P. Larsen, Honolulu, Hawaii: As to the question of some other form of fluorine, I think that might be preferable. The fact that some dentists have been able to paint a 2 per cent solution of sodium fluoride on one half of the teeth and not on the others, and produce a 40 per cent decrease of decay on the treated side only, would indicate that if one had a fluorine product that would absorb well into the enamel perhaps one could better the results. However, perhaps my associates and I should have waited longer, but we did not have time. If we go by the literature—of course, we must be careful after Dr. Alvarez' paper in depending too much on these scientific and laboratory reports. Nevertheless, if one has not been able to influence in four months the aciduric bacteria of the mouth, one has no right to assume that the calcium fluoride tablets will succeed later in reducing tooth decay. As to the gentleman from the Philippines, we appreciate with deep feeling the terrific suffering which the Filipinos have experienced. Over 12,000 Filipinos had to be checked to get 6,000 able to work on our plantations. We picked two of the children who illustrated the distended abdomens and soft muscles which we found in the majority of those examined. However, in spite of the fact that these children were in such poor condition, due to the horrors of the war and the starvation they had to go through, of the total number of teeth in these 104 Filipino children, only 11 per cent showed decay and 48 per cent of the children had perfect mouths. The point there is that the right food for teeth is not necessarily the right food for good general health.

EFFICIENCY OF GASTROINTESTINAL TRACT AFTER RESECTION OF HEAD OF PANCREAS

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MANDRED W. COMFORT, M.D.,
O. THERON CLAGETT, M.D.,
and
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When resection of the head of the pancreas is carried out, partial gastrectomy, total duodenectomy and some sort of anastomosis between the biliary tract and the stomach or small intestine are integral parts of the operative procedure. Such extensive surgical operations cannot be done without interfering to some degree with the normal functioning of the gastrointestional tract. It was the purpose of this study to assess the degree of impairment of the digestive and absorptive functions of the gastrointestinal tract brought about by this operation and to evaluate ways by which such impairment of function could be reduced. This was done by means of intake-excretion studies with standard test diets. Similar studies of normal persons had previously been carried out with two of the same test diets for control purposes.

SUBJECTS STUDIED

Ten patients who had undergone resection of the head of the pancreas consented to be studied. Two of them (cases 4 and 5) had been operated on for severe chronic pancreatitis. The other 8 had been operated on for carcinoma, which was situated at the ampulla of Vater in 4 cases (cases 1, 2, 3 and 8), in the duodenum in 1 case (case 7) and in the head of the pancreas in 3 cases (cases 6, 9 and 10). Figures 1 and 2 illustrate diagrammatically the surgical procedure which had been carried out in each case. In 3 cases (cases 1, 2 and 3) the pancreatic ducts had been ligated, thus preventing the flow of pancreatic juice into the gastrointestinal tract. In 1 case (case 4), the remaining portion of the pancreas was anastomosed to the stomach and in 6 cases (cases 5, 6, 7, 8, 9 and 10) it was anastomosed to the jejunum. Further pertinent clinical data concerning the 10 patients are summarized as follows:

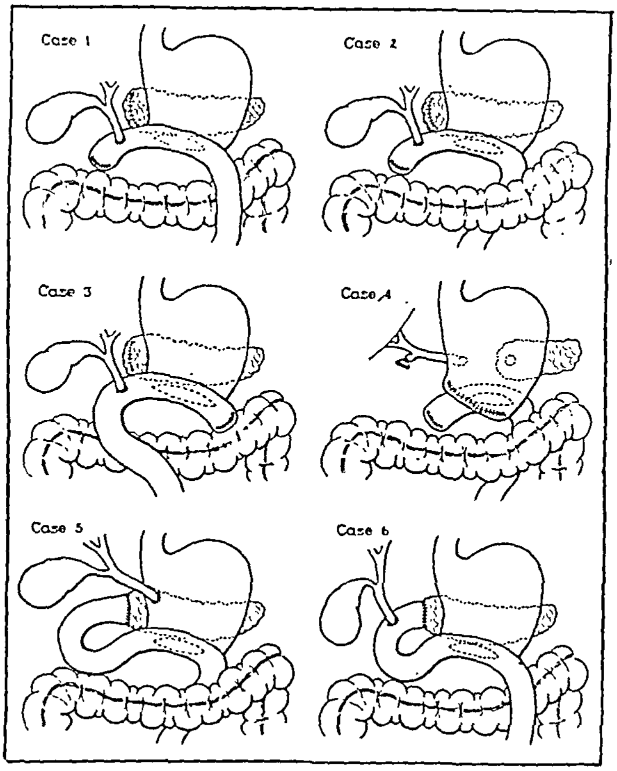

Fig. 1—Diagrammatic representations of the upper part of the gastrointestinal tract after the surgical procedures carried out in cases 1 through 6.

Case 1.—The patient, a man aged 30 years, complained that he had had easy fatigability for one year and jaundice for two months. He stated that cholecystoduodenostomy had been performed six weeks prior to his examination at the Mayo Clinic. Resection of the head of the pancreas, the distal 8 cm. of the stomach and 15 cm. of the duodenum was performed on April 18, 1944. The pathologic diagnosis was multicentric mucous adenocarcinoma, grade 1 (Broders' method), involving the ampulla of Vater, common bile duct and pancreatic duct. Intake-excretion studies were begun one month after operation. The patient was having two or three bowel movements per day and made no complaints con-

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Dr. Osterberg is now at Abbott Laboratories, North Chicago, Ill.

Read in a Symposium on the Pancreas before the Section on Gastro-Enterology and Proctology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J. June 11, 1947.

cerning his abdomen. His weight was 121 pounds (54.9 Kg.) as compared to a customary weight of 170 pounds (77.1 Kg.) before the onset of his illness. A letter from the patient in March 1946 stated that he was feeling well and weighed 145 pounds (65.8 Kg.). He was taking fifteen pancreatin tablets (5 grains [0.3 Gm.] each) per day. A letter in January 1947 stated that he was becoming jaundiced.

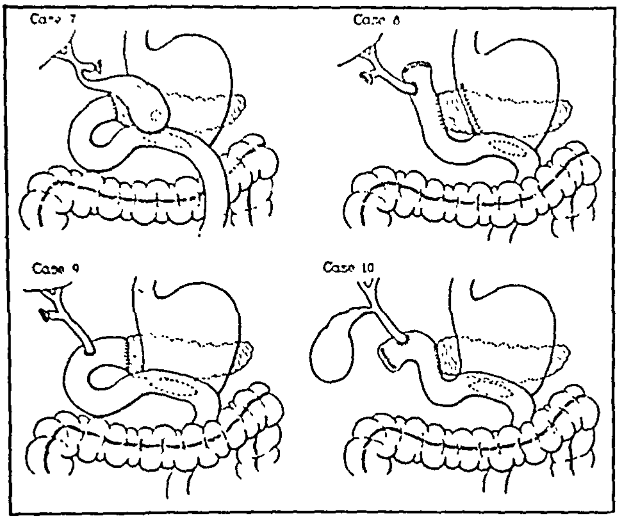

Fig. 2--Diagrammatic representation of the upper part of the gastrointestinal tract after the surgical procedures carried out in cases 7 through 10.

CASE 2.--The patient, a woman aged 54 years, complained that she had had epigastric distress, occasional vomiting and constipation for one year. She had lost 25 pounds (11.3 Kg.). Two years previously she had undergone cholecystogastrostomy at the Mayo Clinic because of jaundice of two weeks' duration. A tumor of the head of the pancreas had been found at that time. Resection of the head of the pancreas along with the distal 15 cm. of the stomach and 36 cm. of duodenum and jejunum was carried out on Jan. 13, 1945. The pathologic diagnosis was adenocarcinoma, grade 1 (5 by 3 by 1 cm.), of the ampulla of Vater, with extension into the head of the pancreas. Intake-excretion studies were carried out six months later. The patient had gained 7 pounds (3.2 Kg.) since operation. She took fifteen enteric-coated tablets of pancreatin with each meal. She made no complaints concerning her abdomen and passed one or two stools per day. Her weight was 97 pounds (44.0 Kg.). Her customary weight before her illness had been 130 pounds (59.0 Kg.). When last heard from, in January 1947, the patient stated that she was feeling well. She was taking fifteen pancreatin tablets (5 grains [0.3 Gm.] each) with each meal. Her weight was 112 pounds (50.8 Kg.).

CASE 3.--The patient, a woman aged 67 years, complained that she had had abdominal pain and a loss of 30 pounds (13.6 Kg.) during the previous year. Resection of the head and a portion of the body of the pancreas along with the distal 6 cm. of the stomach and 11 cm. of the duodenum was carried out on March 9, 1944. The pathologic diagnosis was adenocarcinoma, grade 1 (7 by 5 by 3 cm.), of the ampulla of Vater. Intake-excretion studies were carried out one year later. At this time she complained of diarrhea with passage of six to eight large stools a day since her operation. There had been a 15 pound (6.8 Kg.) loss of body weight. Diabetes mellitus had been discovered seven months after operation and had been controlled with 6 units of protamine zinc insulin and 12 units of regular insulin per day. The patient's average weight before her illness had been 155 pounds (70.3 Kg.). Her weight at the time of study was 113 pounds (51.3 Kg.). When last heard from, in December 1946, the patient stated that she was feeling well, was having normal elimination and weighed 130 pounds (59.0 Kg.). She was taking five pancreatin tablets (5 grains [0.3 Gm.] each) with each meal.

CASE 4.--The patient, a man aged 40, complained that he had had recurring attacks of severe abdominal pain for nine years. He stated that for this pain he had undergone cholecystostomy in 1935, cholecystogastrostomy in 1936 and gastroenterostomy in 1940. Resection of the head of the pancreas, the distal 3 cm. of the stomach and 14 cm. of the duodenum and removal of the gallbladder were performed on Dec. 7, 1944. The pathologic diagnosis was pancreatitis, grade 4 (on the basis of 1 to 4, in which 1 designates the mildest and 4 the most severe condition). At the time of operation the entire pancreas was found to be decidedly fibrosed and its ducts were dilated. Biopsy of the body of the pancreas showed chronic pancreatitis, grade 4. Two months after operation analysis of gastric contents after stimulation by an Ewald test meal revealed no free hydrochloric acid. After stimulation with histamine there was no free hydrochloric acid in the first four specimens of gastric contents withdrawn at ten minute intervals but in the fifth, sixth and seventh there were 10, 20 and 26 units of free hydrochloric acid respectively. A secretin test with the tube in the stomach revealed the pH of the gastric contents to vary between 6.4 and 6.6 before administration of secretin and from 6.4 to 7.2 after its administration. There was some diastase and tryptic activity after stimulation but the amounts were subnormal. Intake-excretion studies were carried out two months after operation. The patient had gained about 10 pounds (4.5 Kg.) since operation and was having two bowel movements per day. His weight was 132 pounds (59.9 Kg.). His customary weight before the onset of his illness had been 138 pounds (62.6 Kg.). The patient returned to the clinic for examination in May 1945 and January 1946. Both times his main complaint was of persistent edema of the ankles. He had experienced no recurrences of abdominal pain. His bowels moved five or six times a day even when he took fifteen tablets (5 grains [0.3 Gm.] each) of pancreatin with each meal. There was evidence of chronic renal disease, which was thought to be the main cause of his edema. Insufficiency of external pancreatic secretion with malnutrition was considered to be a contributing cause. There had been no loss of weight (weighed when edema free).

CASE 5.--The patient, a man aged 37 years, complained that he had had recurring attacks of severe pain in the upper part of the abdomen for fifteen years. Resection of the head of the pancreas, the distal 5 cm. of the stomach and 15 cm. of duodenum was performed on Jan. 19, 1945. The pathologic diagnosis was pancreatitis, grade 4, with pancreatolithiasis. Intake-excretion studies were carried out six months after operation. The patient had experienced two attacks of pain in the upper part of the abdomen since operation. He weighed 125 pounds (56.7 Kg.), a loss of 10 pounds (4.5 Kg.) from his usual preoperative weight of 135 pounds (61.2 Kg.). He complained of diarrhea with four to six large stools a day.

In February 1947, the patient returned to the Mayo Clinic because of recurring attacks of severe pain in the upper part of the abdomen without jaundice for eight months. At surgical exploration he was found to have an inflamed gallbladder containing one stone. This organ had been found to be normal at the time of his previous operation. Cholecystectomy was performed. The previously made choledochogastric stoma was disconnected and the common bile duct was *anastomosed to the jejunum*. The remaining portion of the pancreas appeared normal.

CASE 6.—The patient, a man aged 41 years, complained that he had lost 30 pounds (13.6 Kg.) in ten months and had had diarrhea for three months and jaundice for one month. Resection of the head of the pancreas, the distal 5 cm. of the stomach and 20 cm. of the duodenum and jejunum was performed on May 22, 1945. The pathologic diagnosis was adenocarcinoma, grade 2 (5 by 4 by 3 cm.), of the head of the pancreas. Intake-excretion studies were carried out one month after operation. He was having two or three bowel movements a day. He made no complaints concerning his abdomen. His weight at the time of the study was 134 pounds (60.8 Kg.), whereas his usual weight prior to his illness had been 170 pounds (77.1 Kg.). After this study, the patient gained weight to 170 pounds (77.1 Kg.), taking two pancreatin tablets (5 grains [0.3 Gm.] each) before meals. In February 1947, a letter from him stated that he was in fairly good health, weighed 160 pounds (72.6 Kg.) and passed loose light-colored stools. He was able to do sedentary work. He had continued to take pancreatin.

CASE 7.—The patient, a man aged 48 years, complained that he had had recurring episodes of anemia for one year. The anemia responded readily to administration of iron. Resection of the head of the pancreas, the distal 5 cm. of the stomach and 15 cm. of the duodenum was performed on May 29, 1945. The pathologic diagnosis was adenocarcinoma, grade 1 (8 by 5 by 2 cm.), of the duodenum. Intake-excretion studies were carried out (tables 1 and 2, patient 7, period 1), two months after operation. The patient made no complaints referable to the abdomen. He was having one bowel movement per day. His weight was 146 pounds (66.2 Kg.) as compared to his usual weight of 175 pounds (79.4 Kg.) before his illness.

After this study the patient's weight increased to 153 pounds (69.4 Kg.) without pancreatin. He returned to the clinic in June 1946, complaining of recurring attacks of epigastric pain, fever, chills and jaundice. Abdominal exploration was carried out on June 26, 1946. The cholecystogastric stoma was not functioning because the cystic duct was obstructed by an extrinsic inflammatory mass. A fistula had formed between the lower end of the common duct and the duodenum. The cholecystogastric stoma was disconnected, the gallbladder was removed and the common bile duct was anastomosed to the jejunum. A diagram of the upper part of the gastrointestinal tract after this operation is essentially the same as that represented in figure 2 for patient 9. Intake-excretion studies were carried out four weeks after this operation (tables 1 and 2, patient 7, period 2). The patient weighed 143 pounds (64.9 Kg.). He was having no abdominal symptoms. His bowels moved once each day. When last heard from, in March 1947, he was in good health.

CASE 8.—The patient, a woman aged 51 years, complained that she had had epigastric pain, anorexia and loss of weight for six months. Resection of the head of the pancreas, the distal 10 cm. of the stomach and 15 cm. of the duodenum was carried out on Sept. 7, 1945. The pathologic diagnosis was adenocarcinoma, grade 2 (3 by 2 by 1 cm.), of the ampulla of Vater. Intake-excretion studies were carried out three weeks after operation. The patient was having three to five bowel movements a day, but she had no other complaints. Her weight was 119 pounds (54.0 Kg.), as compared with a usual weight of 145 pounds (65.8 Kg.) before her illness. The patient did well for five months after study

TABLE 1.—*Average Daily Values for Fecal Total Solids and Fat With and Without Pancreatin After Resection of Head of Pancreas* ★

			Total Solids			Fat			Fat, per Cent of Ingested Fat			Fat, Percentage Total Fecal Solids		
Patient	Period	Length of Period, Days	Without Pancreatin, Gm.	With Pancreatin† Gm.	Percentage Change	Without Pancreatin Gm.	With Pancreatin† Gm.	Percentage Change	Without Pancreatin	With Pancreatin†	Percentage Change	Without Pancreatin	With Pancreatin †	Percentage Change
Patients Studied With and Without Pancreatin														
1	1	12	118.0			66.1			65.1			56.0		
	2	10		70.1	40.6		29.2	55.8		28.7	-55.9		41.7	-25.5
2	1	6	139.1			66.3			65.3			47.7		
	2	6		60.0	56.9		27.6	-58.4		27.2	-58.3		45.0	- 4.6
3	1	6	107.6			56.3			55.4			52.3		
	2	6		96.3	-10.5		40.7	27.7		40.1	-27.6		42.3	-19.1
4	1	6	114.1			50.9			50.1			44.6		
	2	6		88.8	22.2		32.3	-36.5		31.8	-36.5		36.4	-18.3
	3	6		58.3	-48.9		20.1	-60.5		19.8	-60.5		34.5	-22.6
	Average		119.7	78.8	32.0	59.9	32.5	-44.6	59.0	32.0	44.6	50.2	41.4	-16.8
Patients Studied Without Pancreatin														
5	1	6	125.6			66.3			65.2			52.8		
6	1	6	104.0			59.2			58.3			56.9		
7	1	6	66.1			38.8			38.2			58.7		
	2	3	39.2			14.9			14.7			38.0		
8	1	6	103.9			35.7			35.1			34.4		
9	1	6	82.9			26.9			26.5			32.4		
10	1	6	42.7			17.4			17.1			40.7		
	2	3	45.0			16.5			16.2			36.7		
	Average ‡(all 10 patients)		100.4			48.4			47.6			48.2		
	Controls, average		27.6			4.1			4.0			14.8		

*All subjects were taking a test diet containing 101.6 Gm. fat and 117.5 Gm. protein per day.

† 15 Gm. pancreatin in enteric-coated tablets was administered daily except in period 3 of patient 4, in which 15 Gm. powdered pancreatin in tomato juice was administered daily.

‡ Period 3 of patient 4, period 2 of patient 7 and period 2 of patient 10 are not included in the averages.

and then began to have pain in the right upper part of the abdomen. She died from abdominal carcinomatosis in December 1946.

CASE 9.—The patient, a man aged 64 years, complained that he had had diarrhea for four months, epigastric pain for six weeks and loss of weight for five months. He stated that two months before he came to the clinic choledochostomy with T tube drainage had been carried out because of jaundice of three weeks' duration. Resection of the head of the pancreas, the distal 9 cm. of the stomach and 15 cm. of the duodenum was performed on Aug. 29, 1945. The pathologic diagnosis was mucous adenocarcinoma, grade 1 (3 by 3 by 3 cm.), of the head of the pancreas. Intake-excretion studies were carried out three weeks after operation. He was having two to four bowel movements each day, but he had no other complaints referable to his abdomen. His weight was 106 pounds (48.1 Kg.) as compared to a usual weight of 145 pounds (65.8 Kg.) before the onset of his illness.

After this study the patient did well for four months, gaining weight to 135 pounds (61.2 Kg.). In January 1946, he began to have abdominal pain, and in March 1946 he died of a recurring malignant lesion.

TABLE 2 • *Average Daily Values for Nitrogen in the Feces and Urine and the Nitrogen Balances With and Without Pancreatin After Resection of the Head of Pancreas* *

Patient	Period	Length of Period, Days	Total Nitrogen Intake, Gm.†	Fecal Nitrogen			Urinary Nitrogen			Total Nitrogen Loss		Nitrogen Balance		Per Cent of Nitrogen Intake Lost in Feces	
				Without Pancreatin, Gm.	With Pancreatin‡ Gm.	Percentage Change	Without Pancreatin, Gm.	With Pancreatin‡ Gm.	Percentage Change	Without Pancreatin, Gm.	With Pancreatin‡ Gm.	Without Pancreatin, Gm.	With Pancreatin‡, Gm.	Without Pancreatin	With Pancreatin‡
Patients Studied with and without Pancreatin															
1	1	12	18.9	6.8			8.6			15.4		+3.5		36.0	
	2	10	20.6		3.0	-55.9		11.3	+31.4		14.3		+6.3		14.6
2	1	6	18.9	9.3			6.3			16.1		+2.8		49.2	
	2	6	20.6		2.4	-74.2		15.9	+133.8		18.3		+2.3		11.7
3	1	6	18.9	6.8			8.5			15.3		+3.6		36.0	
	2	6	20.6		4.1	-39.7		8.9	+4.7		13.0		+7.6		19.9
4	1	6	18.9	7.6			7.6			15.2		+3.7		40.2	
	2	6	20.6		4.3	-43.4		11.9	+56.6		16.2		+4.4		20.9
	3	6	20.5		3.2	-57.9		14.1	+85.5		17.3		+3.2		15.6
Average				7.6	3.5	-53.4	7.9	12.0	+56.6	15.5	15.7	+3.4	+5.2	40.4	16.5
Patients Studied Without Pancreatin															
5	1	6	18.9	8.6			8.7			17.3		+1.6		45.5	
6	1	6	18.9	7.9			8.2			16.1		+2.8		41.8	
7	1	6	18.9	3.2			11.5			14.7		+4.2		16.9	
	2	3	18.9	2.5			15.0			17.5		+1.4		13.2	
8	1	6	18.9	9.2			6.0			15.2		+3.7		48.7	
9	1	6	18.9	6.6			7.9			14.5		+4.4		34.9	
10	1	6	18.9	2.5			12.0			14.5		+4.4		13.2	
	2	3	18.9	4.1			13.2			17.3		+1.6		21.7	
Average§ (all 10 patients)				6.8			8.5			16.3		+3.6		36.2	
Controls, average				1.7										8.8	

* All subjects were taking a test diet containing 101.6 Gm. fat and 117.5 Gm. protein (18.9 Gm. nitrogen) per day.

† Intakes of nitrogen of more than 18.9 Gm. per day were due to nitrogen contained in pancreatin.

‡ Fifteen grams pancreatin in enteric-coated tablets was administered daily except in period 3, patient 4, in which 15 Gm. powdered pancreatin in tomato juice was administered daily.

§ Period 3 of patient 4, period 2 of patient 7 and period 2 of patient 10 are not included in the averages.

CASE 10.—The patient, a man aged 58 years, complained that he had had abdominal pain for ten months and jaundice for four months. His body weight had decreased from 206 pounds (93.4 Kg.) to 134 pounds (60.8 Kg.) in this time. Preliminary cholecystogastrostomy was performed on Dec. 16, 1944. Resection of the head of the pancreas, 8 cm. of the distal portion of the stomach and 16 cm. of the duodenum and jejunum was performed on Feb. 2, 1945. The pathologic diagnosis was adenocarcinoma, grade 1, of the head of the pancreas. Intake-excretion studies were carried out three weeks after the second operation (tables 1 and 2, patient 10, period 1). The patient made no complaints. He was having two formed stools a day. His weight was 143 pounds (64.9 Kg.).

After this study the patient did well, his weight increasing to 152 pounds (68.9 Kg.) six months after operation. In February 1946, he returned complaining of loss of 20 pounds (9.1 Kg.) and pain in the upper part of the abdomen for one month. He was having two normal stools a day. Intake-excretion studies were carried out (tables 1 and 2, patient 10, period 2). Shortly thereafter, abdominal exploration revealed recurring carcinoma. The patient died in January 1947.

DIETS

Four different test diets were employed in this study, the compositions of which have been summarized in table 3. They consisted of bland, easily digestible foods, low in bulk, which were served in three meals supplemented by several smaller between meal feedings each day. All food was weighed. The fat and protein (nitrogen x 6.25) content of diets 1 and 4 were determined by three separate analyses of these diets. Except for these analyzed values the content of carbohydrate, fat and protein of the four diets was calculated from standard tables. A detailed description of diets 2 and 3 has been presented elsewhere.[1] Diets 1, 2 and 3 differed from each other mainly in their fat and carbohydrate content, since the amount of protein and the number of calories in them were not greatly different. They represented a diet of low fat content, a diet of moderate fat content and a diet of high fat content respectively. Diets 2 and 4 differed from each other mainly in their protein and carbohydrate content, since the amount of fat and the number of calories in them were practically the same. They represented a diet of high protein content and a diet of low protein content respectively.

TABLE 3.—*Approximate Composition of Test Diets Per Day*

Diet	Fat, Gm.	Protein, Gm.	Carbohydrate, Gm.	Calories
1	44	123	379	2,405
2	102	118	270	2,463
3	208	98	141	2,823
4	106	61	325	2,497

In order to reduce the tedium of diets when given over long periods of study, three daily menus were arranged for diets 1, 2 and 4 and were fed in a constant order of rotation. Diet 3 was fed over a three day period of study to only 1 patient. The menu of this diet did not vary from one day to the next. In all studies, it was required that all food be eaten.

Miss Lida Burrill, Chief Dietitian, Nutrition Laboratory, St. Marys Hospital, planned and supervised the diets used in this study.

PROCEDURE AND LABORATORY METHODS

The procedures and laboratory methods were the same as those previously employed, which have been described in detail.[1b] All studies were carried out in the Metabolic Study Unit at St. Marys Hospital. With few exceptions the periods of study were six days in length. Collections of stools were made with the help of carmine markers. The subjects ate the test diet during the two days prior to the administration of the first marker and remained on the diet until the second marker appeared in the stool. Feces were analyzed for total solids, fat (total lipid) and nitrogen. All urine passed during the periods of study was collected and analyzed for nitrogen.

The following intake-excretion studies were carried out:

1. Each patient in the entire group of 10 patients was studied with the moderately high fat test diet (diet 2), which had previously been used for the study of 11 normal subjects. A direct measure was thereby obtained of the degree of functional impairment of the gastrointestinal tract after resection of the head of the pancreas. Furthermore, this study made possible a comparison between cases in which the external secretion of the pancreas was prevented from entering the gastrointestinal tract (cases 1, 2 and 3) and those in which an attempt was made to establish a flow of pancreatic juice into the gastrointestinal tract by anastomosing the remaining portion of the pancreas to the stomach (case 4) or to the jejunum (cases 5, 6, 7, 8, 9 and 10).

2. With the same test diet, 4 patients with pronounced impairment of gastrointestinal function (cases 1, 2, 3 and 4) were studied while they were taking pancreatin in doses of fifteen enteric-coated tablets with each of three meals per day.[2] A direct comparison of results with and without pancreatin while the patients were taking the identical diet was therefore possible. One patient (case 4) was also studied while taking 5 Gm. of powdered pancreatin in tomato juice with each of three meals a day. This patient was found to have no free hydrochloric acid in the gastric contents after an Ewald test meal.

3. Five patients (cases 1, 2, 5, 6 and 9) were studied on a low fat diet (diet 1) and one patient (case 6) was in addition studied on a high fat diet (diet 3). With the results obtained from studies on the moderately high fat diet (diet 2), it was thereby possible to compare fecal total solids, fat and nitrogen at three levels of fat intake.

Four patients (cases 1, 6, 8 and 9) were studied on a low protein diet (diet 4). With the results obtained from studies on a high protein diet (diet 2), it was thereby possible to compare fecal losses of total solids, fat and nitrogen at two levels of protein intake.

No control studies of normal subjects have have been carried out with the low fat or low protein diets (diets 1 and 4), but control studies with the high fat test diet (diet 3) and the moderately high fat test diet (diet 2) have previously been published.[1]

RESULTS

In tables 1 and 2 are summarized the results of all studies in which the moderately high fat diet (diet 2) was employed with and without pancreatin. Table 1 is concerned with fecal total solids and fat, while table 2 is concerned with fecal and urinary nitrogen and the nitrogen balance. For the sake of comparision, the average fecal values obtained from the study of a series of normal persons on the same test diet were included at the bottom of these tables.

The degree of impairment of gastrointestinal function was considerable. The average amount of total fecal solids among all 10 patients when not taking pancreatin was 100.4 Gm. per day as compared to an average of 27.6 Gm. per day among the 11 control subjects. The 10 patients lost on an average of 48.4 Gm. of fat per day, or 47.6 per cent of the fat ingested. The control subjects, on the other hand, lost an average of only 4.1 Gm. of fat per day, or 4.0 per cent of the fat ingested. Fat constituted a higher percentage of the total fecal solids among the 10 patients than it did among the controls—an average of 48.2 per cent as compared to an average of 14.8 per cent. Fecal nitrogen averaged 6.8 Gm. per day among the patients and constituted 36.2 per cent of the nitrogen intake. Among the control subjects fecal nitrogen averaged 1.7 Gm. per day and constituted 8.8 per cent of the ingested nitrogen.

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[1] (*a*) Wollaeger, E. E.; Comfort, M. W., and Osterberg, A. E.: Total Solids, Fat and Nitrogen in the Feces: III. A Study of Normal Persons Taking a Test Diet Containing a Moderate Amount of Fat; Comparison with Results Obtained with Normal Persons Taking a Test Diet Containing a Large Amount of Fat, Gastroenterology 9: 272-283 (Sept.) 1947. (b) Wollaeger, E. E.; Comfort, M. W.; Weir, J. F., and Osterberg, A. E.: The Total Solids, Fat and Nitrogen in the Feces: I. A. Study of Normal Persons and of Patients with Duodenal Ulcer and a Test Diet Containing Large Amounts of Fat, ibid., 6:83-92 (Feb.) 1946.

[2] Wilson Laboratories, Chicago. Each tablet contained 5 grains (0.3 Gm.) pancreatin.

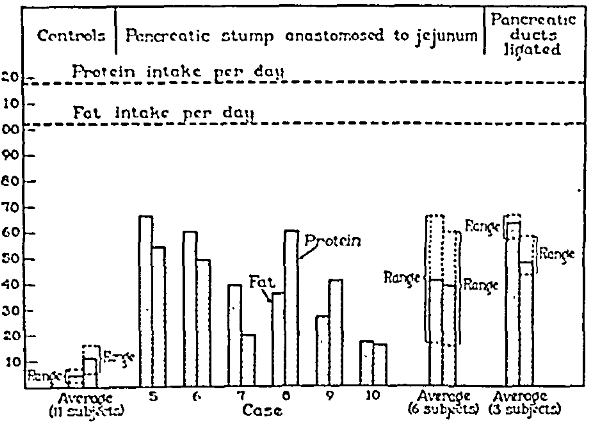

Fig. 3—Fecal losses of fat and protein (nitrogen times 6.25) after resection of the head of the pancreas. Effect of anastomosing the stump of the pancreas to the jejunum. All subjects were taking a test diet containing 101.6 Gm. of fat and 117.5 Gm. of protein per day.

Figure 3 compares the fecal losses of fat and protein among 3 patients whose pancreatic ducts had been ligated (cases 1, 2 and 3) with fecal losses of fat and protein among 6 patients (cases 5, 6, 7, 8, 9 and 10) in whom the the remaining pancreas had been anastomosed to the jejunum. For convenience fecal nitrogen values have been multiplied by 6.25 and expressed as protein. The three patients whose ducts had been ligated lost in the feces on an average 63 of the 102 Gm. of fat and 48 of the 118 Gm. of protein ingested per day. The range of loss of both fat and protein was not wide. Among the 6 subjects in whom the remaining portion of the pancreas had been anastomosed to the jejunum, on the other hand, the fecal losses of fat and protein varied a good deal. They ranged from values equal to those of the patients whose pancreatic ducts had been ligated to values only slightly above normal.

The effect of the oral administration of pancreatin on the fecal fat and protein (nitrogen x 6.25) of 4 patients is shown in figure 4. In every instance fecal losses of fat and protein were definitely and substantially reduced by administration of pancreatin. In the case of fat the average reduction was 44.6 per cent and in the case of protein it was 53.4 per cent. Without pancreatin the average loss of fat was 59.9 Gm. per day; with pancreatin it was 32.5 Gm. Without pancreatin the average loss of protein was 47.5 Gm. per day; with pancreatin it was 21.9 Gm. The ranges of loss of fat and protein when pancreatin was administered did not overlap the ranges of loss when none was given.

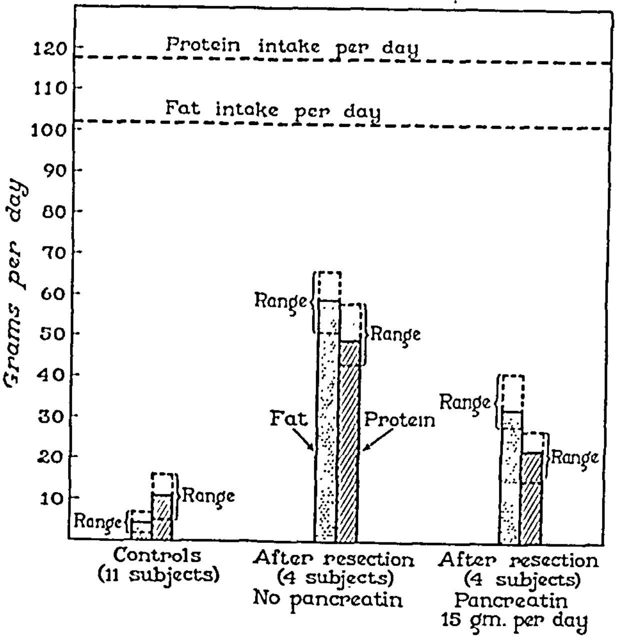

Fig. 4—Fecal losses of fat and protein (nitrogen times 6.25) after resection of the head of the pancreas. Effect of pancreatin. All subjects were taking a test diet containing 102 Gm. of fat and 118 Gm. of protein per day.

An examination of table 1 reveals that pancreatin effected an average reduction in total fecal solids from 119.7 Gm. per day to 78.8 Gm. per day. This constituted a reduction of 32.6 per cent. The percentage of the total fecal solids which was fat was reduced only 16.8 per cent by pancreatin. This indicates an almost parallel reduction of the fatty and nonfatty solid constituents of the feces. In terms of percentage of ingested fat lost in the feces, pancreatin reduced fecal fat losses from 59.0 per cent to 32.0 per cent.

A further evidence of the value of pancreatin in improving the function of the gastrointestinal tract was obtained from studying the values for urinary nitrogen (table 2). Without pancreatin the average urinary excretion of nitrogen was 7.9 Gm. per day. With pancreatin it was 12.0 Gm. per day. Although the nitrogen content of pancreatin (1.6 Gm. in the daily dose) increased the nitrogen intake during the periods in which pancreatin was being administered, this did not explain the entire increase of urinary excretion of nitrogen during these periods. Some of this increase was no doubt due to improved assimilation of nitrogen from the gastrointestinal tract.

The effect of three different levels of fat intake on the fecal total solids, fat and nitrogen is shown in table 4 and in figure 5. (In figure 5 fecal nitrogen values have been multiplied by 6.25 and expressed as fecal protein.) When the fat content of the diet was increased there was a pronounced rise in the fat content of the feces, which was accompanied by a corresponding rise in the total fecal solids. With diet 1, the average loss of fat was 21.9 Gm. per day. With diet 2, the average loss was 57 Gm. With diet 3, the loss was 146 Gm. in the 1 patient studied on this diet. This was in contrast to the results with normal subjects, in whom a loss of fat of 4.1 Gm. per day on the moderately high fat test diet (diet 2) was increased to only 8.7 Gm. per day when the high fat test diet (diet 3) was given.[1a]

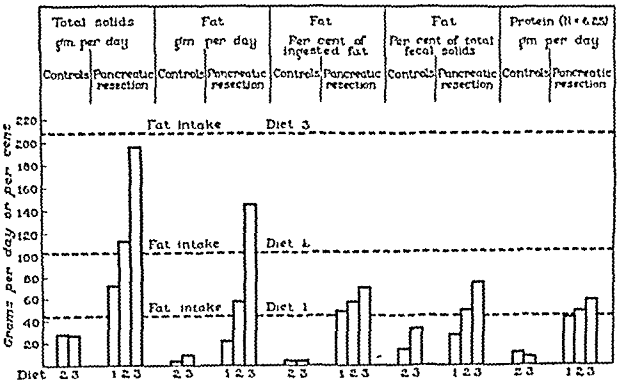

Fig. 5—The effect of various levels of fat intake on total solids, fat and protein in the feces after resection of the head of the pancreas. The control values are averages for 11 subjects who took diet 2 and for 13 subjects who took diet 3. The values for pancreatic resection are averages for 5 subjects who took both diets 1 and 2 and the values for 1 subject who took diet 3.

TABLE 4.—*Effect of Three Different Levels of Fat Intake on the Total Solids, Fat and Nitrogen in the Feces*

		Loss in Feces per Day														
	Length of Period,	Total Solids, Gm.			Fat, Gm.			Fat, Percentage of Ingested Fat			Fat, Percentage Total Fecal Solids			Nitrogen, Gm.		
Patient	Days	Diet 1	Diet 2	Diet 3	Diet 1	Diet 2	Diet 3	Diet 1	Diet 2	Diet 3	Diet 1	Diet 2	Diet 3	Diet 1	Diet 2	Diet 3
1	12	82.7			28.9			66.3			34.9			7.1		
	12		118.0			66.1			65.1			56.0			6.8	
3	6	51.1			22.3			51.1			43.6			6.2		
	6		139.1			66.3			65.3			47.7			9.3	
5	6	80.4			24.1			55.3			30.0			7.5		
	6		125.6			66.3			65.2			52.8			8.6	
6	6	79.0			24.0			55.0			30.4			7.4		
	6		104.0			59.2			58.3			56.9			7.9	
	3			196			146			70.2			74.5			9.2
9	6	63.2			6.8			15.6			10.8			5.2		
	6		82.9			26.9			26.5			32.4			6.6	
Average		71.3	113.9	196	21.2	57.0	146	48.7	56.1	70.2	29.9	49.2	74.5	6.7	7.8	9.2

Among patients who had undergone resection of the head of the pancreas, an increase in the dietary intake of fat was accompanied by a slightly more than corresponding increase in the amount of fecal fat. Consequently the percentage of ingested fat lost in the feces was only slightly increased (48.7 per cent with diet 1, 56.1 per cent with diet 2 and 70.2 per cent with diet 3). On the other hand the percentage of fat in the total fecal solids was substantially increased (29.9 per cent with diet 1, 49.2 per cent with diet 2 and 74.5 per cent with diet 3).

Somewhat similar results were observed in the control studies with diets 2 and 3. Among these normal subjects doubling the fat intake per day resulted in a doubling of the fecal fat loss, so that there was no difference in the percentage of ingested fat lost in the feces with the two diets. The percentage of fat in the total fecal solids, on the other hand, was considerably greater with the high fat diet than with the moderately high fat diet.[1a]

Although fecal losses of fat among patients who had undergone pancreatic resection were greatly increased by increasing the dietary content of fat, fecal losses of protein were not greatly augmented by the large fat losses (fig. 5). They averaged 41.9 Gm. per day on diet 1, 48.8 Gm. per day on diet 2 and 57.5 Gm. per day on diet 3.

In table 5 is shown the effect of two different levels of protein intake on the fecal total solids, fat and nitrogen of patients who have undergone resection of the head of the pancreas. The losses of fat were essentially the same with the two diets. The fecal total solids were slightly greater with diet 2 (high protein) than with diet 4 (low protein). However, the major difference in the results from the two diets was found in the nitrogen content of the stools. With the high protein diet the fecal nitrogen averaged 7.6 Gm. per day and with the low protein diet it averaged 4.7 Gm. per day. In other words, a high level of protein intake resulted in a greater loss of protein in the feces than did a low level of intake. Figure 6 demonstrates that an increase in the amount of fat or protein in the diet resulted in an increase in the quantities of fat or protein absorbed in spite of a great wastage in the feces. With diets 1, 2 and 3, 22.8, 44.6 and 62.0 Gm. of fat per day were absorbed respectively. With diets 4 and 2, 31.6 and 70 Gm. of protein were absorbed respectively.

In table 2 are presented the nitrogen balances of all 10 patients while taking diet 2 both with and without pancreatin. In every case the balances were positive, even when fecal losses of nitrogen were large. With pancreatin the average retention of nitrogen was greater than without it, though there were individual instances in which this was not the case. Table 6 presents the nitrogen balances of patients who were studied at more than one level of fat or protein intake. With the exception of 1 patient (case 1) who was taking the low protein diet (diet 4), all nitrogen balances were positive. *In general nitrogen retention* was less on the low protein diet (diet 4) than on the other three diets, in which the protein content was relatively high. Our results with regard to nitrogen balances are in agreement with those of Nasset, Pierce and Murlin,[3] who showed that depancreatized dogs may have increased nitrogen retention or normal balances even when large amounts of nitrogen are lost in the feces.

TABLE 5.—*Effect of Two Different Levels of Nitrogen Intake on the Total Solids, Fat and Nitrogen in the Feces per Day*

		Loss in Feces per day									
Patient	Length of Period, Days	Total Solids, Gm.		Fat, Gm.		Fat, Percentage of Ingested Fat		Fat, Percentage of Total Fecal Solids		Nitrogen, Gm.	
		Diet 2	Diet 4	Diet 2	Diet 4	Diet 2	Diet 4	Diet 2	Diet 4	Diet 2	Diet 4
1	12	118.0		66.1		65.1		56.0		6.8	
	12		105.5		51.9		52.0		52.0		6.2
6	6	104.0		59.2		58.3		56.8		7.9	
	6		103.0		70.4		66.7		68.3		5.2
8	6	104.0		35.7		35.1		34.3		9.2	
	6		61.0		25.3		24.0		41.5		1.6
9	6	82.9		26.9		26.5		32.4		6.6	
	6		69.1		29.5		28.0		42.7		3.8
Average		102.2	84.6	47.0	45.0	46.3	42.7	45.0	51.1	7.6	4.7

COMMENT.

Among the 10 patients who were studied, there was considerable variation in the degree of impairment of the digestive and absorptive functions of the gastrointestinal tract. Similar variation can be found in the results of previously published intake-excretion studies of patients who have undergone resection of the head of the pancreas.[4] The cause of such variation is not entirely clear, but a good part of it probably represents differences in the amount and quality of the external pancreatic secretion which reaches the gastrointestinal tract. All 3 of our patients in whom the pancreatic ducts were ligated lost large amounts of fat and nitrogen in the feces. There was little difference in the degree of such loss among them. In patients whose pancreas had been anastomosed to the jejunum, on the other hand, the losses ranged from values equal to those of patients whose pancreatic ducts had been ligated to values only slightly above normal. It seems likely that, in some patients, damage to pancreatic tissue had been so extensive as a result of previous obstruction of the pancreatic duct or pancreatitis that little functioning acinar tissue remained. Anastomosis of such a pancreas to the jejunum would not improve digestion or absorption.

Aside from differences in pancreatic secretion, there are other poorly understood factors which influence the absorption of food from the gastrointestinal tract after resection of the head of the pancreas. Partial gastrectomy alone (when the stomach has been anastomosed to the jejunum) was followed by excessive loss of fat and sometimes of nitrogen in the feces.[5] The degree of these losses

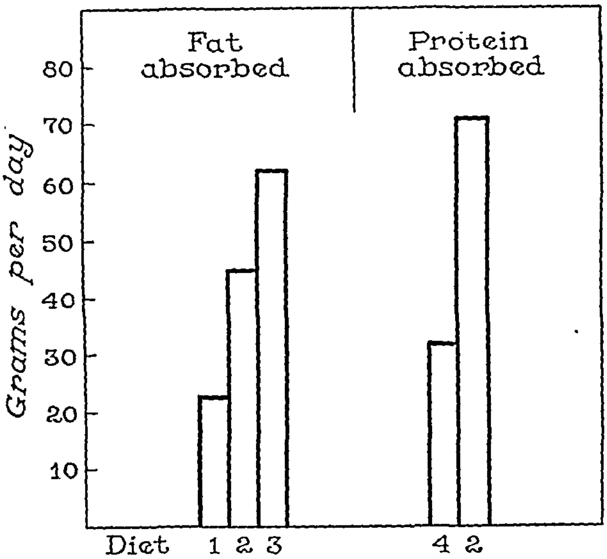

Fig. 6—The effect of various levels of fat and protein intake on the quantity of fat and protein (nitrogen times 6.25) absorbed after resection of the head of the pancreas. The values for fat absorbed are averages for 5 subjects who took both diets 1 and 2 and the value for 1 subject who took diet 3. The values for protein absorbed are averages for 4 subjects who took both diets 2 and 4.

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[3] Nasset, E. S.; Pierce, H. B., and Murlin, J. R.: The Influence of Yeast on Protein Metabolism in Normal and Depancreatized Dogs, J. Lab. & Clin. Med. 16:1151-1168 (Sept.) 1931.

[4] (*a*) Whipple, A. O., and Bauman, L.: Observations on Pathologic Physiology of Insular and External Secretory Functions of Human Pancreas. Am. J. M. Sc. 201:629-636 (May) 1941. (*b*) Brunschwig, A., and Allen, J. G.: Occlusion of External Pancreatic Secretion in Man, Proc. Soc. Exper. Biol. & Med. 53:43-47 (May) 1943. (*c*) Lake, M.; Cornell, N. W., and Harrison, H. E.: Post-Operative Achylia Pancreatica: Fat and Protein Absorption With and Without Replacement Therapy; Report of a Case, Am. J. M. Sc. 205:118-122 (Jan.) 1943. (*d*) Rekers, P. E.; Pack, G. T., and Rhoads, C. P.: Metabolic Studies in Patients with Cancer of the Gastrointestinal Tract: V. Pancreatic Insufficiency in a Patient Treated Surgically for Carcinoma of the Ampulla of Vater, J. A. M. A. 122:1243-1245 (Aug. 28) 1943.

[5] Wollaeger, E. E.; Comfort, M. W.; Wier, J. F., and Osterberg, A. E.: The Total Solids, Fat and Nitrogen in the Feces: II. A Study of Persons who had Undergone Partial Gastrectomy with Anastomosis of the Entire Cut End of the Stomach and the Jejunum (Polya Anastomosis), Gastroenterology 6:93-104 (Feb.) 1946.

varied from patient to patient but was not of the same order of magnitude as that found when resection of the head of the pancreas and the duodenum had also been done. There was no reason to believe that the pancreas was abnormal in the patients who had undergone partial gastrectomy alone. It seemed unlikely, therefore, that difference in pancreatic secretion was responsible for the variations in fecal fat and nitrogen found. Since partial gastrectomy with gastrojejunostomy was carried out in all patients who underwent resection of the head of the pancreas, this part of the operation alone must have been responsible for some of the excess fecal loss of fat and nitrogen sustained by these patients. By the same token, it could also have been responsible for some of the variation in the losses among them.

Handelsman, Golden and Pratt[6] studied absorption of food by 3 dogs in which special precautions had been taken to exclude pancreatic secretion from the gastrointestinal tract. They found large differences in the amount of food absorbed by different dogs taking the same diet. These differences obviously could not be explained on the basis of variations in pancreatic secretion and were attributed to unknown factors influencing gastrointestinal function. Similar variations were found in the results of Whipple and Bauman,[4a] who studied 4 patients, and Brunschwig and Allen,[4b] who studied 3 patients after resection of the head of the pancreas with occlusion of the pancreatic ducts. Two patients in the first group and 1 in the second group were found to have approximately normal fecal losses of fat and nitrogen. The other patients in the two groups sustained relatively large losses.

In contrast to these findings, all 3 of our patients in whom the pancreatic ducts had been ligated lost large amounts of fat and nitrogen in the feces when they ingested the same test diet. There was little difference in the degree of loss among them. This discrepancy between our results on the one hand and those of Handelsman, Golden and Pratt,[6] Whipple and Bauman,[4a] and Brunschwig and Allen[4b] on the other is not easily explained. Perhaps if we had carried out a greater number of studies with patients whose pancreatic ducts had been ligated, a much greater variation in results would have been found. On the other hand, consideration must be given to the fact that fistulous connections between the pancreas and the gastrointestinal tract of dogs have frequently occurred even after ligation of the pancreatic ducts.[7] Apparently, no such fistulous connections were demonstrated in the animals of Handelsman, Golden and Pratt at the time of necropsy. However, the possibility of formation of fistula was not entirely ruled out in the 2 patients of Whipple and Bauman and the 1 patient of Brunschwig and Allen who were shown to have relatively normal fecal losses of fat and nitrogen. The results of Coffey, Mann and Bollman[8] with dogs indicate that the secretions from only a small amount of pancreatic tissue may be adequate to maintain practically normal digestion and absorption. It is possible that pancreatoenteric fistulas formed in some of our patients whose pancreatic ducts had been ligated. However, the degree of fecal loss of fat and protein in these patients, which was similar to that of patients who had undergone total pancreatectomy,[9] makes it seem improbable that pancreatic juice was entering the gastrointestinal tract.

The study of fecal losses of fat at various levels of fat intake revealed that (1) fecal losses of fat increased as the fat content of the diet increased; (2) in spite of great wastage in the feces the actual amount of fat absorbed was in-

TABLE 6.—*Effect of Various Levels of Fat and Protein Intake on Nitrogen Balance After Resection of Head of Pancreas*

		Nitrogen, Gm. per Day				
Patient	Diet	Intake	Loss Urine	Loss Feces	Loss Total	Balance
1	1	19.7	9.4	7.1	16.5	+3.2
	2	18.9	8.6	6.8	15.4	+3.5
	4	9.7	4.2	6.1	10.3	-0.6
2	1	19.7	0.8	6.2	17.0	+2.7
	2	18.9	6.8	9.3	16.1	+2.8
5	1	19.7	0.1	7.5	17.6	+2.1
	2	18.9	8.7	8.6	17.3	+1.6
6	1	19.7	9.7	7.4	17.1	+2.6
	2	18.9	8.2	7.9	16.1	+2.8
	3	15.7	3.2	9.2	12.4	+3.3
	4	9.7	4.3	5.2	9.5	+0.2
8	2	18.9	6.0	9.2	15.2	+3.7
	4	9.7	3.7	3.6	7.3	+2.4
9	1	19.7	8.6	5.2	13.8	+5.9
	2	18.9	7.9	6.6	14.5	+4.4
	4	9.7	4.5	3.8	8.3	+1.4

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[6] Handelsman, M. B.; Golden, L. A., and Pratt, J. H.: The Effect of Variations in the Diet on the Absorption of Food in the Absence of Pancreatic Digestion, J. Nutrition 8:479-495 (Oct.) 1934.

[7] Pratt, J. H.; Lamson, P. D., and Marks, H. K.: The Effect of Excluding Pancreatic Juice from the Intestine, Tr. A. Am. Physician 24:266-279, 1909. Handelsman, M. B.: Digestive and Absorptive Function of External Secretion of Pancreas, Ann. Int. Med., 11:1479-1497 (Feb.) 1938.

[8] Coffey, R. J.; Mann, F. C., and Bollman, J. L.: III. The Influence of the Pancreas on the Utilization of Foodstuffs. Am. J. Digest. Dis. 7:144-149 (April) 1940.

[9] (a) Priestly, J. T., Comfort, M. W., and Radcliffe, J., Jr.: Total Pancreatectomy for Hyperinsulinism Due to Islet-Cell Adenoma: Survival and Cure at Sixteen Months After Operation; Presentation of Metabolic Studies. Ann. Surg. 119:211 (Feb.) 1944. (b) Dixon, C. F.; Comfort, M. W.; Lichtman, A. L., and Benson, R. E.: Total Pancreatectomy for Carcinoma of the Pancreas in a Diabetic Person: Metabolic Studies, Arch. Surg. 52:619-639 (June) 1946.

creased by increasing the fat content of the diet, and (3) the efficiency of the gastrointestinal tract decreased as the fat content of the diet was raised. Thus, despite the fact that the actual amount of fat absorbed was larger with the higher fat diets, the average percentage of ingested fat absorbed dropped from 51 per cent with diet 1 to 44 per cent with diet 2 and 30 per cent with diet 3. Similar results were reported by Handelsman, Golden and Pratt with dogs. When patients who have undergone resection of the head of the pancreas are fed diets of high fat content, they often have more frequent and copious bowel movements and experience a greater degree of abdominal discomfort than when their diet is low in fat. Because they have such a poor tolerance for fat and assimilate it so inefficiently, we have usually advised these patients to limit the fat content of their diets to between 50 and 75 Gm. per day.

TABLE 7.—*Body Weight Before and After Resection of the Head of the Pancreas*

Patient	Customary Weight Before Illness, Pounds	Weight at Time of Study, Pounds	Later Weight, Pounds	Time After Operation, Years	Pancreatin, 5 Grain Tablets Per Day
1	170	120	145	2	15
2	130	97	112	2	45
3	155	113	130	2 3/4	15
4	138	132	130	1	45
5	135	125	120	2	?
6	170	134	160	2 3/4	6
7	175	146	143	2	0
8	145	119	—	—	0
9	145	106	135	½	0
10	206	143	152	½	0

The results of the study of fecal protein losses at two levels of protein intake revealed that: (1) fecal losses of protein increased as the protein content of the diet increased; (2) in spite of great wastage in the feces, the actual amount of protein absorbed was increased by increasing the protein content of the diet. The results with protein differed from the results with fat in that gastrointestinal efficiency did not diminish as protein intake was increased but on the contrary was somewhat better with the high protein intake than it was with the low. With diet 2 (high protein) an average of approximately 60 per cent of ingested protein was absorbed, while with diet 4 (low protein) approximately 51 per cent of ingested protein was absorbed. Furthermore, the nitrogen balance studies revealed a greater retention of nitrogen with the high protein diet than with the low protein diet. Since large amounts of dietary protein are well tolerated by patients who have undergone resection of the head of the pancreas, we have prescribed for them diets containing from 120 to 140 Gm. of protein per day. Large amounts of carbohydrates are also well tolerated by these patients and can be taken in sufficient quantities to bring the total calories in the diet to 3,000 or more per day.

The beneficial effects of pancreatin on the absorption of fat and protein in human subjects who are suffering from an insufficiency of the external pancreatic secretion seem well established.[10] They are well demonstrated by the fact that fecal losses of fat and protein were reduced by approximately 50 per cent in the four subjects whom we studied.

From a nutritional point of view our 10 patients did surprisingly well, considering the large caloric losses in the feces which some of them sustained. By taking bland diets high in calories, protein and carbohydrate and low in fat, and by taking pancreatin if impairment of gastrointestinal function was great, they were able to gain weight or maintain a satisfactory weight level in almost every instance. In table 7 is presented the customary weight of each patient before illness, the weight at the time of our study and the weight at some later time indicated in the table. Diarrhea was a handicap in only 2 cases (cases 4 and 5). At the present time, two to three years after operation, 7 of the 10 patients are living and 4 of them (cases 2,3,6 and 7) are in good health.

We had the opportunity of repeating intake-excretion studies after the lapse of an interval of time with only 2 of our patients. Patients 7 and 10 were each reexamined with diet 2 a year after their initial studies had been carried out (tables 1 and 2, patient 7, periods 1 and 2 and patient 10, periods 1 and 2). In the case of patient 7 the results in the two periods of study were not entirely comparable, since he had undergone a secondary operation because of obstruction in the biliary tract a month before the second period of study. However, it is of interest to note that fecal losses of total solids and fats were considerably lower at the second examination than they had been a year previously. Fecal loss of nitrogen was not much changed. The results from the two studies of patient 10 showed no great differences.

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[10] Beazell, J. M.; Schmidt, C. R., and Ivy, A. C.: Diagnosis and Treatment of Achylia Pancreatica, J. A. M. A. 116:2735-2739 (June 21) 1941.

SUMMARY

By means of intake-excretion studies using standard test diets we have assessed the degree of impairment of the digestive and absorptive functions of the gastrointestinal tract brought about by the surgical procedure necessary for resection of the head of the pancreas. When the pancreatic ducts were ligated at the time of operation, thus preventing the flow of pancreatic juice into the gastrointestinal tract, impairment of gastrointestinal function was invariably great. It was reduced in some patients by anastomosing the remaining portion of the pancreas to the small intestine. It was also reduced when pancreatin was administered.

Although an increase in the dietary fat and protein of these patients resulted in an increased wastage of fat and protein in the feces, it also resulted in an increase in the amount of these foods which was assimilated.

By taking diets high in calories, protein and carbohydrate and low in fat, and by taking pancreatin if impairment of gastrointestinal function was great, most patients who had undergone resection of the head of the pancreas were able to maintain a satisfactory nutritional status.

ABSTRACT OF DISCUSSION

DR. ALLEN O. WHIPPLE, New York: In regard to the contribution by Dr. Wollaeger and associates, I think that this is a great contribution. It settles one thing, the advantage wherever possible of uniting or reuniting the pancreatic flow by anastomosing the pancreatic duct to a portion of the jejunum. That has been a matter of controversy for years, but I think the work done at the Mayo Foundation has settled it, and I am extremely glad to have this paper appear.

DR. ROBERT ELMAN, St. Louis: Because radical resection of the head of the pancreas is not only feasible but successful, the early diagnosis has become more important. May I suggest one method of early diagnosis? Obstruction of the pancreatic duct experimentally produces an elevation in the serum amylase which returns to normal usually in a week or two. One might expect, therefore, that to detect an elevation of the serum amylase after obstruction of the pancreatic duct following carcinoma one should examine the blood rather early in the disease. Otherwise a normal value will be found. I looked up a number of our records of proved carcinoma of the pancreas in which serum amylase was measured and found some correlation in certain cases between elevation of amylase and the duration of symptoms. A patient whose blood was examined the soonest after the onset of symptoms—i.e., four weeks—had the highest value. One case in which the blood was examined at seven weeks had a value of 210. More interesting is the third case, in which, six weeks after the onset of symptoms, the value was 150; this dropped a week later to 100. Without the first determination, the elevation would, of course, have been missed. The fourth case at eight weeks had a value of 150 but three days later had dropped to 210. Doubtless, if the examination had been a week later, the value would have returned to normal. It seems that examinations of the blood early in the course of jaundice would reveal elevations in the blood amylase indicative of obstruction in the pancreatic duct. Another diagnostic procedure which should be mentioned is the exploratory incision. More and more associates and I are subjecting these patients with obscure jaundice to a diagnostic exploration which we feel is just as safe as blind biopsy of the liver and gives much more information than can be observed with the peritoneoscope. Moreover, the information desired may be extended as indicated. First of all, when the ascitic fluid is observed, we are obviously dealing with extensive peritoneal metastasis or a hepatogenous type of jaundice. Second, the liver may be visualized and biopsied. Third, the gallbladder is observed and palpated. If it is greatly dilated, one can be sure of extrahepatic obstruction. This demands examination of the duodenum in order to mobilize it and explore the head of the pancreas. A biopsy for frozen section may then be indicated. The surgeon must be prepared for a negative exploration which may be disappointing from the standpoint of therapy but will be gratefully received by the patient, who may then be sure that he does not have carcinoma

DR. EDWARD BERK, Philadelphia: Current methods of studying the pancreas and its function do not permit the diagnosis of carcinoma to the exclusion of all other lesions. Data in the literature pertaining to clinical manifestations of carcinoma of the pancreas are based largely on persons in whom the cancer was well advanced. These observations have tended to fix in our minds the late manifestations. Furthermore, in many of the reported cases, diagnosis was established solely by the findings at operation. The shortcomings of such unconfirmed surgical observations are obvious, especially when they are used to differentiate the clinical manifestations of cancer confined to the head from those in the body or tail of the pancreas. We must realize that pain and loss of weight, altered carbohydrate metabolism and distributed pancreatic function are important clues. We must appreciate the value of roentgen evidence of changes produced in neighboring viscera. Painless jaundice, palpable enlargement of the gallbladder and bulky, fatty stools, while classical and diagnostically significant, are encountered together in only a minority of the cases of pancreatic cancer

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An Unsolved Yellow Fever Problem.—The mode of passage of jungle yellow fever over open country between forests remains one of the unsolved problems in the study of this disease. It is known that monkeys and certain other vertebrates may contract yellow fever by the bite of infected sylvan mosquitoes and harbor the virus for a period of days. Thus the virus may survive and spread in any given forest patch until the susceptible animal population is immunized, or until the insect vectors decrease to such small numbers, due to unfavorable conditions, that they can no longer maintain the cycle. The local migration of monkeys and mosquitoes within their normal habitat logically accounts for infiltration within the forest, but the method by which the virus traverses the open country between isolated forest patches, such as exist in the path of epidemic yellow fever in central and southern Brazil, has not been satisfactorily explained.—Causey, O. R., and Kumm, Henry W., *The American Journal of Tropical Medicine*, May 1948.

ROENTGENOLOGIC TREATMENT OF LYMPH NODES AND SPLEEN IN BRILL-SYMMERS DISEASE

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There is a comparatively newly described disease which is known as giant follicular lymphadenopathy or Brill-Symmers disease.[1] It has been widely recognized by pathologists but is only beginning to attract the attention of clinicians, among whom it is almost always mistaken for Hodgkin's disease. Both are primarily diseases of the lymphoid system and both are characterized, clinically, by generalized, occasionally by localized, enlargement of the superficial lymph nodes and not uncommonly by splenomegaly. Histologically, the changes in the lymph nodes and the spleen are so divergent that confusion between the two diseases is scarcely possible. It is imperative for the radiologist, to whom falls the duty of treating these patients, to know the underlying morphology and the responses to radiation.

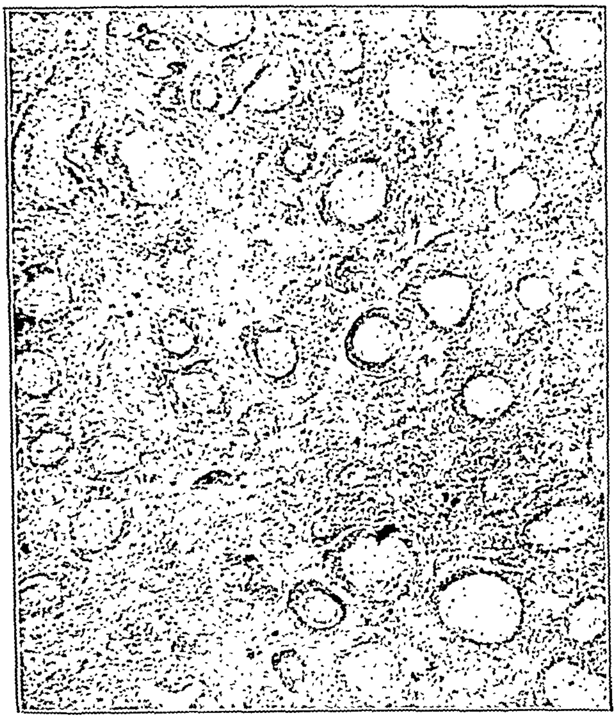

Fig. 1.—Low power photomicrograph showing numerical and dimensional hyperplasia of the lymph follicles in giant follicular lymphadenopathy.

PATHOLOGY

Giant follicular lymphadenopathy is characterized by numerical and dimensional hyperplasia of the lymph follicles (fig. 1). The follicles may consist exclusively of small lymphocytes (fig. 2). More commonly three types of cells are distinguishable in them: large cells with hypochromatic nuclei whose borders are sharply defined and indented; slightly smaller cells with richly chromatic nuclei but with similarly indented limiting membranes; and cells with still smaller, deeply staining nuclei with poorly defined limit-

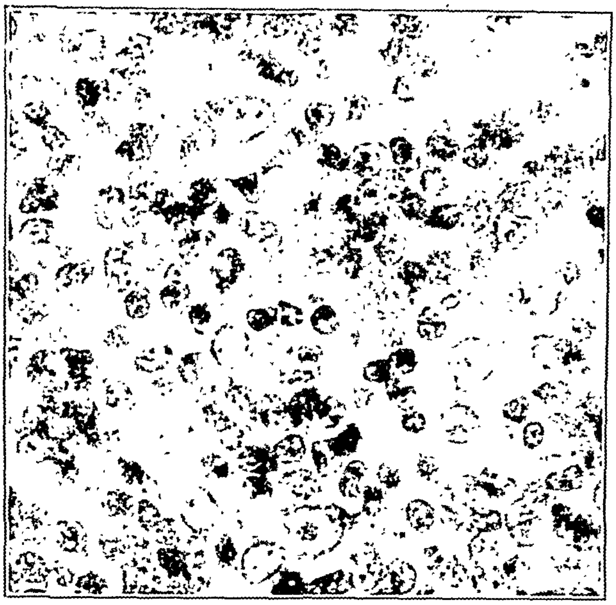

Fig. 2.—A high power photomicrograph depicting three distinguishable types of cells: the large cells with hypochromatic nuclei whose borders are sharply defined and indented (shadow cell); slightly smaller cells, deeper staining and with similarly indented nuclei, and, thirdly, smaller richly chromatic cells which are in the order of large lymphocytes.

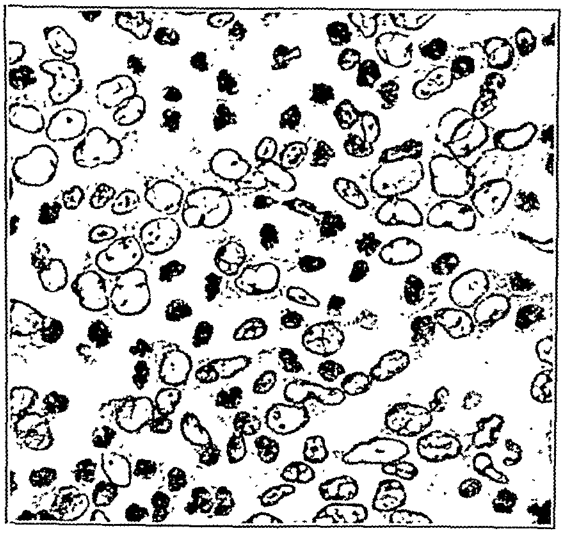

Fig. 3.—Drawing to illustrate the cells photographed in figure 2.

Read before the Section on Radiology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

From the Department of Radiation Therapy, Bellevue Hospital, New York, Dr. Ira I. Kaplan, Director. Dr. Rubenfeld is visiting radiation therapist, Bellevue Hospital; and associate clinical professor of radiology, New York University College of Medicine.

[1] Brill, N. E.; Baehr, G., and Rosenthal, N.: Generelized Giant Lymph Follicle Hyperplasia of Lymph Nodes and Spleen, J. A. M. A. 84: 668 (Feb. 28) 1925. Symmers, D.: Giant Follicular Lymphadenopathy With or Without Splenomegaly, Arch. Path, 26:1092 (Sept.) 1938; Clinical Significance of the Pathologic Changes in Giant Folicular Lymphadenopathy, ibid. 34: 385 (Aug.) 1942; Clinical Significance of the Deeper Anatomic Changes in Lymphoid Diseases, Arch. Int. Med. 74:163 (Sept.) 1944.

ing membranes that are of the type of large lymphocytes (figs. 3 and 4). The hyperplastic lymph follicles may remain intact throughout the course of the disease or they may rupture and permit the escape of their cell components into the substance of the nodes (figs. 5, 6 and 7). In the latter event the disease giant follicular lymphadenopathy becomes transformed into polymorphous cell sarcoma. Symmers described this transformation in 1938. According to Cohen and Bergstrom,[2] "The ability of this disease to alter its morphology appears to be fundamental. Giant follicular lymphadenopathy is to be understood as a pattern of hyperplasia with potentialities for multiple differentiation, the end phase being unrecognizable in the original morphology." On the other hand, it may remain unchanged throughout life (Symmers; Cohen and Bergstrom); it may undergo transformation into lymphosarcoma (Baehr, Klemperer and Rosenthal[3]), or it may terminate in lymphoid leukemia or become associated with the histologic changes of Hodgkin's disease (Symmers). It may give rise to a reticulum cell sarcoma (Cohen and Bergstrom), or, finally, it may undergo transformation into the polymorphous cell sarcoma of Symmers. These paths of development are represented in the following manner:

Giant Follicular Lymphadenopathy

– Associated with features
of Hodgkin's disease

Lymphatic leukemia Lymphosarcoma Reticulum cell sarcoma Polymorphous cell sarcoma

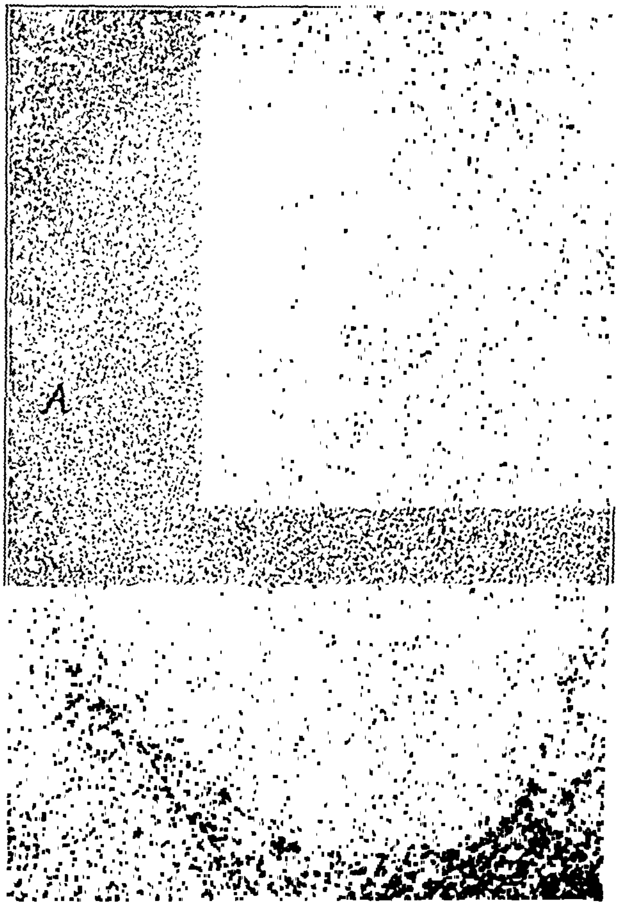

Fig. 4.—A large ballooned lymph follicle composed of cells indentified in figures 2 and 3. At point A the rim of lymphocytes shows thinning and initial rupture as a precursor of polymorphous cell sarcoma.

CLINICAL FEATURES

Nineteen patients with giant follicular lymphadenopathy or with polymorphous cell sarcoma have been studied. The oldest patient was 59, the youngest 12. The ages in decades were as follows: 1 to 10 years, no cases; 11 to 20 years, 2 cases; 21 to 30 years, 3 cases; 31 to 40 years, 4 cases; 41 to 50 years, 8 cases, and 51 to 60 years, 2 cases. There were 5 females and 14 males.

Enlarged lymph nodes constituted the outstanding clinical feature. Clinically, the nodes appeared as localized enlargements of peripheral groups. In order of frequency, the enlarged lymph nodes were as follows: axillary lymph nodes, 13 patients; cervical lymph nodes, 13 patients; inguinal lymph nodes, 11 patients; occipital lymph nodes, 3 patients; epitrochlear lymph nodes, 2 patients; femoral lymph nodes, 1 patient, and auricular lymph nodes, 1 patient.

The size of the nodes varied from 1 to 3 cm. Neither in size, consistency nor attachments did the nodes present identifying characteristics, a feature which should be emphasized, since clinically they are indistinguishable from those of other lymphomas, notably Hodgkin's disease.

In addition to the presence of enlarged lymph nodes other features were noted as follows: weakness, 5 patients; cutaneous lesions, 4 patients (exfoliative dermatitis); loss of weight, 4 patients; cough, 3 patients; abdominal pains, 2 patients; edema of legs, 1 patient; pallor, 1 patient; burning of feet, 1 patient, and dyspnea, 1 patient. Enlargement of the spleen was present in 3 patients, and 1 had an enlarged liver.

Of interest was the appearance of persistent leukopenia in 4 patients. One patient who has been observed for fourteen years showed a white cell count of 2,000 for over two years.

TREATMENT

Nine patients with giant follicular lymphadenopathy and 10 with polymorphous cell sarcoma have been treated.

The lymph nodes and spleen were treated with roentgen rays of a half value layer of 1 to 2 mm. of copper at a distance of 50 cm. in unit doses that varied between 100 and 200 r (in air). The size of the portal was adapted to cover the area of involvement and varied between 50 and 225 sq. cm. A total air dose of 600 to 1,000 r caused recession of the enlarged lymph nodes and spleen in giant follicular lymphadenopathy. Lymph nodes that had undergone transformation into polymorphous cell sarcoma usually required higher doses, to the extent of 2,000 to 3,000 r. In addition to the difference in the degree of response there were variations in the rapidity of recession. Whereas the lymph nodes of giant follicular lymphadenopathy showed rapid decrease or even disappeared, those of polymorphous cell sarcoma were slow to regress and even showed a latent period of two to six months before disappearing. In 1 patient the lymph nodes showed histologic evidence of giant follicular lymphadenopathy, but other nodes in the same patient required 3,000 r before improvement was noted, and it is assumed that some form of mutation had occurred. These variations in response to radiation therapy support the view that giant follicular lymphadenopathy is a relatively benign disease and that polymorphous cell sarcoma is a resistant or malignant phase.

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[2] Cohen, S. E., and Bergstrom, V. W.: Giant Follicular Lymphoblastoma, Am. J. Clin. Path. 16: 22, 1946.

[3] Baehr, G.; Klemperer, P., and Rosenthal, N. Follicular Lymphoblastoma, Am. J. Path. 7:558, 1931.

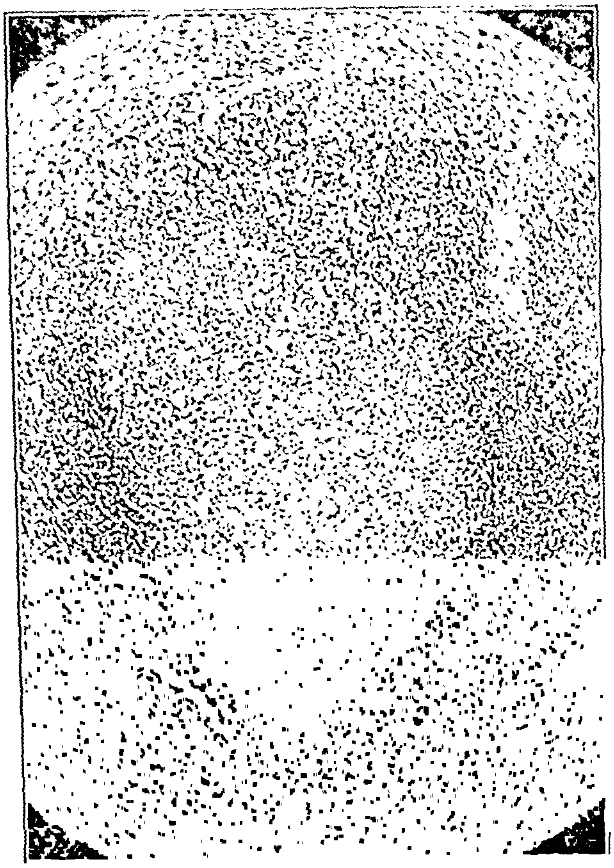

Fig. 5.—An enlarged follicle demonstrating beginning rupture of the lymphocytic rim with occasional follicle cells appearing within the stroma of the lymph node.

REPORT OF CASES

Giant Follicular Lymphadenopathy.—J. H., aged 49, was first seen in October 1933 because of loss of weight and a burning sensation in both feet. The spleen was enlarged to a point 15 cm. below the left costal margin. Enlarged lymph nodes were palpated in the axillary, inguinal and epitrochlear regions. The nodes were firm, nontender and freely movable and varied in size from 1 to 2 cm. The liver was palpated 2 cm. below the margin of the ribs. The white cells numbered 4,200, of which 55 per cent were lymphocytes. Histologic examination of several lymph nodes removed from the left axilla showed numerical and dimensional hyperplasia of the follicles. Treatment was given according to the technic just outlined. The spleen was treated anteriorly and posteriorly every third day alternately until a dose of 300 r was delivered to each side. Two months after completion of treatment the spleen and liver had receded and the lymph nodes were no longer palpable. Further improvement was indicated by the disappearance of the burning sensation in the feet, by return of the normal blood count and by a gain of 25 pounds (11.3 Kg.) in weight. In 1946 the patient was still well and was following his occupation as a tile setter. Blood chemistry studies, sternal marrow examinations and roentgenograms of the long bones were all within the limits of normal. The blood count showed 1,400 leukocytes, of which 65 per cent were lymphocytes. The spleen was palpated 4 cm. below the left costal margin. The blood count has since been repeated on numerous occasions and showed persistent leukopenia. In this case the presence of a relatively high lymphocyte count suggests the possibility of transformation of giant follicular lymphadenopathy into lymphoid leukemia.

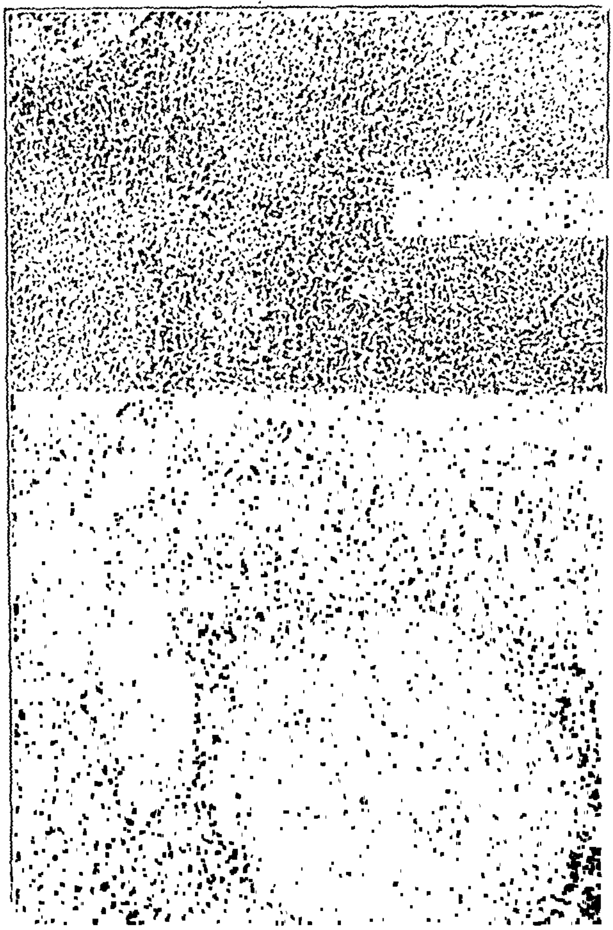

Fig. 6.—Showing varying-sized lymph follicles some of which have grown to large size. Some have ruptured, pouring their contents into the stroma of the node, and others have coalesced with neighboring follicles.

Polymorphous Cell Sarcoma.—F. L., aged 12, presented enlarged lymph nodes in the cervical, axillary, inguinal and epitrochlear regions. The spleen was not palpable. The blood count was normal. Histologic examination of an excised cervical node revealed the changes of polymorphous cell sarcoma. In July and August of 1938 each lymph node region was irradiated until a dose of 700 r (air) was delivered. There was no detectable recession. Treatment was continued until November so that, over a period of four months, each area received 2,200 r (air). At the end of that time no enlarged lymph nodes were apparent. At the present moment, or eight years after the commencement of radiation therapy, the patient is well.

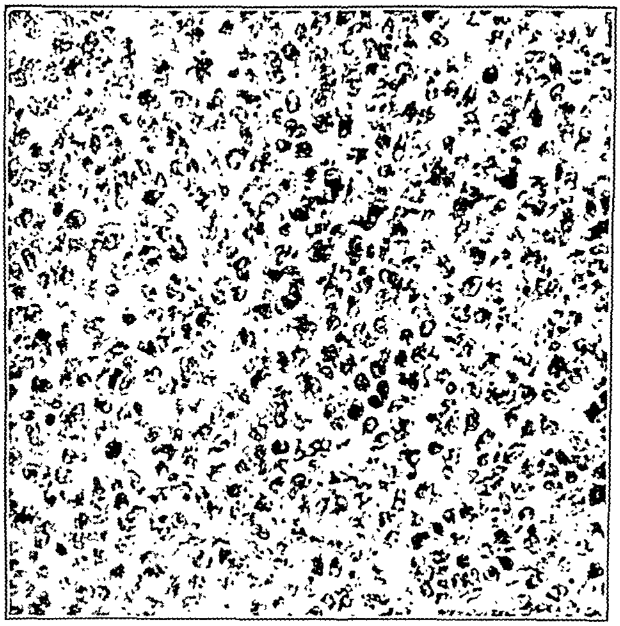

Fig. 7.—High power photomicrograph from a ruptured follicle showing infiltration of the body of the node by large hypochromatic or shadow cells and smaller hyperchromatic cells of the large lymphocyte type.

RESULTS OF TREATMENT

Survival data of this group of patients are summarized in tables 1 and 2.

TABLE 1.—*Patients with Giant Follicular Lymphadenopathy*

Patient	Years of Survival	Notes
J.H.	14	Still under observation
D.W.	10	
W.W.	7	
C.R.	4	Not followed
B.W.	3	Still under observation
D.K.	5	Died in acute toxemia
C.D.	No follow-up	
J.J.	No follow-up	
I.R.	No follow-up	

Four of 7 patients (66 per cent) with giant follicular lymphadenopathy and 6 of 10 (60 per cent) with polymorphous cell sarcoma are known to have survived five or more years. These figures stand in sharp distinction to the relatively less favorable survival rates of lymphosarcoma, 25 per cent; Hodgkin's disease, 20 per cent, and lymphatic leukemia, 15 per cent. The immediate and often dramatic recession of the enlarged lymph nodes in giant follicular lymphadenopathy may be used as an index to distinguish these nodes from those of polymorphous cell sarcoma, the behavior of which is commonly characterized by a slower rate of recession after larger total doses of radiation.

TABLE 2.—*Patients with Polymorphous Cell Sarcoma*

Patient	Years of Survival	Notes
J.H.	12	Still under observation
F.L.	8	Still under observation
M.C.	8	Still under observation
M.W.	7	Still under observation
S.C.	4	Not followed
J.C.	7	Died
P.L.	6	Died
C.S.	4	Died
B.N.	3	Died
W.H.	1	Still under observation

SUMMARY AND CONCLUSIONS

The lymph nodes in giant follicular lymphadenopathy are characterized, histologically, by increase in the number and size of the lymph follicles. When the follicles rupture and their cells escape into the substance of the node, the disease assumes the malignant qualities of polymorphous cell sarcoma. Giant follicular lymphadenopathy may undergo transformation into polymorphous cell sarcoma, into lymphosarcoma, into Hodgkin's disease or into lymphoid leukemia.

The character of the nodes or the symptoms were not different from what appears in other diseases of the lymph nodes. The single noteworthy exception was the persistent leukopenia.

Roentgen therapy of 200 kilovolt potential was used to treat the lymph nodes and spleen. Two noteworthy variations in response were noted: The nodes in giant follicular lymphadenopathy receded or disappeared under doses of 800 to 1,000 r, while the nodes in polymorphous cell sarcoma regressed only after doses of 2,000 to 3,000 r. The nodes in polymorphous cell sarcoma frequently showed a latent period of reaction in contrast to the rapid disappearance of the nodes in giant follicular lymphadenopathy. These variations may be used as a therapeutic test.

Sixty-six per cent of patients with giant follicular lymphadenopathy and 60 per cent of those with polymorphous cell sarcoma are apparently well five or more years after the institution of treatment.

ABSTRACT OF DISCUSSION

DR. SAMUEL E. COHEN, Elmira, N. Y.: It is encouraging to learn that of Dr. Rubenfeld's patients treated for giant follicle lymphadenopathy and for polymorphous cell sarcoma 66 and 60 per cent respectively are well five or more years after start of radiotherapy. Heretofore, five year survival rates were quoted at 47 to 50 per cent. A second important point which Dr. Rubenfeld makes is the difference in the response between giant follicle lymphadenopathy and the polymorphous cell sarcoma derivative. His follicular lymphomas receded quickly and required moderate radiation, while the sarcomatous variety of Symmers regressed only after intense treatment and showed a lag period before response. These dual features, the general radiosensitivity of the disease and the differences in response of the two allied conditions, have a common pathoanatomic background. I wish to direct your attention to this component. Brill-Symmers disease is a composite entity consisting of various phases and multiple morphologic manifestations. The anatomic forms which this disease can assume are now seven in number. The disease has all the potentialities of a malignant condition, but the degree of malignancy, both pathologic and clinical, varies in the different subdivisions. Giant follicle lymphadenopathy has a relatively better prognosis than other forms in the category. This disease develops and progresses slowly, its response to irradiation is gratifying. This comparatively favorable course of giant follicle lymphadenopathy is determined by its morphology. In its earliest form the disease begins as a lymph node hyperplasia histologically resembling the inflammatory-toxic type. Basically the disease is characterized by a morphologic pattern that is a differentiated form of structural arrangement. It is this degree of differentiation that determines the development, the radiosensitivity and the outcome. In its early phases the disease is reversible or curable. When it has become transformed into a dedifferentiated structural modification the course is irreversible and the outcome is fatal. The development and prognoses of giant follicle lymphadenopathy are attributes of its morphologic differentiation. The prognosis deteriorates as the pattern of differentiation originally inherent in the disease disintegrates. Radiosensitivity does not always indicate curability. While the disease responds in the beginning, it progressively becomes radioresistant. Of those patients surviving five years, about one half to two thirds will not reach the ten year mark, and the impression exists that even ten years is not a sufficient length of time to be sure that a malignant lymphoma may not reappear. Although usually highly responsive to radiotherapy, the disease most frequently slowly progresses, takes the full course of a malignant neoplasm and in the experience of many is invariably fatal under those present methods of treatment as are routinely available. But life can be maintained and in ever increasing survival rates as conclusively illustrated in the cases presented by Dr. Rubenfeld.

Eosinophilic Granuloma of Bone.—During the past seven years eosinophilic granuloma of bone has rapidly assumed increasing importance as a specific clinical entity. This particular destructive lesion mimics a variety of neoplastic processes as well as inflammatory conditions, and should be considered in any differential diagnosis in which single or multiple lesions of bone are encountered. Solitary eosinophilic granulomata may stimulate bone cyst, giant cell tumor, Ewing's tumor, solitary myeloma, osteogenic sarcoma, and osteomyelitis. Multiple lesions may present the same clinical signs and roentgenographic findings as multiple myeloma, metastatic tumor, osteitis fibrosa cystica, Letterer-Siwe disease, and Hand-Schuller-Christian disease.—Maurer, Elmer, M.D., and DeStefano, M.D., *The Journal of Thoracic Surgery*, June 1948.

THE UNITED STATES ARMY AND THE HISTÒRY OF MEDICINE

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Just where should one begin? Obviously at the very beginning of the United States Army. For practical purposes, one should start with the year 1775, for it was then that the history of the Medical Department, or as it was once called, the Hospital Department, first came into being. The Army was at Cambridge following the battle of Lexington, and, from that day to the present, many of its medical officers have made history over a period of one hundred and seventy-two years.

It is by no means easy to make even a fair evaluation of the work of the many persons contributing to the results achieved in nearly a century and three quarters. In our examination, we physicians are confronted with the problems of the dim past and the recent past, with the living and with the dead, with the meager accounts of difficult and laborious tasks of long ago and with the well publicized and skilfully presented stories of the present day. Comparisons are often useless and we should not attempt them. The work of those long dead we can often best appreciate because it has been weighed carefully, and, after a lapse of many years, sober judgment can be rendered.

As a basic principle, we should take it for granted that in the compilation of any history an unbiased writer will not lean toward inclusion of those whose contributions are ephemeral and without lasting influence on the progress of medicine. Also we should remember that the work and influence of a person temporarily on duty with the Army Medical Department should not be credited wholly to the Army organization, but only that part which is inherent to and dependent on Army service, facilities and opportunities.

It is not easy to appraise justly the great medical figures in this recent war, and no one can predict with certainty who will be remembered in the annals of its medical history. It is difficult to achieve immortality even with the best of intentions. Some will have greatness thrust on them, while others will achieve it, not alone, but by a generous willingness to welcome the inclusion of many who held humble office but who well deserve to share the glory.

THE AMERICAN REVOLUTION

The American Revolution was a sterile one as far as medical literature is concerned, and of the some 1,400 physicians who took part in it, but 3 or 4 wrote anything of importance. James

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Read before the Section on Miscellaneous Topics at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J. June 11, 1947.

Thacher[1] kept a journal of the period from 1775 to 1783, and our knowledge of the day to day happenings of the Medical Department is largely due to him.

It is my belief that John Morgan of Pennsylvania, born in 1735 and a noted pupil of John Hunter, was the greatest medical leader of the Revolutionary War. To him we owe our first hospital regulations, and one cannot read them or his correspondence with Washington unaware of his commanding stature. Possessing an admirable character, he was persevering, unselfish and indefatigable. Despite the controversial phase of his administration his achievements should live in the history of American medicine.

THE PERIOD IMMEDIATELY FOLLOWING THE REVOLUTION

In the period immediately following the revolution there is practically nothing to record concerning medicomilitary operations or discoveries on the part of our medical officers, and there is little to interest the historian. Not until 1818, with the appointment of Joseph Lovell as Surgeon General, did the Medical Department have anything to be proud of. Young Dr. Lovell was a friend of Andrew Jackson; his home, the famour Blair House, was close to the White House. Lovell is responsible for the best set of sanitary regulations the Army had ever had up to this time. He also founded the Army Medical Library.

The same era produced William Beaumont, who was born in 1785, entering the Army in 1812. His early record shows thar he possessed an inflexible and uncompromising character. In 1822 came his great opportunity, when he was called to care for Alexis St. Martin, who had been severely injured by a charge of duck shot which carried away the anterior half of the sixth rib, lacerated the lung and diaphragm and perforated the stomach, leaving a permanent gastric fistula. Beaumont's place in history is secure as a result of his unparalleled opportunities for observation. Following the publication of his "Physiology of Digestion or Experiments on the Gastric Juice,"[2] his name became known in the far corners of the earth. Beaumont's contributions to our knowlege of digestion are acknowledged generally as the greatest in this field up to the time of Pavlov, late in the nineteenth century. While his military superiors were not unaware of the fame accruing to the Medical Department of the Army as a result of Beaumont's studies, there seems to have been a lack of official enthusiasm for his continuance in research, and he resigned from the Army in 1839.

THE CIVIL WAR

In the War between the States shone two brilliant luminaries, William A. Hammond and Jonathan Letterman. Hammond, in his thirties, was appointed Surgeon General in 1861 over the heads of so many of his superiors that it is useless to count them. Almost at once he secured authority to place all the general hospitals under the command of The Surgeon General, and they have remained there ever since. He collected a host of medical statistics of the war, and this procedure has never ceased. He is responsible also for the remarkable collection of pathologic specimens of the Civil War. These were ordered placed in Washington, and that was the beginning of the Army Medical Museum. He inaugurated the Army monthly sanitary reports, an important feature in the history of preventive medicine. Almost everything Hammond began he saw to a conclusion, and most of his important work continues in effect. Strange to say, his reward for these meritorious reforms and innovations was dismissal from the Army by sentence of a General Court Martial. Long after the war, the Congress corrected this monstrous injustice and restored him to his place of honor. By that time, all Hammond cared for was his good name. He wanted no more of military life. His success as a neurologist in his later years has no connection with the Army, but is cited merely to emphasize his extraordinary versatility.

In a position contemporaneous with Hammond is Jonathan Letterman, once the forgotten man of the United States Army Medical Department. Surgeon Letterman revolutionized the transportation of the wounded from the battlefield, for not since the time of Larrey, Napoleon's chief medical officer, had any great advance been made. Letterman's ambulance service during the latter half of the Civil War has made history, and his example in the present century has never been lost sight of. Our present system of evacuating the wounded, now reaching a stage of perfection once undreamed of, dates back to Letterman's conception and solution of a problem which had ever been the despair of Army medical officers.

The War of the Rebellion produced other great names, some of them of men who, through their surgical experience, rose to dizzy heights in the profession and influenced greatly the history of medicine, but they are not to be claimed by the Army. "The Medical and Surgical History of the War,"[3] compiled by Otis, Smart, Woodward and Huntington, was a mighty and enduring contribution. Since that day, our Medical Department has never failed to record for posterity the medical history of our armed conflicts.

THE CLOSE OF THE NINETEENTH CENTURY

With the end of the Civil War came still another period of sterility, and I am able to include, up to the closing years of the century, but two instances in which the Medical

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[1] Thacher, J.: A Military Journal During the American Revolutionary War, from 1775 to 1783, Boston, Cottons & Barnard, 1827.

[2] Beaumont, W.: The Physiology of Digestion with Experiments on the Gastric Juice, Burlington, C. Goodrich, 1847.

[3] Otis, G. A.; Smart, C.; Woodward, J. J., and Huntington, D. L.: The Medical and Surgical History of the War of the Rebellion, United States War Department, Surgeon-General's Office, 1870-1879.

Department of the Army secured any preeminence in professional fields, to influence in any considerable degree the march of medical science. In the domain of bacteriology, George M. Sternberg was gospel for a time. He had the distinction, independently of Pasteur, of discovering the Pneumococcus. Sternberg is not well remembered today, but his claim to a place in the company of the elect seems to rest on a sound basis. The other name, that of John S. Billings, has a unique significance. Billings was the immortal originator of the Index Catalogue, and never did bibliographer become so famous over night. Billings has other claims to distinction in that he was the founder of the greatness of the Army Medical Library, the planner of the Johns Hopkins Hospital and the lever that helped to raise the United States Public Health Service to its present proud position. Add to this the fact that he consolidated three great New York libraries into one public library system before he died, and you cannot resist him even if you do not remember him. Seldom has a man labored so diligently and left so much to live after him.

In a day long past, the Medical Department of the army produced a number of excellent naturalists and ornithologists. Albert J. Myer, for whom Fort Myer was named, began his Army service as a medical officer, and later became Chief Signal Officer. He founded the meteorologic service of the United States. Frederick C. Ainsworth also began as a medical officer, but becoming impatient of delay incident to obtaining data necessary for pension applications, founded the Record and Pension Office, the forerunner of the Veterans Administration of today. Leonard Wood made history as a combat officer, rising to be Chief of Staff and later Governor General of the Philippines. He exercised a not inconsiderable influence in stamping out mosquito-borne diseases in Cuba. In later years, his administration in the Philippines aided greatly the development of the modern humane treatment of leprosy.

To sum up, one may say, if I may be excused for the repetition, that in strictly medical endeavors in the closing years of the last century, one calls to mind only Billings and Sternberg as deserving of a large place in medical history. This is not to deny credit to the many who made worth while endeavors connected with opening a new land west of the Mississippi. In general, one can say, therefore, that the United States Army made little important medical history up to the beginning of the twentieth century, and its main achievements in this field were almost entirely those of men who worked alone, often with little or no recognition or Government encouragement.

Just before the beginning of the present century, Walter Reed, fired no doubt by Sternberg's work, entered the field of preventive medicine with his epoch-making discovery of the mode of transmission of yellow fever. Major Reed was assisted by James Carroll and Jesse Lazear, whose names are linked with his to the glory of the United States Army. It would be difficult to estimate the saving in human life and treasure which has resulted from the work of the Yellow Fever Board.

THE TWENTIETH CENTURY

We should recall that the work on yellow fever was one of the first pieces of scientific research for a definite and announced purpose in which the War Department was actively interested. Within a few years, William Crawford Gorgas likewise had made his name immortal by his sanitary work in the Panama Canal Zone. This followed directly on Reed's discovery, and the organized sanitary campaign waged by General Gorgas, often with insufficient financial support, was one of the greatest in history. It was responsible for much of the success in zone sanitation and mosquito-borne disease prevention achieved by the Army in succeeding years.

Some years before the outbreak of the First World War, Frederick F. Russell began his great task on the elimination of typhoid from the Army by the use of prophylactic vaccine, following the lines suggested by Sir A.E. Wright. The result of Russell's work has been astounding, and typhoid has long ceased to exist in our Army. These results led to many other prophylactic measures, notably the compulsory protection of American forces from tetanus.

Bailey K. Ashford's labors in the elimination in great part of ancylostomiasis, or hookworm disease, in Puerto Rico should be referred to. It has not been given the wide attention it deserves, and Ashford should be regarded as one of the great benefactors of the Western World.

In the field of pulmonary tuberculosis, beginning with the establishment of Fort Bayard as a tuberculosis hospital, the Army contributed much of value in the last third of a century. For this, George E. Bushnell was in great measure responsible. Despite his comparative anonymity, I look on Bushnell as a far-sighted genius, well worthy of grateful remembrance.

The fact that drinking water can be quickly and cheaply sterilized in the field by means of sodium hypochlorite was demonstrated by an unassuming medical officer who never wrote for publicity. Carl R. Darnall is to be credited with this epochal discovery, which lighted the way to the modern treatment of municipal water supplies by chlorine. William J. Lyster, by his invention of the field sterlizing bag, aided the practical application of Darnall's discovery to army field service.

In the early years of the twentieth century, research in tropical medicine in the Army went on apace. Charles F. Craig in parasitology, Edward B. Vedder in beriberi, Henry J. Nichols in yaws and Raymond Kelser in the control of rinderpest in the Philippines made important contributions not to be lost sight of. I mention Fielding H. Garrison and would like to claim him for the Army for his great contributions to the history of medicine. However, he was a civil service employee of the War Department until late in life. Only when his work was done did he receive a commission in the Army, and his services subsequently were not outstanding. As a historian on the strictly military side one should not forget Louis C. Duncan, whose analysis of the battles of the Civil War are of a high order.

During the First World War, the work of individuals was subordinated largely to team work for the greater benefit of the whole Army. Harvey Cushing's brilliance in head surgery, as a notable exception, can be credited, in part, to the Medical Department with which he was then connected. Most of our medical officers did their work as sanitarians, administrators and executives, receiving little in the way of personal prestige, for that was reserved for the great captains and kings. General Merritte W. Ireland's splendid organizing ability, however, was such that it brought him appreciation and distinction that will be long remembered. His influence has made itself felt for more than a generation.

SUMMARY

To summarize the scientific and practical work of the Medical Department of the Army in the century and a half since the Revolution and ending in the period some years after the close of the First World War, I think one can say that the elimination of yellow fever and typhoid and the sanitary clean-up in the Canal Zone are certainly among the great medical accomplishments of all time. The discovery of the means of sterilizing water supplies by chlorine, the elimination of ancylostomiasis in a great portion of Puerto Rico and the successes in the institutional treatment of tuberculosis are certainly notable achievements. It cannot be claimed for the Army that many important medical or surgical discoveries have been made in the strictly clinical fields, but I should like to mention the surgical contributions of William L. Keller in handling fracture in the field and in the surgery of empyema. Our late Surgeon General, Norman T. Kirk, has made many valued contributions to the study of amputations, on which no man is better qualified to speak.

It may be remarked that it is not the particular work of individuals that has reduced the noneffective and mortality rates in the Army, but rather the systematic use of preventive measures of demonstrated soundness in their application to large masses of men living under the same conditions and also under complete and orderly control, that has brought about satisfactory end results. Even here one cannot lose sight of the individual, for the history of medicine is concerned largely with personalities. Therefore, in closing, I take the liberty of listing chronologically the twelve greatest medical names of the Army, accompanied by their triumphs, who I feel deserve a place in medical history during the century and a half following the American Revolution.

1. The researches of William Beaumont in human digestion

2. The vision of William A. Hammond and his contributions to the study of pathology

3. The organizational scheme of evacuating wounded from the battlefield, perfected by Jonathan Letterman

4. The bibliographic research and the founding of of the Index-Catalogue of medicine, by John S. Billings

5. The discovery of the mode of transmission of yellow fever, by Walter Reed

6. The contributions to the study of bacteriology, by George M. Sternberg

7. The practical sanitary measures instituted by William C. Gorgas, resulting in the elimination of mosquito-borne disease in the Panama Canal Zone

8. The United States Army's record in the care and treatment of pulmonary tuberculosis, which received its impetus from the early work and enthusiasm of George E. Bushnell

9. The introduction of vaccination against typhoid in the United States Army, by Frederick F. Russell, leading the way to important later work in immunology

10. The discovery of a means for the practical sterilization of water by means of chlorine, by Carl R. Darnall

11. The elimination of ancylostomiasis, or hookworm, from large areas at Puerto Rico, by Bailey K. Ashford

12. The coordination of medical elements in the European Theater of Operations in World War I, by Merritte W. Ireland

Here I close this brief summary of accomplishment by the United States Army Medical Department, hoping that I have made a just appraisal of the results, which I am confident will live in the annals of historical medicine, leaving the important work of the war which has just ended to those who will one day follow me.

Clinical Notes, Suggestions and New Instruments

LYMPHOCYTIC CHORIOMENINGITIS

Report of a Case Occurring in a Granary Harboring Infected Mice

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Philadelphia

The occurrence of lymphocytic choriomeningitis in persons from homes where mice have been proved to be carriers of the virus is well known[1] A few cases have occurred in closely circumscribed areas Farmer and Janeway[2] recorded 4 cases in persons living within an area of two blocks in Boston Dalldorf and associates[3] reported 3 cases, occurring over a period of two years, in persons living in or adjacent to one apartment building where infected mice were found It has been suggested that small, persistent foci of infection exist, on the basis of the known natural history of the disease in mice and the circumscribed range of activity of mice The percentage of infected house mice varies apparently in different communities, and it has been recorded as 21 5 per cent in Washington, D C,[4] and 4 per cent in Boston[5] and New York[6]

The diagnosis of lymphocytic choriomeningitis is usually not suspected unless attention is directed to signs and symptoms suggestive of meningoencephalitis, although it has been shown that generalized systemic infection may occur without any evidence of involvement of the central nervous system[7] It is not known how often the disease manifests itself in this form, nor is it known how often apparently asymptomatic infection occurs. The demonstration of neutralizing antibodies in the blood of as many as 10 per cent of the adult population, chosen at random, suggests that they may occur more frequently than is suspected[8] However, in spite of the diagnostic methods now available, less than 100 proved cases of this disease have been recorded up to the present time Many of these represent infections acquired during experimental work with the virus, so that the number of proved naturally occurring cases is still small

It is the purpose of this paper to report the isolation of lymphocytic choriomeningitis virus from a patient with the disease and from mice trapped in a granary where he worked The results of a survey to determine the possibility of infection in 6 other persons who worked in the same granary are also recorded

REPORT OF CASE

J. H., aged 15, was admitted to the Pennsylvania Hospital on Dec. 27, 1946, complaining of headache and stiff neck Three days before admission, he had frontal headache, chilliness and sore throat. He was nauseated and vomited once During the next two days he was aware of stiffness of the neck and photophobia Physical examination revealed a well developed and nourished white boy who appeared acutely sick and lethargic The rectal temperature was 102.8 F. (39.3 C), the pulse rate 80 and the respiration rate 22 The face was flushed, the upper eyelids were edematous and the conjunctivas were congested Photophobia was present, and there was tenderness to pressure and pain on motion of the eyeballs Flattening of the right nasolabial fold was present The ocular fundi were normal except for slight blurring of the margins of the optic disks There was tenderness over the posterior muscles of the neck, and mild nuchal rigidity was present Moderately enlarged and tender anterior and posterior cervical lymph nodes were palpable, and the pharyngeal mucosa was congested The heart and lungs were normal and the liver and spleen were not palpable The deep tendon reflexes were equal but hypoactive The Kernig sign was present bilaterally The Babinski sign was not present

Laboratory Data—On the day of admission, the hemoglobin measured 15 Gm per hundred cubic centimeters and the erythrocytes numbered 5,400,000 and the leukocytes numbered 7,000 cells per cubic millimeter, with 44 per cent polymorphonuclear leukocytes, 48 per cent lymphocytes and 8 per cent monocytes The urine was clear, yellow, acid, with a specific gravity of 1 028. There was no albumin or sugar, and the stained urinary sediment was normal Boerner-Lukens and Eagle flocculation tests of the blood gave negative results Culture of the blood was sterile Lumbar puncture revealed faintly cloudy spinal fluid with an initial pressure of 350 mm of water, containing 800 cells per cubic millimeter, of which 70 per cent were lymphocytes Stained smear of the centrifuged sediment revealed no bacteria, and culture was sterile

Course of Disease.—During the ensuing five days, the temperature declined slowly by lysis, reaching normal on the seventh day of disease Headache, lethargy, photophobia and lymphadenopathy continued unabated for the first two days of hospitalization and thereafter diminished so that by the eighth day of disease the patient was asymptomatic Convalescence was uneventful and recovery was complete.

On the fifth day of disease, the leukocytes numbered 10,000 cells per cubic millimeter, with 87 per cent large lymphocytes. Both relative and absolute lymphocytosis persisted for the ensuing week Heterophile antibody agglutination tests on the patient's serum gave negative results on the sixth and the twenty-fourth day of disease.

Isolation of Virus—Lymphocytic choriomeningitis virus was isolated in white mice and guinea pigs from both spinal fluid and blood obtained from the patient on the fourth day of disease This strain of virus was serologically indistinguishable from the W E[9] strain of lymphocytic choriomeningitis virus.[10]

Two weeks after the onset of illness, 3 gray mice were trapped in the granary where the patient had worked A strain of virus, indistinguishable immunologically from the strain of virus obtained from the patient and from the W E strain of virus, was isolated from the pooled brains of these mice.

Identification of the strains of virus isolated from the patient and the gray mice as lymphocytic choriomeningitis was performed, in each instance, by demonstrating the specific soluble antigen[11] of choriomeningitis in extracts of the spleens of guinea pigs inoculated with the original material as well as certain subsequent passage material This was corroborated by the neutralization of both strains of virus with known hyperimmune lymphocytic choriomeningitis (W E.) guinea pig serum[9] In addition, guinea pigs immune to the W E strain of virus were not susceptible when inoculated intracerebrally with the recently isolated strains of virus and, conversely, guinea pigs immune to the newly isolated strains of virus were not susceptible when inoculated intracerebrally with the W.E strain of lymphocytic choriomeningitis virus.

In order to substantiate further the concept that the newly isolated strains actually were derived from the patient and the

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From The Pennsylvania Hospital and The Jefferson Medical College of P

[illegible] ducted, in part, with the aid of the Commis-
si [illegible] Diseases, Army Epidemiological Board, Office of the Surgeon General, United States Army, Washington, D C

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[7] (*a*) Lepine, P.; Mollaret, P., and Kreis, B.: Receptivite de l'homme au virus murin de la choriomeningite lymphocytaire Reproduction experimentale de la meningite lymphocytaire benigne, Compt. rend. Acad. d. sc. 204:1846-1848, 1937. (*b*) Smadel, J. E.; Green, R. H, Paltauf, R. M., and Gonzales, T. A.: Lymphocytic Choriomeningitis: Two Human Fatalities Following an Unusual Febrile Illness, Proc Soc. Exper Biol. & Med. 49:683-686, 1942.

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[10] Rivers, T M., and Scott, T F. McN.: Meningitis in Man Caused by a Filtrable Virus, J. Exper. Med. 63:415-432, 1936.

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gray mice trapped in the granary, the original materials which had been stored at dry ice box temperature were again inoculated into healthy mice and guinea pigs. Lymphocytic choriomeningitis virus was again identified in each original inoculum. Finally, in the patient a rising titer developed of both complement-fixing and neutralizing antibodies in the blood to his own strain of virus as well as to the virus isolated from the brains of the gray mice trapped in the granary.

Serologic Study.—The diagnosis of lymphocytic choriomeningitis in the patient was corroborated by the appearance of a rising titer of complement-fixing and neutralizing antibodies in the blood to the W. E. strain of lymphocytic choriomeningitis virus.[12] Because of the isolation of virus from the brains of gray mice trapped in the granary where the patient worked, an attempt was made to determine the serologic response of 6 other boys who had worked in the same room. Serum was obtained from all 6 boys two and one-half months after the onset of disease in the patient. These boys had been at work in the granary for periods ranging between three and fourteen months. None of them had been sick during this time, and none of them had demonstrable complement fixing or neutralizing antibodies to the strains of lymphocytic choriomeningitis virus isolated from the patient or the infected mice, or to the W. E. strain of virus.

COMMENT

The patient had been working in the granary for tem months before he became sick. During this time, he had frequently removed dead mice from traps, the last time being two to three weeks before the onset of disease. The other 6 boys who had worked in the same room for periods ranging from three to fourteen months did not recall handling mice at any time, suggesting that they may not have had sufficient exposure to virus to become infected. The possibility exists, of course, that 3 of them who had been there from seven to fourteen months might have been infected, with a subsequent disappearance of antibodies, although this is not likely in view of the apparent persistence of neutralizing antibodies in the blood of infected persons.

Of particular interest, then, is the fact that of 7 boys working in a room known to harbor mice infected with lymphocytic choriomeningitis virus, the only one to contract the disease was a boy who frequently removed mice from traps. Although the manner of spread of this disease to man is not known exactly, the evidence presented in this paper suggests that even in an infected focus the opportunity for man to acquire the disease may, at times, depend on such close contact with infected mice as occurs in handling them or materials contaminated with their excreta. Because of this, it would seem practicable to recommend the use of forceps or a paper towel to remove house mice from traps, with careful washing of the hands after such an operation.

SUMMARY

Lymphocytic choriomeningitis virus was isolated from the spinal fluid and blood of a patient with the disease, and also from the brains of gray mice trapped in the granary where he worked. Six other boys who had worked in the same granary for periods ranging from three to fourteen months had no demonstrable complement-fixing or neutralizing antibodies to this virus.

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[12] These tests were done by Dr. J. E. Smadel, Director, Department of Virus and Rickettsial Diseases, Army Medical Department Research and Graduate School, Washington, D. C.

To Test the Scope of the Experimental Method.—In 1901 Rockefeller Institute for Medical Research was founded. Though the idea was one man's, though it was made real through the beneficence of another, though its form was determined by physicians who were scientists as well, it must be deemed a folk expression. For it was what Americans wanted; since pioneer days the homely "try and see" had been their habit, and of late they had begun to have exciting thoughts on what experiment might bring to pass for the betterment of life, if carried out in a large way. Research institutions had already been set going in Europe, but The Rockefeller Institute had a larger aim: it was to test the scope of the experimental method as such.—Peyton Rous, Simon Flexner and Medical Discovery, Science, June 11, 1948.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

SUPPLEMENTAL REPORT ON ORGANOMERCURIAL COMPOUNDS

The Council authorizes the publication of the following papers by John H. Brewer, Ph. D., of the Biological Research Laboratory, Hynson, Westcott & Dunning, Inc., Baltimore, Md., and H. M. Powell, Sc. D., of the research laboratories of Eli Lilly and Company, Indianapolis, in reply to the Report of the Council (J. A. M. A. 136:37-41 [Jan. 3] 1948), "The Bacteriostatic and Bactericidal Actions of Some Mercurial Compounds on Hemolytic Streptococci," by H. E. Morton, L. L. North and F. B. Engley Jr. The authors (Morton and his coworkers) of the original report have commented on the papers by Drs. Brewer and Powell. The Council believes that these comments should be published as part of the supplementary report on organomercurial compounds.

Austin Smith, M.D., *Secretary.*

REDUCTION OF INFECTIVITY OF CERTAIN PATHOGENIC BACTERIA BY "MERCUROCHROME"

JOHN H. BREWER, Ph.D.
Baltimore

In a recent report the Council on Pharmacy and Chemistry of the American Medical Association, commenting on the article, "Bacteriostatic and Bactericidal Actions of Some Mercurial Compounds on Hemolytic Streptococci" by Morton, North and Engley,[1] expresses deep concern as to the value and usefulness of certain mercurial antiseptics, including "mercurochrome" (merbromin N.F.). As a matter of fact, a challenge was made to the manufacturers of mercurial antiseptics in the statement that this "is a field in which wishful thinking is dangerous," and experimental verification of the usefulness of the products was requested. It seems that the Council is mainly impressed by these observations which presume to show that the infectivity of hemolytic streptococci has not been impaired by treatment with mercurial antiseptics. In reply my associates and I submit laboratory data which answer this question and others raised by the Council.

Although the technic described in this report does not simulate conditions of clinical use, in order to avoid argument this technic has been utilized in our laboratory study. The laboratory evidence which has been obtained from this study of well over 2,000 mice infected with the same strain of hemolytic streptococcus C 203 as used by Morton and also

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From the Biological Research Laboratory, Hynson, Westcott & Dunning, Inc.

Mr. C. Baxter McLaughlin and Mrs. Beatrice Day Lilley gave technical assistance.

[1] Morton, H. E.; North, L. L., and Engley, F. B., Jr.: The Bacteriostatic and Bactericidal Actions of Some Mercurial Compounds on Hemolytic Streptococci, J. A. M. A. 136: 37-41 (January 3) 1948.

with other pathogenic bacteria enables us to state that the infectivity of bacteria treated with solutions of “mercurochrome” is not only definitely impaired but in many instances is completely nullified.

In accordance with the Council's suggestion, furthermore, observations have not been limited to one organism or to one species of animal; it is therefore believed that the results completely answer the challenge as made.

For example, it has not been possible to substantiate the statement made by Morton and associates in their summary, namely: “Hemolytic streptococci, an example of non-spore forming pathogenic organisms, while in a state of bacteriostasis produced by a mercurial compound, are still infectious for the animal body. Bactericidal rather than bacteriostatic action of the compounds is necessary to prevent a generalized infection.” On the basis of laboratory experiments using a far greater number of animals and different species of infecting organisms, it has been determined that bacteria in a state of bacteriostasis cannot be reactivated by the animal body to produce infection except when massive doses are used--and even then the great majority of animals survive. These results therefore show that bacteriostasis practically eliminates the chance of infection.

TABLE 1.—*Results of Intraperitoneal Injections into Mice of Various Dilutions of Streptococcus C 203 Culture Which Has Been Exposed to 1 per cent “Mercurochrome” Ten Minutes*

Ten Mice Received Each Dilution

Number of Mice Dead at End of 7 Days

Dilution of Culture	1:10	1:100	1:1,000	1:10,000	1:100,000
C 203 culture control (no drug)	10	10	9	7	3
C 203 culture treated with 1% “mercurochrome”	2	0	0	0	0
Drug control 1% “mercurochrome” (no culture)	0				

It should be noted that all animals received injections of 0.1 cc. of the culture rather than 1 cc., and for this reason the minimum lethal dose may appear to be less than that obtained in the usual C 203 titration.

TABLE 2.—*Results of Intraperitoneal Injections into Mice of Various Dilutions of Streptococcus C203 Culture Which Has Been Exposed to “Mercurochrome” for Ten Minutes*

Forty Mice Received Each Dilution

Number of Mice Dead at End of Seven Days

Dilution of Culture	1:10	1:100	1:1,000	1:10,000	1:100,000	1:1,000,000
C203 culture control (no drug)	40	39	37	28	9	4
C203 culture treated with 1% “mercurochrome”	8	9	3	3	0	0
Drug control 1% “mercurochrome” (no culture)	0					

Culture, 0.1 cc. of C203M, injected intraperitoneally with or without 1 per cent “mercurochrome.

Forty mice had injections of 0.1 cc. 1 per cent “mercurochrome” intraperitoneally as a drug control.

The experiments further prove that the initial study was far too limited in scope. If greater numbers and different species of animals had been used, and if the minimum lethal dose or reasonable multiples thereof had been used as an inoculation, an entirely different picture would have been presented--as will be demonstrated by the experimental work.

In tables 1 and 2 is shown the protection afforded mice inoculated with various dilutions of C 203 which had been previously exposed to 1 per cent solution of “mercurochrome” for ten minutes. A study of these tables reveals clearly that the infectivity of the organism was so reduced by treatment with the mercurial that the great majority of mice survived the test—even when the greatest concentration of culture was injected. Table 1 illustrates a single experiment in the series, whereas table 2 is the composite of of all experiments.

In order to prove beyond question the fact that it is the mercurial compound which affords protection by impairing the infectivity of the organism, table 3 presents the results obtained by neutralizing “mercurochrome” in the animal body by injections of BAL. These results as outlined in tables 1, 2 and 3 prove conclusively that the infectivity of the pathogenic organism C 203 is significantly impaired by exposure to “mercurochrome” solution. These facts will be illustrated in more detail in the discussion on experimental work which follows, which also further answers the Council's challenge. The scope of the experiments has been broadened by the use of other pathogenic organisms, other routes of inoculation and larger animals. The observations in these respects cast some doubt on the usefulness of the Morton technic for purposes of determining adequately the clinical usefulness of mercurial antiseptics.

TABLE 3.—*Results of Intraperitoneal Injections into Mice of Various Dilutions of Streptococcus C203 Culture Which Has Been Exposed to “Mercurochrome” for Ten Minutes and Then Injected with BAL*

Ten Mice Received Each Dilution

Number of Mice Dead at End of Seven Days

Dilution of C203M	Infusion Culture Control	C203M 1% “Mercurochrome” Mixture		
		No BAL	BAL - 2 Hr.	BAL - 6 Hr.
1;10	10	2	10	1
1:1,000	10	0	10	0

Numbers represent the deaths among 10 mice receiving injections in each dilution.

BAL control — 10 mice had intramuscular injections of 9.1 cc. 1 per cent BAL — no deaths resulted.

A virulent culture of C203M was diluted 1:10 and 1:1,000 in 1 per cent “mercurochrome.” After ten minutes exposure of the organisms to the mercurial compound, 50 mice received intraperitoneal injections of 0.1cc of the 1:10 dilution and 59 mice, the 1:1,000 dilution.

At intervals of two and six hours, 10 mice with injections of each dilution received 0.1 cc. 1 per cent BAL in oil intramuscularly.

EXPERIMENTAL WORK

Using the same technic for determining the virulence of the culture, it was possible to prove that the culture used in the current study was of equivalent virulence. Although a large percentage of the data of Morton, North and Engley is given over to determining the minimum lethal dosage of their culture, only a 1:10 final dilution of culture was used in testing the mercurial compounds. This dilution of culture represents many thousands of organisms, and since these workers stated that four organisms produce death in control animals, it was of interest to determine the protective value of the mercurial compounds in terms of multiples of lethal doses. It should be noted at this point that it was not possible to study the effect of 2 per cent "mercurochrome" solution used in the report to the Council. According to observations in the present experimental work, 2 per cent solution of "mercurochrome" cannot be used because the 0.1 cc. quantity is greater than LD/50 for mice.

Utilizing a culture of streptococcus C 203 M obtained from Dr. Morton and also a strain of C 203 which was obtained from Drs. Long and Bliss, Johns Hopkins School of Hygiene and Public Health, the experiments were repeated many times, using over 100 mice in each experiment. In addition to the 1:10 dilution of the culture in the antiseptic mixture used by these workers, 1:100, 1:1,000, 1:10,000 and 1:100,000 dilutions of the culture in antiseptic were also made. Protection afforded by the mercurial compound can readily be seen from data in tables 1 and 2 which were referred to previously.

Even though thousands of lethal doses of organisms are present in the 1:10 dilution, it was possible to get better than 80 per cent protection at this dilution. In all other dilutions of the culture an even higher percentage of protection was obtained.

From a consideration of the data in tables 1 and 2, it is rather apparent that bacteriostatic activity has effectively reduced the infectivity of the organism. In order to prove that it is the bacteriostatic effect of the mercurial compound and not the natural defenses of the body or even germicidal activity, the experiments outlined by tables 1 and 2 have been repeated. However, in this series 2,3-dimercaptopropanol (BAL) has been used to neutralize the mercurial agent in vivo. It is well recognized that this is an extremely powerful neutralizing agent for heavy metals. (This dimercaptan readily forms insoluble salts with mercury and many other heavy metals.)

The results of these series of experiments are presented in table 3. It can be seen that if 2,3-dimercaptopropanol is not injected, the results are identical with those reported in tables 1 and 2. If, however, 0.1 cc. of the agent in oil is injected into each animal two hours after the "mercurochrome"-treated bacteria, all the animals die of a streptococcic septicemia. This indicates clearly that 2,3-dimercaptopropanol neutralized the mercurial agent which was in or on the treated bacteria, and those bacteria freed of bacteriostatic restraint were thereby enabled to cause death. From this significant experiment it can be said that by holding an organism bacteriostatically a general infection may be prevented.

Another important fact is outlined in table 3. When 0.1 cc. of the drug in oil is injected into each animal six hours after the treated bacteria, the results are quite similar to those obtained in the series of animals not given injections of the drug. This experiment strongly indicates that the defense mechanisms of the body have taken care of the bacteria which had been held bacteriostatically until such time. This experimental work has been extended to include a study of phagocytosis and actual time of death of various organisms within the animal body and forms the basis of a much longer report to be published shortly.

In answer to the Council's question as to "whether other infectious agents would differ and lose their virulence when exposed to mercury may well be investigated," a pathogenic pneumococcus type I, obtained from Drs. Long and Bliss, has been used. The results of these experiments are shown in tables 4 and 5. It is immediately evident that complete protection is afforded by the exposure of the organisms to 1 per cent "mercurochrome," even in the 1:10 culture dilution.

TABLE 4.—*Results of Intravenous Injections into Mice of Various Dilutions of Pneumococcus Type I Which were Exposed to "Mercurochrome" for Fifteen Minutes*

	Ten Mice Received Each Dilution			
	Number of Mice Dead At End of Seven Days			
Dilution of culture	1:10	1:100	1:1,000	1:10,000
Pn1-culture control (no drug)	10	10	10	9
Pn1 culture treated with 1% "mercurochrome"	0	0	0	0
Drug control 1% "mercurochrome" (no culture)	0			

Another fact demonstrated by this table is that injection is made by the intravenous route rather than by the intraperitoneal route. The same result, that is, complete protection, is obtained by both routes of injection. The reason that "mercurochrome" gave as good protection by the intraperitoneal injections was not because of the phagocytic response or local tissue reaction in the peritoneal cavity. This is proved by the protection which was also afforded when the intravenous route of injection was used. It was not possible to repeat Morton, North and Engley's type of experiment using the intravenous route with C 203, since it took many thousands more organisms to kill the controls by this route and only sporadic deaths occurred with use of the 1:10 dilution. This route of injection is exceedingly important in considering the clinical usefulness of the organic mercurial compounds. Since they are used primarily as local or topical antiseptics, it is evident that one of the most important routes by which bacteria may get into the body from a wound is the intravenous route.

In an effort more closely to approach the clinical use of these mercurial compounds, laceration experiments were made on several hundred mice by various methods. The mice were lightly etherized, and a high speed grinder was used to produce a surface wound. Another method was also used: many razor blades were bolted together with 1/32 inch (0.08 cm.) spacing washers and uniform cuts were made through a fiber guide. The straight virulent cultures were mopped into these wounds, and then at various times the several antiseptics and germicides were applied. Since the controls which received the straight culture and no antiseptic would not be infected in many instances, and never consistently, these results are not tabulated in this present paper.

Table 5.—*Results of Intravenous Injections into Mice of Various Dilutions of Pneumococcus Type 1 Culture Which Had Been Exposed to Mercurochrome for Ten Minutes*

	Fifty Mice Received Each Dilution			
	Number of Mice Dead at End of Seven Days			
Dilution of Culture	1:10	1:100	1:1,000	1:10,000
PnI culture control (no drug)	31	26	5	7
PnI culture treated with 1% "mercurochrome"	0	0	0	0
Drug control 1% "mercurochrome" (no culture)	0			

It is apparent that the pneumococcus in this experiment was less virulent than when the experiment shown in table 4 was performed. However, the mice were all protected in each case.

We were unable to infect guinea pigs or rabbits with straight cultures of these organisms employing the technic used in the report to the Council, even though corrections were made for body weight. Therefore, the effectiveness of "mercurochrome" in larger animals could not be studied by this technic.

For more than ten years we have been well aware that mercurial compounds are not germicides in the strict sense of the word; this has been pointed out at length in two previous articles in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.[2] In November 1947 the spore suspensions of the various organisms referred to in the 1939 article,[2a] which had been exposed to the market strength of the various organic mercurial preparations, for ten years were opened and planted into thioglycollate medium, and without exception they all grew out within forty-eight hours. A full discussion of this experiment is given in the paper mentioned earlier in this report.

A lengthy discussion of this subject might well be written, but the Council has stated that their interest is in "experimental verification" of the ability of mercurial compounds to impair the infectivity of these organisms and this has been the subject of this study.

Other organic mercurial preparations listed in New and Nonofficial Remedies have been studied in this series, but since the investigations have not been as extensive as with "mercurochrome" solutions tabulations of the results with these compounds are deferred.

SUMMARY

1. The Council on Pharmacy and Chemistry has previously presented as a report the work of Morton, North and Engley[1] challenging the scope of usefulness of mercurial antiseptics. The specific questions raised by that report and the Council have been answered herein by experimental evidence. This has been accomplished by extending their work and by introducing new experimental data.

2. Experimental results obtained in a study of intraperitoneal injection of "mercurochrome" (merbromin)-treated hemolytic streptococci strain C 203 indicate (tables 1 and 2) that more than 80 per cent of the animals survive even massive inoculations of thousands of lethal doses of organisms so treated.

3. Experimental results obtained in a study of another route of infection, namely, intravenous injection of "mercurochrome"-treated pneumococci type 1 indicate (tables 4 and 5) that all animals survive the massive inoculations of thousands of lethal doses of organisms so treated.

4. Experimental results obtained in scarification experiments, which would more closely simulate clinical use, were inconclusive in that control animals could not be consistently infected.

5. Experimental results obtained in the study of intraperitoneal injection of "mercurochrome"-treated bacteria, followed by the injection of the mercurial neutralizer BAL, indicate (table 3) that it is the bacteriostasis produced by the mercurial compound which prevents the death of the animals.

6. These experimental results therefore prove that bacteriostasis resulting from the treatment of pathogenic bacteria with 1 per cent solution of "mercurochrome" impairs the infectivity of these bacteria to such an extent that the chance of infection is practically eliminated.

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[2] (*a*) Brewer, J. H.: The Antibacterial Effects of the Organic Mercurial Compounds, J.A.M.A. 112:2009, 1939; The Bacteriostatic and Bactericidal Actions of Some Mercurial Compounds on Hemolytic Streptococci, J.A.M.A. 136: 37-41 (January 3) 1948. (*b*) Clear Liquid Mediums for the "Aerobic" Cultivation of Anaerobes, ibid. 115: 598,

ANTIBACTERIAL ACTION OF "MERTHIOLATE" AGAINST HEMOLYTIC STREPTOCOCCI

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Indianapolis

The recent report of Morton and collaborators[1] dealing with the purported lack of germicidal action of organomercurial coumpounds prompts the submission of this brief report. It is neither supportive nor contradictory of the Morton publication; rather, it is intended to point out the manner in which the outcome of experiments of this sort is influenced by some of the conditions on the laboratory bench which are frequently given little consideration by laboratorians and readers alike.

To judge from the results observed during the past several years in experiments in the laboratory with organomercurial agents (and other compounds of the germicide-antiseptic-disinfectant group), sulfonamide drugs and various antibiotics in rather large numbers, three main conditions of testing may affect the outcome of the tests considerably. These are temperature, time and quantity of bacteria. Chick and Martin[2] some forty years ago dealt with such varying conditions, but lately they have not been given much consideration.

To simplify the problem tests similar to those of Morton and his associates have been conducted, using the same technic and the same bacterium; namely, the mouse-virulent hemolytic streptococcus strain C 203 and "merthiolate" (sodium ethylmercurithiosalicylate). No other organomercurial compounds are dealt with in this particular report. Also, the report does not touch on phenol (which the previous workers[1] included) at this time, because a recent publication[3] has indicated that phenol-"killed" bacteria can be "resurrected" by special methods of cultivation which I have not studied.

The culture has been medicated at two temperatures, namely, at room temperature (as used by Morton and collaborators, and which of course is exceedingly indefinite) and also at 37 C. Instead of one dilution, a series of decimal dilutions of test culture have been used and medication of the culture with "merthiolate" has been extended from five minutes up to sixty minutes.

After various periods of medication of bacterial culture with the organomercurial compound, inoculums from such tubes were *(a)* planted into thioglycollate broth and incubated at 37 C. for seven days and *(b)* injected intraperitoneally into white mice, which in turn were observed for seven days (in case survival was this long).

The thioglycollate broth was that specified by the National Institute of Health for sterility tests and was the same variety as employed in the original study.[1] The white mice used here were from a stock used during several years for chemotherapy tests of numerous drugs (mostly sulfonamide drugs and antibiotics) and were fatally vulnerable to intraperitoneal injections of 10^{-7} to 10^{-8} dilutions of hemolytic streptococcus C 203.

The results of these tests under varied conditions are as anticipated; they show that the effectiveness of "merthiolate" in the form of aqueous solution depends on temperature, time and quantity of bacteria. The results, moreover, are about the same as judged either by whether medicated culture shows growth in thioglycollate broth or whether it kills mice. Under the conditions that were used, "merthiolate" although it appears to be ineffective at room temperature, is effective at 37 C.

The upper portion of the accompanying table shows the details of the tests conducted at room temperature. Other than slight action at the longest exposure, the organomercurial agent appears here to be without germicidal action. These results are similar to those obtained under similar conditions when thioglycollate broth first came into use in this way in 1941, and also when medicated virulent bacteria under the same conditions were injected into animals in this laboratory in 1929.[4] Furthermore, these results agree with those of Morton, North and Engley.

The bottom portion of the table shows the details of the tests conducted at 37 C. "Merthiolate" 1:1,000 in 5 cc. quantities appears to be germicidal for 0.1 cc. of a 10^{-2} dilution of culture in fifteen to thirty minutes. It seems from these results that either the thioglycollate broth or the mice may be depended on in most instances to give true answers as to the presence of viable bacteria. In prolonged tests top virulence is apt to drop before the viability of the culture is affected. This is evident in many kinds of chemotherapeutic tests not reported here.

The largest doses of hemolytic streptococci medicated with the mercurial agent in the foregoing tests were less in volume than the single doses used by Morton and others. However, the largest doses, namely, 0.1 cc. of undiluted culture, comprise approximately 1,000,000 MLD (minimum lethal doses) for white mice, and this appears to be a somewhat higher number of MLD than Morton and associates employed. Doses of 0.1 cc. 10^{-5} and 0.1 cc. 10^{-6} dilutions of culture were tried (but the results are not shown here); these gave erratic results for obvious reasons.

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[1] Morton, H. E., North, L. L., and Engley, F. B.: The Bacteriostatic and Bactericidal Actions of Some Mercurial Compounds in Hemolytic Streptococci, J.A.M.A. 136:37-41 (Jan. 3) 1948.

[2] Chick, H., and Martin, C. J.: The Principles Involved in the Standardization of Disinfectants and the Influence of Organic Matter on Germicidal Value, J. Hyg. 8:654-697, 1908.

[3] Flett, L. H.; Haring, R. C.; Guiteras, A. F., and Shapiro, R. L.: The Revival of Organisms Presumably Killed by Phenol, J. Bact. 50:591-595, 1945.

[4] Series of records in this laboratory, of dates during March and April, 1929.

In the last twenty years a flood of laboratory publications dealing with antibacterial titers of one kind or another has appeared on germicides, antiseptics, disinfectants and other antibacterial agents, and also, especially during the latter half of this time, many such laboratory papers have appeared on antibiotics. Lately many additional publications have appeared on inhibitory agents which block the biologic action of many types of biologically active agents both synthetic (as for example some of the germicide-antiseptic-disinfectant group) and natural (as, for example, the antibiotics). None of these need to be referred to here.

Use on the laboratory bench of inhibitors such as thioglycollate for organomercurial compounds, para-aminobenzioc acid for sulfonamide drugs, penicillinase for penicillin and so on has advanced knowledge academically about the precise mode of toxic action of a given chemical agent against the bacterial cell. Perhaps on the basis of these tests and injections of medicated cultures into animals, various antibacterial agents of the antiseptic-germicide-disinfectant group might be reclassified; however, this would likely contribute to more artificiality rather than fill a definite need in view of the results herewith reported.

The concept that the toxic action of any given antibacterial drug for a bacterial cell comprises a zone of action rather than a point has been reviewed by Marshall and Hrenoff.[5] These authors indicate that in the antibacterial "spectrum" of a given drug there is a gradual merging of overly strong, nonuseful concentrations of such drug into germicidal concentrations; these in turn merge into bacteriostatic concentrations, and these then even merge in some instances into stimulatory concentrations. All zones except the last one comprise zones of action in which the drug is toxic to bacteria. Failure of laboratory experimenters to keep some such concept in mind along with effects of temperature, time and quantity of bacteria, as has been indicated, leads to "proving" and "disproving," without end, one drug after another. There is added confusion in that the terms germicide, antiseptic and disinfectant have different meanings to different persons, and exact definitions have to be arbitrary.

It is regrettable that there seems to be no single method of assaying the likely efficacy of drugs of the germicide-antiseptic-disinfectant group. These agents are commonly put to such varied jobs that no single assay seems possible. A single assay is as yet impossible for another reason; namely, no one knows with certainty how to measure quantitatively the good accomplished by these drugs when they are used as they have been and will be used.

Tests of Germicidal Action of "Merthiolate" Against Hemolytic Streptococcus C203

Medication at:	Amt. of "Merthiolate" 1: 1,000	0.1 CC Dose of Hemolytic Streptococcus C203 Culture Diluted:	"Merthiolate" + Streptococcus Mixture										Water + Streptococcus Mixture	
			(a) planted in doses of 0.02 cc. into thioglycollate broth and (b) injected intraperitoneally in doses of 0.05 cc. into white mice after intervals of:											
			5 min.		10 min.		15 min.		30 min.		60 min.		60 min.	
			(a)	*(b)*	*(a)*	*(b)*	*(a)*	*(b)*	*(a)*	*(b)*	*(a)*	*(b)*	*(a)*	*(b)*
Room temperature	5 cc.	undiluted	+	1,1	+	1,1	+	1,1	+	1,2	+	1,1	+	1,1
	5 cc.	10^{-1}	+	1,1	+	1,3	+	1,1	+	1,2	+	2,2	+	1,1
	5 cc.	10^{-2}	+	1,1	+	1,1	+	1,1	+	1,1	+	2,2	+	1,1
	5 cc.	10^{-3}	+	1,1	+	1,1	+	1,1	+	1,2	+	2,S	+	1,2
	5 cc.	10^{-4}	+	3,3	+	3,3	+	1,3	+	2,3	-	S,S	+	2,2
37 C.	5 cc.	undiluted	+	1,1,1,1	+	1,1,2,2	+	1,2,2,2	-	2,2,2,S		S,S,S,S	+	1,1,1,1
	5 cc.	10^{-1}	+	1,1,1,1	+	1,1,1,2	+	2,2,3,S	-	2,S,S,S		S,S,S,S	+	1,1,1,1
	5 cc.	10^{-2}	+	1,1,1,1	+	1,2,2,2	-	2,S,S,S	-	S,S,S,S		S,S,S,S	+	1,1,2,2
	5 cc.	10^{-3}	+	1,1,2,2	-	2,2,2,S		S,S,S,S	-	S,S,S,S		S,S,S,S	+	2,2,2,2
	5 cc.	10^{-4}	+	1,2,2,2	-	2,S,S,S	-	S,S,S,S	-	S,S,S,S		S,S,S,S	+	2,2,2,S

+ indicates growth of hemolytic streptococci in thioglycollate broth;

– indicates no growth of hemolytic streptococci in thioglycollate broth at seven days.

Each figure indicates the day (after injection) of death of 1 mouse.

S indicates the survival of 1 mouse at seven days. The minimum lethal dose of culture was 0.05 cc. of 10^{-7} dilution as tested on 2 white mice on each decimal dilution of culture up to 10^{-8}. Both mice on 10^{-7} dilution, and neither of the mice on 10^{-8} dilution, died.

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[5] Marshall, M. S., and Hrenoff, A. K.: Bacteriostasis, J. Infect. Dis. 61:42-54, 1937.

CONCLUSIONS

1. "Merthiolate" (sodium ethylmercurithiosalicylate) is germicidal at normal temperature against a range of seemingly small doses of virulent hemolytic streptococci, extending from the smallest up to doses of about 0.1 cc. of 10^{-2} dilution of culture in fifteen to thirty minutes.

2. Such doses of virulent culture, however, are of considerable biologic activity and importance, since this maximum dose contains about 100,000 MLD for white mice.

3. The extent of antibacterial action (germicidal, antiseptic or disinfectant) frequently depends, as has been pointed out before, on temperature, time and quantity of bacteria used.

4. Experience with numerous antibacterial tests and study of the literature on this item (which is about as old as bacteriology) indicate that there is no single method of test or assay of the practical usefulness of this type of drug. A series of diversified tests of each drug should give indications of usefulness.

June 3, 1948

Dr. Austin Smith, Secretary
Council on Pharmacy and Chemistry
American Medical Association
535 North Dearborn Street
Chicago 11, Illinois

Dear Dr. Smith:

Thank you for submitting for our inspection and comments the paper entitled "Antibacterial Action of 'Merthiolate' Against Hemolytic Streptococci," by Dr. H. M. Powell of the research laboratories of Eli Lilly and Company, which has been accepted for publication in THE JOURNAL.

We believe that it is a good item to publish in THE JOURNAL and that the results are important especially because they come from the laboratories of the company which produces and manufactures "merthiolate." The work appears to be carefully planned and carried out. The paper is concise and readily understandable as far as it goes. There are one or two points which we think should be verified to make sure that an error has not been made in typing. In table 1, is the amount 0.05 cc. correct for the amount which was injected into the mice, or should it be 0.5? The former amount is rather impractical to inject accurately into mice.

If the amount 0.05 cc. is correct, then we believe that an error has occurred, as 0.1 cc. of undiluted culture would contain 20,000,000 M.L.D., which were exposed to the action of merthiolate. When 0.05 cc. of the culture-"merthiolate" mixture was injected into mice, the mice would be receiving approximately 200,000 M.L.D. as compared with approximately 500,000 M.L.D. employed by us. Dr. Powell states that he used a somewhat higher minimum lethal dose than we did, but our calculations from his data indicate that he used fewer organisms. It does not alter the picture, but should be clarified for the sake of accuracy in his paper.

Our comments on the paper are as follows:

While Powell states in the first paragraph of his paper that his report is neither supportive nor contradictory of the article by us, the results given in table 1 of his paper are supportive of the statements in the first two paragraphs of the summary in our article. It is well to have this additional supportive evidence from the manufacturers of "merthiolate" to add to the other publications that growth in thioglycollate medium of hemolytic streptococci exposed to "merthiolate" parallels fairly well infectivity for mice.

When 0.1 cc. of culture is mixed with 5 cc. of 1:1,000 aqueous "merthiolate" solution, at room temperature, the results are the same as when water is employed (table). At 37 C. the culture-"merthiolate" mixture had to be held thirty minutes or longer before the compound showed more killing action than water. Only when the number of test organisms was greatly reduced and the temperature of medication was raised to 37 C. was there killing action, but the label on the product as purchased on the open market makes no reference to these limitations of the compound.

One questions that "merthiolate," as it may be used in the practice of medicine or surgery, reacts with infectious micro-organisms at a temperature of 37 C. It is used topically, and the temperature of the surface of the body is generally less than 37 C. (usually it is 30 to 33 C.). Tests have been made on the anti-infecting power of "merthiolate" when used topically, and no protective action was evidenced (work of Nungester cited in more detail later), as one would surmise from the results in table 1 of Powell. Dr. Powell states that "room temperature" as employed by us is indefinite and that he used 37 C. in addition to room temperature. We added undiluted culture to "merthiolate" and allowed it to act on the streptococci for a period of ten minutes at room temperature before injecting into mice. In the results given by Powell in his table 1, with undiluted culture acted on by "merthiolate" it can be seen that no killing action and no protective action was afforded by the "merthiolate" in an exposure of ten minutes at either temperature, so that it is unimportant that we employed only one temperature of medication, namely, that of the room.

It is true that temperature, time and quantity of bacteria affect the outcome of germicidal tests, as Powell states, citing the publication of Chick and Martin of 1908, but there are other important factors which have been noted in the interim. The nature of the environment of the micro-organism can be listed as one of the additional factors, and the publication of Smith, Czarnetsky and Mudd of 1938 was mentioned in our article to call attention to one of the peculiarities of mercury compounds which are used as germicides.

The element of time is important, and frequently it is impractical for the physician or surgeon to wait thirty or more minutes for a compound to exert its germ-killing action, as one might have to do according to the results given in table 1.

The bacteriologist, physician or surgeon never knows the quantity of micro-organisms which he has to destroy. He is usually interested in killing all pathogenic micro-organisms or reducing the number to prevent infection. It is only logical to use cultures of the test organism as they normally grow in appropriate culture mediums, and not a thousandfold or greater dilutions of the test culture, in testing the in vitro killing action of compounds.

Paragraph ten of Powell's article needs to be clarified. As it now stands, it erroneously gives the impression that Powell used a greater minimum lethal dose than we did. According to the legend at the bottom of table 1 (Powell) 0.05 cc. of 10^{-7} dilution of the culture of hemolytic streptococci killed all of the mice (2) inoculated. This would indicate that the culture originally contained 200,000,000 MLD per cubic centimeter. Only 0.1 cc.

of the culture was added to 5 cc. of "merthiolate" solution, and 0.05 cc. of this mixture was subsequently injected into mice. If none of the streptococci were killed, this would indicate that the mice received approximately 200,000 MLD each. The culture used by us contained about 10,000,000 MLD per cubic centimeter. One cubic centimeter of the culture was added to 10 cc. of "merthiolate" solution, and 0.5 cc. of this mixture was subsequently injected into mice. If none of the streptococci were killed, this would indicate that the mice received approximately 500,000 M.L.D. each. When using undiluted culture, Powell was employing less than one-half the number of organisms employed by us, and when using 10^{-4} dilution of the culture he was employing only 20 M.L.D. of streptococci. An exposure of fifteen minutes at 37 C. was required to render these few lethal doses of culture harmless, even when the organisms were suspended in an aqueous medium.

Powell states that the use of inhibitors, such as thioglycollate for organomercurial compounds, has advanced knowledge academically about the precise mode of toxic action of a given chemical agent against the bacterial cell and that this might lead to a reclassification of the antibacterial agents, but this would likely contribute to more artificiality rather than fill a definite need. It is universally known that there are sulfur-containing compounds in the human body, and it is well known that sulfur compounds can inactivate the antibacterial action of mercurial compounds. Our investigation and Powell's show that the animal body is even slightly better than a thioglycollate-containing medium in this neutralizing effect and in supporting growth of virulent hemolytic streptococci. Our paper and Powell's show that growth of "merthiolate"-treated streptococci in thioglycollate medium is proof that the organisms are still infectious if introduced into the animal body. This is ample evidence that knowledge of the mode of action of the mercurial compounds has led to the devising of a more effective test for the anti-infecting property of the mercurial compounds. Attempts at evaluating the power of a compound in preventing infection following topical application required surgical procedures (Nungester, W. J., and Kempf, A. H.: An "Infection-Prevention" Test for the Evaluation of Skin Disinfectants, *J. Infect. Dis.* 71:174, 1942). By the use of thioglycollate medium comparable information can be obtained more easily, more quickly and more economically. Nungester and Kempf observed that, following the application of a culture of pneumococci to the skin of a mouse, treating the area with aqueous "merthiolate," 1:1,000, and then placing the skin in the peritoneal cavity of the same mouse resulted in death of all the mice of pneumococcic infection. The control mice treated with isotonic sodium chloride solution also showed 100 per cent mortality. Mice so treated, except with a culture of streptococci, and then aqueous "merthiolate," 1:500, likewise showed 100 per cent mortality. The observation by Nungester and Kempf that aqueous "merthiolate," 1:500 and 1:1,000, had no protective action, which in that respect was comparable to isotonic sodium chloride solution, is in line with the observation of Powell that aqueous "merthiolate," 1:1,000, is comparable to water, in that no killing or protective action was exerted on an undiluted culture of hemolytic streptococci at room temperature.

ture by Powell deals with the toxicity of "merthiolate" for streptococci cells. No mention is made to its toxicity for tissue cells. In addition to the several references which were given in our article on the toxicity of the organomercurial compounds for tissue cells, there should be added the articles by Gaul and Underwood and his co-workers (Gaul, L. E.: Overtreatment Dermatitis, J.A.M.A. 127:439 [Feb. 24] 1945; Underwood, G. B.; Gaul, L. E.; Collins, E., and Mosby, M.: Overtreatment, Dermatitis of Feet, J.A.M.A. 130:249 [Feb. 2] 1946). In the later article the authors report that of their 400 dermatologic patients, 40 per cent of the patients (160) showed an allergic reaction to one or more of the remedies used and in 35 per cent (56) of the positive reactions the offending substance was one of the organic mercurials. Furthermore, "merthiolate" was responsible for the reactions in 90 per cent of the patients who reacted to an organic mercurial.

The works of Salle and Lazarus, Nye and Welch (cited in our article) all reported "merthiolate" more toxic for tissue cells than for bacterial cells.

In spite of the numerous publications by competent investigators on the extremely weak action of "merthiolate" on bacteria and in preventing infection and its greater toxicity for tissue cells than for bacterial cells, the product bears the label "A stable, stainless, organic mercury compound of high germicidal value, particularly in serum and other protein media." Our work and that of Powell and of Nungester (Nungester and Kempf as well as Nungester, Hood and Warren, Proc. Soc. Exper. Biol. & Med. 52:287, 1943) demonstrate that the bacteriostasis, so far as "merthiolate" is concerned, is not sufficient to prevent infection.

The authors of the original Council report on organomercurial compounds also commented on Dr. Brewer's paper as follows, under date of June 9 1948:

Our comments on the paper "Studies on the Reduction of Infectivity of Certain Pathogenic Bacteria by 'Mercurochrome,' " by Dr. John H. Brewer, of Hynson, Westcott and Dunning, are as follows:

It seems to us unfortunate that the report by Brewer deals with the subject of antisepsis by mercurial compounds more in the spirit of controversy than as an objective exposition of the essential facts of the situation. Although there are many points in his manuscript to which exception could be made, we prefer to confine our remarks to the essential and relevant facts.

It is the usual procedure to employ culture and germicide in the ratio of 1 part of undiluted culture to 10 parts of germicide in the in vitro testing of germicides, as we used, and not several tenfold dilutions of the test culture. In Brewer's work with bacterial spores along these lines (THE JOURNAL, 1939), he did not use decimal dilutions of the cultures.

The observation by Dr. Brewer that 2 per cent solution of "mercurochrome" was toxic for mice in 0.1 cc. amounts injected intraperitoneally supports our observations; even though some of the mice receiving the 2 per cent "mercurochrome" solution and streptococcus mixture died from causes other than streptococcic infection, some did die of an apparent streptococcic infection (table 3, Morton); this represents the solution of "mercurochrome" supplied to the trade.

The same strain of a particular micro-organism may behave differently in different laboratories and in the hands of different investigators. Although Powell and Brewer and we used the same strain (C-203) of hemolytic streptococci, their

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SATURDAY, JULY 3, 1948

THE 1948 SESSION

Exactly 11,963 Fellows of the American Medical Association registered their attendance at the Annual Session of the American Medical Association held in Chicago June 21-25. The physicians began pouring into the city during the preceding week for attendance on the Interamerican Cardiological Congress and a score of specialistic society meetings concerned with many different aspects of medicine. The trustees, the officers and many councils and committees of the Association began their meetings and continued into the Annual Session.

Among the unusual features of this session were a series of television programs sent by short wave to the Navy Pier, medical schools, hospitals and hotels; an athletic performance in which the participants were persons handicapped by amputation and other disabilities; a complete series of exhibits related to atomic energy associated with a series of papers that covered this subject; the adoption of a new constitution and bylaws by the House of Delegates which serve to facilitate more prompt and decisive action on subjects of interest to the House of Delegates, and with all this a series of public meetings, social gatherings and educational features seldom equalled in any other organization. Indeed, the Annual Session of the Association, which last year included almost 16,000 Fellows and this year about 12,000, represents an assemblage which in quantity of attendance and material reaches four or five times the scope of any other medical assemblage.

Unfortunately, the Republican National Convention secured most of the available good space in the press and over the radio, so that concentration of the public on the doings of scientific medicine was difficult to stimulate. Nevertheless the total number of radio programs was far above that of any previous Session. Television programs were also "short-waved," "televised" or "videoed" during the meeting.

Among the subjects that aroused much interest in the House of Delegates were consideration of the various prepayment plans for hospitalization and medical care, the practice of medicine by hospitals, the question of cooperation with the American Red Cross in the establishment of a nationwide blood bank system, the establishment of a new council on rural health and medical care and a variety of reactions toward past, present and future medical events. While some resolutions were introduced that might have had the effect of "upsetting the apple cart," the delegates carefully considered all these proposals in properly constituted reference committees which heard great numbers of interested physicians and then brought to the House of Delegates mature opinions which in a majority of instances received ready acceptance by the House. The great stability and scope of the American Medical Association and its system of organization and operation tend to the avoidance of hasty actions based on insufficient information.

Unusual at this Session of the American Medical Association was a considerable change in the officers of the Association resulting largely from the termination of terms of service by trustees and other officers, so that the House of Delegates now has a new Speaker, Dr. Francis F. Borzell of Philadelphia, a new Vice-Speaker, Dr. James R. Reuling, Bayside, N. Y., three new Trustees, Drs. Walter B. Martin of Norfolk, Va., Edwin S. Hamilton of Kankakee, Ill., and Gunnar Gundersen of LaCrosse, Wis., as well as new members on the Council on Medical Education and Hospitals, Medical Service and Scientific Assembly. Dr. Roy Fouts, who has served for some years as Speaker of the House of Delegates, was elevated to the Vice-Presidency of the Association and received a great ovation from the House of Delegates in recognition of his earnestness and manifest fairness in his decisions as Speaker of the House. With the assumption of the Presidency of the Association by Dr. R. L. Sensenich, the elevation of Dr. Ernest E. Irons to the position of President-Elect following many years of service to the organization as trustee and member of the councils, with the reelection of the Secretary, Dr. George F. Lull and the Treasurer, Dr. J. J. Moore, the Association moves on in its steady drive toward maintaining the ideals of American medicine and its system of medical practice.

Once again much of the great scope and tremendous utility of the exhibits was demonstrated. The Scientific Exhibit was larger than any previously held and its usefulness for graduate education of both general practitioners and specialists was apparent in the vast crowds of physicians who circulated through its aisles and who stood for hours listening to and watching demonstrations by men who had actually conducted the work. The motion picture show and the special conferences on diabetes, fractures and physical medicine were constantly overwhelmed with capacity attendance. The Art Show occupied a tremendous space between the Scientific and Technical Exhibits and in the interest it evolved and the attendance it attracted reached a new high point. The exhibits by medical publishers, pharmaceutic manufacturers and practically every important industry associated with the practice of medicine in the United States were larger than any ever previously held and were in their own way a graduate course in medicine.

The weather in Chicago was hot and humid and a major cause for complaint. The Board of Trustees will no doubt consider the possibility of an earlier date for any future meeting in Chicago. The next Annual Session will be held in Atlantic City, where the weather is seldom insalubrious, and thereafter in San Francisco and again in Atlantic City. The next Interim Session, which is designed to appeal primarily to general practitioners, will be held in St. Louis on November 30 and December 1 and 2 and will be preceded by a National Conference on Public Relations and a meeting by the secretaries of the state medical societies and the editors of the state medical journals.

The continued growth of the American Medical Association with its many councils, committees and bureaus, its gatherings for conferences on every aspect of medical science and practice, its extensive features in the field of publication, have demanded an addition to the present headquarters building which is now in the process of construction.

Many foreign physicians attended the Session of the American Medical Association just held in Chicago. Practically every important nation in the world was represented and there were many physicians who came from the Latin American countries, particularly Argentina, Chile and Peru, as well as from the European nations, Australia, New Zealand and South Africa. Already the interest in world medicine exemplified by the activities of the World Health Organization and the World Medical Association is growing. In this work the American Medical Association is assuming the leadership that is its responsibility because of the breadth and the high scientific quality of medicine practiced in our country.

SURGICAL TREATMENT OF CANCER OF THE RECTUM AND RECTOSIGMOID

Cancer of the rectum is an easily diagnosed lesion which when extirpated radically by surgical methods has a most favorable prognosis. While there is small difference of opinion that radical surgery is the method of choice in its treatment, the rediscovery of the "pull through operation" has in recent years created a certain amount of controversy as to the type of procedure most acceptable in the majority of cases. A cursory survey of the literature of a quarter of a century ago would have revealed to the most ardent enthusiast for the sphincter-saving type of operation a paucity of data on favorable end results of such attacks.

Certainly the milestones of progress in the treatment of cancer of the rectum and sigmoid colon, beginning as long ago as 1826 and labeled with the name of the Frenchman Lisfranc, have created an interesting vista of experience on which to look back. As one reaches the horizon of present day surgery of the lower bowel, one finally views the work of Miles as the greatest contribution in this field of surgery which has yet been made. The combined abdominoperineal resection of the rectum as developed by him has yet to be improved on by any surgeon of this day.

Since Miles's epic publication there have been innumerable surgeons both great and small who have tried to develop many procedures for the preservation of the anal sphincter in the treatment of cancer of the rectum. In the light of the recent anatomic studies carried on by David and Gilchrist and again by Coller and Ransom, there seems little justification for this effort. Furthermore, there has been to date no reported series of five to ten year cures of cancer of the rectum with preservation of the anal sphincter which can compare with the results achieved by the Miles operation.

In the light of the extensive and painstaking work of David and Gilchrist, who have studied an average of fifty-five glands per specimen in 200 resections, our routine pathologic studies in most instances seem rather inadequate. They do, however, lend additional evidence to the thesis that the presence or absence of glandular involvement exerts a profound influence on prognosis. It shows that longevity is in direct proportion to glandular involvement. This, in turn, is entirely dependent on the grade of the growth. In short, the lower the grade of the lesion, the later metastasis will occur. In contrast to this, the higher the grade, the earlier extension will take place. These observations emphasize the fundamental importance of as radical an operation as possible with as widespread a removal of gland-bearing tissue—a basic surgical principle.

The bitter cry against the abdominal anus as pointed out by Pfeiffer is raised by "those who do not have them and do not need them to remain alive." Again, he observed that "of course, the uncontrollable perineal colostomy is infinitely inferior to the abdominal anus in all respects except sentimental nonsense." With this thesis the great majority of surgeons who have had wide experience in this field are in hearty accord. By contrast one finds a few men in this country and abroad who persist in trying to stem the tide of current thought by expending great effort to maintain the anal sphincter or condone the tragic incapacity of an incompetent perineal colostomy.

The secret of proper adjustment to an abdominal colostomy is the realization that this is the safest and the best method of insuring longevity. The surgeon who is a staunch advocate of the combined operation as the best possible means for saving the life of his patient will not belie the confidence of his patient in a faltering dissertation on the pros and cons of an abdominal anus versus perineal colostomy or the doubtful possibility of retaining the use of the anal sphincter. It is this uncertainty that a colostomy is essential which leads to hesitation, dissatisfaction and maladjustment.

Current Comment

THE PRESIDENT-ELECT—DR. ERNEST EDWARD IRONS

The election of Dr. Ernest Edward Irons to be President-Elect of the American Medical Association is in accord with tradition which selects for the highest position in the affairs of the medical profession one who has for many years served his fellow physicians in a series of appointments. Dr. Irons was born in Council Bluffs, Iowa, Feb. 17, 1877. He attended the University of Chicago, receiving the Bachelor of Science degree in 1900 and the Doctor of Medicine from Rush Medical College in 1903. He was awarded the degree of Doctor of Philosophy for research in 1912. He has practiced medicine in Chicago since 1903. From 1902 to 1904 he was assistant in pathology and bacteriology at the University of Chicago, under Professor E. O. Jordan. Early in his career he became associated at the Presbyterian Hospital in Chicago with Dr. James B. Herrick and with Dr. Frank Billings; he occupied various positions on the faculty of Rush Medical College, ultimately becoming Professor of Medicine. He is now Clinical Professor Emeritus in the University of Illinois Medical School, with which Rush has been combined. In 1924 Dr. Frank Billings resigned as Dean of the faculty of Rush Medical College and was succeeded by Dr. Ernest E. Irons in the joint position of Dean of Students and Dean of the Faculty. In 1923 the Board of Trustees elected him to membership on the Council on Pharmacy and Chemistry, and he served on that council through to 1941; he has always supported the standards adopted by the scientific councils of the American Medical Association. His achievements have been recognized by membership in the Central Society for Clinical Research, the Association of American Physicians, The American College of Physicians, the American Board of Internal Medicine, the American Society for Clinical Investigation, the American Association of Pathologists and Bacteriologists and the Society of American Bacteriologists. In 1946 he was elected President of the Institute of Medicine of Chicago. He was President of the American College of Physicians in 1944 and President of the American Association for the Study and Control of Rheumatic Diseases in 1934. The Nu Sigma Nu established an annual lectureship in his honor at Rush Medical College. He himself gave the Charles R. Bardeen Memorial Lecture at the University of Wisconsin Medical School in 1940. He was President of the Society of Medical History of Chicago in 1940. He has also been awarded the "Gold-headed Cane" of the School of Medicine of the University of California, held previously by Dr. James B. Herrick, with whom also Dr. Irons has been associated through a career of many years. His contributions to medical research have been concerned with focal infection, iritis and rheumatic diseases. More recently he has written extensively in the fields of medical economics and social medicine. In World War I he became colonel in command of the Base Hospital at Camp Custer near Battle Creek, Mich., and during World War II he represented medicine in many different capacities including several important committees of the National Research Council. He is a representative of the American Medical Association in the World Medical Association. Recently Dr. Irons was appointed by Mayor Kennelley of Chicago to the Board of Directors of the Municipal Tuberculosis Sanitarium, and he is now president of that board. Doctor Irons was elected to the Board of Trustees of the American Medical Association in 1941 and has served as Secretary of the Board since that time. In 1943 the House of Delegates of the Association requested a report on hospitals practicing medicine. During the year the Board of Trustees of the American Medical Association had a conference with a committee of the American Hospital Association to consider this question. The report of that conference included studies of plans in various portions of the United States particularly as they were concerned with abuses in relation to the practice of roentgenology and clinical pathology. This report was prepared by Dr. Ernest E. Irons and Dr. R. L. Sensenich. The importance of that statement cannot be overestimated. At a meeting of the American Medical Association in 1937 the principle was adopted that the subscriber's contract under any form of hospitalization insurance should exclude all medical service and that contract provisions should be limited exclusively to hospital facilities. The report prepared by Drs. Sensenich and Irons emphasized that fundamental principle. Until it is changed by the House of Delegates, it represents the policy of the American Medical Association. Dr. Irons has been for some time chairman of the Joint Committee on Medical Activities. The Association has in Dr. Irons a representative who will be recognized throughout the world as typical of American medicine from the scientific, professional, political and social points of view.

Ernest Edward Irons, M.D.
President-Elect of the American Medical Association

DISTINGUISHED SERVICE MEDAL

Once again the Distinguished Service Medal of the American Medical Association was awarded by the House of Delegates to a Chicago physician, Dr. Isaac Arthur Abt. His accomplishments are of such magnitude as to compare well with those of the other famous American physicians on whom this distinction has been bestowed. The recipient of the first medal, Dr. Rudolph Matas of New Orleans, now 88 years old, was present when the medal was conferred by President R. L. Sensenich on Dr. Abt. Dr. Abt was born in Wilmington, Ill., Dec. 18, 1867. After a preliminary medical course at Johns Hopkins University in 1889, he received his degree of Doctor of Medicine in 1891 from Chicago Medical College, now Northwestern University Medical School. He was thereafter an intern in Michael Reese Hospital from 1891 to 1893 and subsequently did graduate work in Vienna and Berlin. He served as professor of diseases of children in Northwestern University Woman's Medical School from 1897 to 1901 and as professor of diseases of children in Rush Medical College, 1902 to 1908. He then became professor of diseases of children at Northwestern University Medical School from 1909 until 1942, since which time he has been professor emeritus. His work included consulting positions in the Children's Memorial Hospital, the Sarah Morris Hospital, St. Luke's Hospital and Passavant Hospital. He held the presidency of the American Pediatric Society in 1926 and the American Academy of Pediatrics in 1930. He was president of the Chicago Medical Society in 1927 and of the American Association of Teachers of Diseases of Children in 1922. Dr. Abt has been known not only as an outstanding clinician but also as a great teacher. His contributions to the literature of his specialty include hundreds of articles and periodicals, a baby book called "The Baby's Food," published in 1917, and an autobiography called "The Baby Doctor" published in 1944. Outstanding was his "System of Pediatrics," an encyclopedic work of which he was editor. He was instrumental in 1910 in encouraging the founding of the *American Journal of Diseases of Children.* In the American Medical Association Dr. Abt served for many years, representing the Section on Diseases of Children in the House of Delegates. His contributions on reference committees of the House of Delegates were notable. In 1925 he presented to the House of Delegates a report on the methods of sale and promotion of proprietary infant foods which has served as a standard since that time. Thus the House of Delegates honored a true physician who combines in one personality the healer, the scientific diagnostician, the teacher, the leader and the citizen.

Isaac Arthur Abt, M.D.
Awarded Distinguished Service Medal

ORGANOMERCURIAL ANTISEPTICS

The Council on Pharmacy and Chemistry recently published a report by Morton, North and Engley [1] that showed, according to the methods employed by these investigators, that commonly used mercurial antiseptics did not kill certain strains of virulent hemolytic streptococci *in vivo.* In presenting this report the Council said "The field of usefulness of organic mercurials should be explored, proved and defined. The proponents of these preparations should proceed seriously and diligently to this task." With commendable promptness the proponents of two brands of mercurial antiseptics have provided the Council with data from their laboratories. These reports, elsewhere in this issue, extend the observations of Morton, North and Engley. Although not all organisms are killed by mercurial antiseptics, virulence may be altered and the degree of infectivity lessened or practically abolished. It is gratifying that the challenge of the Council has been met so promptly. These reports help materially to define the field of usefulness and limitations of the organic mercurial compounds, and they further emphasize the need for critical appraisal of the methods used to assess the efficiency of antiseptics. The lesson to be learned from the data presented in the report of Morton and associates and in the reports of Brewer [2] and Powell [3] is that slight variations in technic, differences in test organisms, and differences in criteria of effectiveness lead to different conclusions regarding the antiseptic efficiency of the organomercurial compounds.

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[1] Morton, H. E.; North, L. L., and Engley, F. B., Jr.: The Bacteriostatic and Bactericidal Actions of Some Mercurial Compounds on Hemolytic Streptococci, J.A.M.A. 136: 37 (Jan. 3) 1948.

[2] Brewer, J. H.: Reduction of Infectivity of Certain Pathogenic Bacteria by "Mercurochrome," J.A.M.A., this issue, page

[3] Powell, H. M.: Antibacterial Action of "Merthiolate" Against Hemolytic Streptococci, J.A.M.A., this issue, page.

ORGANIZATION SECTION

PROCEEDINGS OF THE CHICAGO SESSION

MINUTES OF THE ANNUAL SESSION OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION, HELD IN CHICAGO, JUNE 21-25, 1948

HOUSE OF DELEGATES

First Meeting—Monday Morning, June 21

The House of Delegates convened in the Red Lacquer Room of the Palmer House, Chicago, and was called to order at 10:10 a. m. by the Speaker, Dr. R. W. Fouts.

Preliminary Report of the Reference Committee on Credentials

The Speaker appointed as tellers Dr. John W. Green, California, Chairman; Dr. E. Roger Samuel, Pennsylvania, and Dr. Scott Lord Smith, New York.

Dr. G. Henry Mundt, Chairman, stated that 160 delegates had registered and the Speaker, after requesting the tellers to prepare to distribute the ballots for the selection of the recipient of the Distinguished Service Award, declared the House duly constituted.

Roll Call

The Secretary called the roll at the request of the Speaker, and 165 delegates answered or after the call reported themselves as present.

Distinguished Service Award

Dr. E. L. Henderson, Chairman of the Board of Trustees, presented a report of the Board as follows:

The Committee on Distinguished Service Award of the American Medical Association submitted five names to the Board of Trustees.

In accordance with chapter VI, section 5, of the By-Laws, the Board has selected by ballot the following names for presentation to the House of Delegates in alphabetical order: Dr. Isaac Abt, Chicago; Dr. Alfred Blalock, Baltimore, and Dr. Seale Harris, Birmingham, Ala. Dr. Henderson, on request, read to the House information from "Who's Who" concerning Drs. Abt, Blalock and Harris.

The tellers spread the ballot and the Secretary announced that one hundred and fifty-nine votes had been cast, of which Dr. Abt received ninety-nine, Dr. Blalock twenty-six and Dr. Harris thirty-four.

The Speaker declared Dr. Isaac Abt, Chicago, who had received the majority of the votes cast, to be elected by the House of Delegates to receive the Distinguished Service Award of the American Medical Association.

Adoption of Proceedings of Interim Session in Cleveland, January 1948

On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, and carried, the proceedings of the interim session of the House of Delegates held in January 1948 were adopted as printed.

Address of Speaker, Dr. R. W. Fouts

The Vice Speaker, Dr. F. F. Borzell, Pennsylvania, presided while the Speaker of the House read his address, which was referred to the Reference Committee on Reports of Officers and which reads as follows:

Mr. Speaker, Members of the House of Delegates and Guests:

It is again my privilege to preside over the deliberations of an organization of distinguished men who have played and are continuing to play a significant part in shaping the destinies not only of medicine, but of many social activities throughout the world. Your contributions toward establishing policies for the American Medical Association have not only served this nation well, but have also provided a pattern for other organizations throughout the world. The leadership of American physicians in world organizations is quite significant. While these contributions cannot be measured by any known standards of values, they deserve the plaudits of thinking people.

As stated in some previous addresses, your Speaker believes that the function of his office is to assist in the conduct of the business of the House in a fair, unbiased and business-like manner at all times and to maintain the dignity becoming this distinguished office. This I have attempted to do. If at any time it has seemed that this was not the case, the error was due to oversight or lack of information rather than desire.

Some changes in the conduct of the affairs of the House that have been inaugurated the past few years appear to be working well and have served to expedite the business of our sessions. Some of these have already been incorporated in our Constitution and By-Laws and others will be proposed for adoption at this session. Some of the changes proposed at the interim session in Cleveland by the Special Committee to Expedite the Work of the House of Delegates will be in evidence at this session.

A resolution adopted at the Cleveland session in January provided that all reference committees be appointed sixty days prior to the convening of sessions and that the names of the appointees be published thirty days prior to the session. This poses somewhat of a problem for your Speaker. Sixty days ago, inquiry revealed that a number of the states had reported no delegates elected, and many others had reported only half of their quota. You will note from your Handbook that some states were unable to name their delegates at the time the Handbook went to press.

This condition made it impossible to give proper representation in the appointment of reference committees for this session. I do not see how this can be avoided in the future unless all state organizations revise their constitutions and by-laws and the respective delegates assume office on the same date, such as January 1 of each year. I believe that further consideration might well be given this question.

Each session of the House presents new problems. Of special significance at this time is the Blue Cross and voluntary insurance plans, the intern situation and the nurse problem. A special committee will report on the latter question at this meeting. The proposed selective draft of physicians appears to be settled, at least temporarily. I am confident that each member of this House will give due deliberation and consideration to all questions presented.

IN MEMORIAM

Each year new names are added to what is now a rather long list of colleagues who formerly served American medicine. The Vice Speaker will read the names of those who have departed from this life since our last annual session as follows (the dates following the names indicate years of service in the House or as officers of the Association):

Edward B. Angell, New York, 1908.
Francis R. Anthony, Missouri, 1907.
William E. Bannen, Wisconsin, 1916; 1929-1936.
Rupert L. Blue, President, 1915-1916.
George V. I. Brown, Milwaukee, Section on Stomatology, 1902; 1907; 1909-1916.
Curtis F. Burnam, Maryland, 1915.
William J. Carrington, Atlantic City, N. J., Vice-President, 1942-1943.
Arthur S. Chittenden, New York, 1926.
Frederic C. Conway, New York, 1939-1940.

George H. Curfman, Colorado, 1925; 1945-1946.
John Darrington, Mississippi, 1906-1907.
William Davis, Minnesota, 1903-1904.
Charles M. DeValin, U. S. Navy, 1924.
Edward C. Ellett, Tennessee, 1914; 1925-1926.
Thomas H. Farrell, New York, 1926.
Howard B. Garner, Michigan, 1905.
Alois B. Graham, Indianapolis, Section on Gastro-Enterology and Proctology, 1920-1921.
John H. Graves, California, 1921.
John A. Hawkins, Pennsylvania, 1916.
Barney J. Hein, Ohio, 1939-1947.
Charles H. Henninger, Pennsylvania, 1941-1944.
J. Newton Hunsberger, Pennsylvania, 1923-1943.
Ernest L. Hunt, Massachusetts, 1943.
Reid Hunt, Boston, Section on Pharmacology and Therapeutics, 1911-1912.
T. Henshaw Kelly, California, 1935.
Percy T. Magan, California, 1927-1930.
Descum C. McKenney, Buffalo, N. Y., Section on Gastro-Enterology and Proctology, 1933-1935.
Samuel P. Mengel, Pennsylvania, 1924; 1929; 1931-1940.
Samuel Rush Miller, Tennessee, 1911-1912; 1916.
Fred T. Murphy, Massachusetts, 1911.
John H. Musser, Louisiana, 1928. Vice President, 1933-1934; Member, Council on Medical Education and Hospitals, 1934-1947.
J. Archer O'Reilly, St. Louis, Section on Orthopedic Surgery, 1931-1933; 1940-1947.
Julian Rawls, Virginia, 1941.
Auguste Rhu, Ohio, 1912.
Charles W. Roberts, Georgia, 1925; 1927-1928; 1932-1941. Member, Board of Trustees, 1941-1947.
George E. Shambaugh, Chicago, Section on Laryngology, Otology and Rhinology, 1916.
Frederic E. Sondern, New York, 1916-1921; 1932-1942.
Reginald J. H. Stroud, Arizona, 1919; 1930.
Holman Taylor, Texas, 1912-1914; 1920-1947; Fourth Vice President, 1917-1918; Member, Judicial Council, 1939-1942.
Clarence G. Toland, California, 1934-1935.
Gerald B. Webb, Colorado, 1920-1921.
Oliver W. Welch, Alabama, 1947.
Frederick W. Wilkerson, Alabama, 1920.
George F. Zinninger, Ohio, 1932-1933; 1937-1938.

The Speaker requested the members of the House to stand for a brief moment in silent tribute to the memory of these absentees, after which he continued reading his address.

REFERENCE COMMITTEES

Your Speaker believes that it is necessary to create three special reference committees: Executive Session, Medical Service and Prepayment Insurance, and Emergency Medical Service and requests authority to make such appointment.

On motion of Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried, the Speaker was given permission to appoint the three special reference committees he requested.

It has been found necessary to make some changes in committee appointments since publication. The personnel of all reference committees as appointed by the Speaker is as follows (the list includes the names of all those appointed by the Speaker at this time and later in the session):

SECTIONS AND SECTION WORK

Robertson Ward, Chairman, California.
A. S. Giordano, Indiana.
Leo G. Christian, Michigan.
Charles T. Stone, Section on Internal Medicine.
Edward L. Compere, Section on Orthopedic Surgery.

RULES AND ORDER OF BUSINESS

Herbert P. Ramsey, Chairman, District of Columbia.
Philip W. Morgan, Kansas.
James P. Wall, Mississippi.
Edward H. Weld, Illinois.
James P. Kerby, Utah.

MEDICAL EDUCATION

W. D. Stovall, Chairman, Wisconsin.
Joseph H. Howard, Connecticut.
Charles F. Strosnider, North Carolina.
J. D. McCarthy, Nebraska.
Joseph F. Londrigan, New Jersey.

LEGISLATION AND PUBLIC RELATIONS

Thomas A. McGoldrick, Chairman, New York.
George A. Unfug, Colorado.
Donald Cass, California.
Clark Bailey, Kentucky.
Charles L. Shafer, Pennsylvania.

HYGIENE AND PUBLIC HEALTH

Leland S. McKittrick, Chairman, Massachusetts.
H. Gordon MacLean, California.
James Beebe, Delaware.
Robert E. Schlueter, Missouri.
Cornelius T. Lehmann, Texas.

AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

Arthur J. Bedell, Chairman, Section on Ophthalmology.
James Q. Graves, Louisiana.
William F. Costello, New Jersey.
Howard R. Dudgeon, Texas.
Theodore H. Harwood, Vermont.

REPORTS OF OFFICERS

Allen H. Bunce, Chairman, Georgia.
George W. Kosmak, New York.
Louis M. Orr II, Florida.
Walter E. Vest, West Virginia.
Roland W. Stahr, Nevada.

REPORTS OF BOARD OF TRUSTEES AND SECRETARY

Walter P. Anderton, Chairman, New York.
Thomas A. Foster, Maine.
Warren L. Allee, Missouri.
Jesse D. Hamer, Arizona.
Herman A. Lawson, Rhode Island.

CREDENTIALS

G. Henry Mundt, Chairman, Illinois.
Carl A. Lincke, Ohio.
H. B. Everett, Tennessee.
E. P. Flood, New York.
Raymond F. Peterson, Montana.

MISCELLANEOUS BUSINESS

Edwin S. Hamilton, Chairman, Illinois.
Thomas M. Brennan, New York.
Charles R. Rountree, Oklahoma.
Claude R. Keyport, Michigan.
John H. Moore, North Dakota.

EXECUTIVE SESSION

Charles H. Phifer, Chairman, Illinois.
George Braunlich, Iowa.
A. A. Walker, Alabama.
W. A. Coventry, Minnesota.
Raymond L. Zech, Washington.
Walter F. Donaldson, Pennsylvania.
George P. Johnston, Wyoming.

MEDICAL SERVICE AND PREPAYMENT INSURANCE

Henry B. Mulholland, Virginia.
H. G. Hamer, Indiana.
Stephen E. Gavin, Wisconsin.
D. A. Rhinehart, Arkansas.
L. Howard Schriver, Ohio.

EMERGENCY MEDICAL SERVICE

George E. Armstrong, Chairman, U. S. Army.
Hugh P. Smith, South Carolina.
Wyman D. Barrett, Michigan.
Morton D. Willcutts, U. S. Navy.
George A. Woodhouse, Ohio.
Raymond M. McKeown, Oregon.

TELLERS

John W. Green, Chairman, California.
E. Roger Samuel, Pennsylvania.
Scott Lord Smith, New York.

SERGEANTS AT ARMS

J. Stanley Kenney, Chairman, New York.
Hoyt B. Woolley, Idaho.
Fred H. Muller, Illinois.

The House approved of the appointments to reference committees as made by the Speaker on motion of Dr. Mather Pfeiffenberger, Illinois, seconded by Dr. Walter E. Vest, West Virginia, and carried.

POSTLUDE

As somewhat of a postlude may I be permitted to indulge in a few additional remarks?

There has been editorial comment in some medical journals and other periodicals and some papers have been written relative to the geriatric problem as it concerns the membership of this House. A resolution seeking to remedy this alleged affliction was presented on this floor. Whether or not this question merits consideration is not for me to state, but I would point out that, after a rather long period of observation, I fail to call to mind the name of any former or present member of this body whose enthusiasm has waned or whose efficiency has become less because of his years of experience in the service he has given. This is a question that cannot be settled by this body. The authority to act is vested solely in the respective state medical associations.

Speaking from a personal standpoint, I must state that to have served continuously in the House since the 1922 Session, the last ten years as Vice Speaker and Speaker, has been a most interesting and challenging experience. To have been chosen as your presiding officer for the past five sessions has in itself been a high honor, and I sincerely appreciate that honor. I have considered this position a serious responsibility, not only to this body and American medicine, but to medicine and the welfare of humankind throughout the world. Truly, American medicine sets this pace.

To have served with an outstanding group of loyal workers, such as comprise the membership of this House and the officers of the American Medical Association over these years, is a privilege that can be accorded only a few. I have been signally honored in this regard. It has seemed to me that all too few of the rank and file members of our profession interest themselves in the future of the welfare of their profession and only a comparative few carry the load.

It is not my purpose here to inveigh against the free riders who profit but do not serve, or even those who ride and drag their feet—for we have our share of them—but it is my hope that in the future more of our members will join in carrying the load, to the everlasting glory of American medicine. The members of this House should be diligent, in season and out of season, in stimulating the interest of greater numbers of our profession to combat the economic and political implications of these times.

Our obligations are not discharged by just attending the sessions of this House and participating in its deliberations. The greatest service to American medicine, its purposes and ideals, may be rendered only by taking advantage of every opportunity to inform correctly our state association members on matters of national import as they develop in connection with our official duties. This can only mean that we must take time from our professional duties to study the economic and social aspects of the problems confronting our nation at this time. I bespeak your continuous participation.

Greeting to Dr. Olin West, Former Secretary

The Speaker resumed the chair and requested Dr. Olin West, former Secretary, to come to the platform. Dr. West was greeted with enthusiasm by the members of the House.

Address of President

The Speaker declared the next order of business to be the address of President Edward L. Bortz.

Dr. Bortz delivered the following address, which was referred to the Reference Committee on Reports of Officers:

Mr. Speaker and Members of the House of Delegates:

The Centennial Celebration of the American Medical Association held one year ago created an opportunity to survey the major accomplishments and review the objectives of our Association. The first year of the second century has been characterized by vigorous activity on the part of the officials and staff of our Association, working in collaboration with officers of state and county medical societies and other groups to solve the medical problems facing the American public at the present time.

It is unnecessary to comment on the excellent state of the health of the nation, but let me briefly recall the steady advances of medical science in its various fields to extend the frontiers of knowledge which will lead to an even better control of the major afflictions of mankind. There is abundant evidence to certify the deep interest of the members of the profession in the details of medical practice. The broader social objectives of modern society are likewise under study.

THE AMERICAN MEDICAL ASSOCIATION IN ACTION

One is continually impressed and sometimes amazed at the vast amount of work which is being carried on by the members of the Board of Trustees. Their high sense of responsibility and steadfast devotion on the highest plane has placed the entire Association in their debt. Let me assure you that the weighty problems continually arising are being surveyed from every possible angle. The sole desideratum on which each problem is approached is that of a high quality of medical care for the American people. Our Board is no rubber stamp for any individual or minority pressure group. American medicine owes it a debt which will be difficult to repay.

To the Secretary, Dr. George F. Lull, and his able corps of assistants, the thanks of the Association are in order. To the Editor, Dr. Morris Fishbein, honor and credit are due for the wide extent of his interests and travels. Members of the central staff of the Association, a splendid group of workers, also deserve our gratitude.

I regret that time is not available to review adequately the great amount of significant work which is continuously being carried on by the various Councils. Each of these has a staff that has contributed in many important ways to further the cause of American medicine.

The Board of Trustees, through the Washington office and the Bureau of Legal Medicine and Legislation, is keeping strict watch on the various bills in Congress which bear on the nation's health. Only after critical analysis and a study of the ultimate ends to be served does the Board place its seal of approval. Our Board likewise has been diligent in its appraisal of innumerable plans for extending the insurance principle for financing medical care.

Our officers are playing a dominant role in the direction of the World Medical Association; we have always been in favor of the World Health Organization. Not only has the Association demonstrated its interest in international problems, but on the home front it is taking an active part in the formulation of a program for a higher level of health for our own population.

MEDICAL ECONOMICS

Many regional conferences have been held under the auspices of the Council on Medical Service. To these meetings representatives from a number of states have convened for the purpose of investigating problems of particular importance in each section of the nation. In this way, local questions are approached in a more intimate fashion. With the assistance of officials from American Medical Association headquarters, local officers have been able to clarify many of the vexing problems which are confronting the profession. Plans for medical care should be regarded as in an evolutionary phase. This must not be forgotten. A certain amount of time will be required to work out satisfactory principles. And, furthermore, it must be remembered that a program which would meet the requirements of a rural community would most likely not be applicable to densely populated areas.

Voluntary insurance plans have been surprisingly successful in winning the support of the American public. It would seem that the voluntary principle of medical insurance has won such widespread approval as to warrant universal participation in this program.

A study of medical service areas by Frank D. Dickinson, Ph.D., Director of the Bureau of Medical Economic Research, bids fair to be one of the great contributions in the field of medical economics. An analysis of the over-all medical needs of a given area compared with the personnel available is a method so sound and so logical that it is surprising that this approach has not heretofore been recognized. Such an analysis, carried on with attention to facts, should eliminate much of the controversy which has arisen because of inadequate statistical data or improper conclusions. Statistics, to have any value, must be factual as to origins and conclusions. During the coming months, a large mass of statistical data will be collected and studied. A milestone in the search for better ways of distributing medical care, and the means of payment therefor, will be reached if representatives of organized medicine and the governmental agencies working together may analyze the material and agree on the observations.

Organized medicine has never failed to support any method which logically pointed toward a higher level of health for the American people. Far from being reactionary in attitude, the past history of this Association indicates a spirit, interest and aggressiveness in the search for better medical care. Medicine, as a profession, is socially minded in action and outlook. The effectiveness of its activities may be found in the simple yardstick of the life span. Since the turn of the century, medical science has brought about an increase in the length of human life to an all time high of sixty-seven years. The monetary benefits to the consumers, since we are consumer-minded these days, are beyond calculation.

A few months ago, in February to be exact, the Brookings Institution, at the request of H. Alexander Smith, chairman of the Subcommittee on Health of the Senate Committee on Labor and Public Welfare, made an unbiased study of medical care. The report indicates that greater progress in the application of medical and sanitary science has been made under the voluntary system of medical care in our nation than can be found anywhere else in the world. And, the report continues, there is every reason to believe that these trends will carry on unabated under our present system. Certainly there is still much to be accomplished, but, as the Brookings Institution points out, it is highly probable that the intelligent cooperation of consumers and the medical profession will develop satisfactory arrangements for medical care which will remain subject to local control without administration by the national government.

During the past year the Committee on Nursing Problems, under the chairmanship of Dr. Thomas P. Murdock, has carried on a number of far reaching investigations in this important field. The numerous conferences with representatives of nursing organizations have been productive. It is to be hoped that a more satisfactory nursing program may be evolved from the work of this Committee.

HEALTH EDUCATION

Organized medicine has long been interested in the philosophy of health. However, being so preoccupied with strictly scientific pursuits, the rank and file of the medical profession has failed to use its influence and participate actively in health educational programs. Health is not exclusively a matter of medical care. Environmental factors, which include food, shelter, type of work and similar activities, are of basic importance.

A modern health program requires the participation of leaders from all walks of life in each locality. Because of their professional experience and training in the field of health and scientific medicine, members of the medical profession should assume leadership in the formulation of a satisfactory health program in every community. With emphasis on prevention, prophylaxis and the maintenance of vigorous positive health, fewer patients should require hospital care and the level of health should be improved. Likewise, the costs should decline.

During the past year a number of important conferences have been arranged by the Bureau of Health Education of the Association. To these conferences have come educational and other civic leaders for the purpose of exploring ways and means for more satisfactory health educational programs. We are well on our way in the field of health education.

PREPAREDNESS

At the present time, the Congress of the United States has a number of bills in process bearing on the problem of medical care in the event of national emergency. Discriminatory legislation for drafting physicians has been vigorously opposed by the American Medical Association. Such legislation is unconstitutional and could not be sustained in court. Organized medicine is obligated to aid in the development of an over-all program which will adequately meet the needs of the entire population. The difficulty in drafting physician's and in placing the destiny of members of the medical profession in the hands of military authorities would bring a decided deficit of personnel to care for civilian requirements.

Last Saturday the Congress passed the draft. Congress, in deference to American medicine, deleted that objectionable item from the draft bill, and now where do we stand? That is one of the most important problems facing this House today. Gentlemen, Congress has deleted that section of the bill and the draft is coming on in ninety days, and the Medical Corps of the armed forces is going to need doctors. That is our responsibility. I want to say to you that we have had wholesome and sustained cooperation from the Surgeons General and their staffs all along the line. They have cooperated with the Board of Trustees and officials of the Association at all times. They have cooperated with our Council on National Emergency Medical Service, and now we must rise to the occasion and see that sufficient doctors are available on a voluntary basis. The alternative, gentlemen, is the draft.

The Council on National Emergency Medical Service, created by this House during the past year, under the able Chairman, Dr. James C. Sargent, has held a number of conferences with top ranking authorities in Washington. At these meetings the various phases of medical care in the event of national involvement have been discussed. It would seem that an Advisory Medical Board should be established to function with the National Security Resources Board at the top civilian level. Only on this plane will it be possible to determine the over-all needs of the nation and to make assignments accordingly. Past experience has demonstrated the vast amount of waste in personnel and equipment which occurs when nonmedical officials are given responsibility for allotment of medical resources. Hard-won experience should not be disregarded in the present hour of national concern.

Through the Council on National Emergency Medical Service we are well prepared to render a valuable service to the nation.

MEDICINE'S SOCIAL RELATIONSHIPS

The subject of public relations has received a great deal of attention during the past few years. The field is a broad one. Essentially it deals with human relationships, and the aim to be accomplished is a sympathetic understanding of the manifold activities which are being carried on by the medical profession. Preoccupation with restricted professional phases of practice with too little attention to the interpretation of the work we are carrying on has left large segments of the public uninformed about the objectives we are seeking to attain. To bring about a better rapport between the public and the profession, it is essential that we utilize every avenue of approach—every means for dissemination of information.

Members of the profession are being subjected to much adverse criticism because of the inability on the part of the public to obtain the services of a physician for night emergencies. Here is one problem that must be solved and solved promptly by physicians throughout the nation. County medical societies are in a position to improve the public relations of our profession at the local level by developing methods for taking care of night calls.

In the field of human relationship the Woman's Auxiliary is our most valuable asset. The response with which the splendid women have carried the message of American medicine into the various forums, clubs, associations and councils of lay groups is an important service to the country.

Press releases and other promotional work of similar nature in which Mr. Lawrence Rember and Mr. John Bach are engaged have kept the activities of the Association before the public. Accuracy and dignity in reporting the work of medical science has reached a new high during the past year, and medicine has won new adherents through the activities of these men.

From time to time it should prove edifying to survey the position of organized medicine in various areas of the nation. What is the present status of the relationship between Congress and the American Medical Association? How does organized medicine stand with the manufacturing groups, with labor and with educational institutions? Where lack of understanding exists, it is our responsibility to analyze the specific complaints and in a generous spirit endeavor to rationalize the differences.

A resourceful public relations program will reveal these troublesome issues and institute effective measures for their correction.

MEDICINE IN A FREE SOCIETY

In the past organized medicine has concerned itself principally with standards of education, extension of services and the promotion of research. The changing scene of civilization is bringing the people of various nations into closer contact and communication with one another. Isolationism is an outworn concept. Health is a topic of major interest which is international in scope.

In our favored land, leadership in medicine is essential if the full potentialities of modern medical science are to be realized. The scientific method in medicine has infinite possibilities for improving human beings. In fact, as Descartes many years ago stated, "If the human race is ever to improve materially, intellectually, and culturally, the science of medicine will perform that service."

The troubled world today is hoping for social stability. Citizens of all nations are longing to return to peaceful pursuits without the ominous threat of human destruction. It should not be necessary to descend to the barbarous rule of the jungle in quest of a better way of life. The members of the medical profession, schooled in the intricacies of the management of disease, also possess an insight into the inner emotional mechanisms of their fellow human beings. The physician intimately knows the hopes and fears and aspirations of those whom he serves. The man of medicine is a friend and counselor of his patients. In this sympathetic relationship he is a leader in his community. An organization of such leaders possesses the capacity, and has an unexcelled opportunity, to influence social trends in the direction of a higher level of health for community and nation.

In the atomic age, when a new chapter of civilization is being born, the medical profession should rise to its full stature and exert its powerful influence in the formulation of a social program that will extend the benefits of medical science to the far corners of the world.

During the past year the American Medical Association has made an auspicious beginning in its second century. There is need for broad vision and the long view in planning a program for the future in order that our Association may maintain its position as a great organization dedicated to the lofty principle of a more worth while way of life for our fellow men.

Presentation of President-Elect

The Speaker presented to the House Dr. R. L. Sensenich, the President-Elect, who addressed the House as follows:

Mr. Speaker, Mr. President, Dr. West, Members of the House:

It is a bit difficult to take all these evidences of your kindly interest and your evident kindly feeling toward me and such respect as you have for the office of President-Elect of the Association.

Last year I made a suggestion that I thought the President-Elect probably should not take your time in addressing you, and a little later the committee formulated this matter into a rule. Now perhaps I might admit that maybe I suspected they were going to do that. At any rate, I am not going to take your time today.

I reminded the House at that time that you had much to do, much of importance. If I judge correctly, you have more to do this year, and I regret that in the future I can see no opportunity for relief. If medicine is going to continue to hold and to assume still further positions in leadership in those things in which medicine should be interested, yours will be the task of defining the policies, and those policies are sometimes not easy to define, a bit difficult to follow, in the midst of a social structure that sometimes is not kind to our point of view.

And, lastly, it needs a unanimous opinion and a definite willingness to get down and fight for the promotion of those policies. I am not going to take any of your time, but I wish to assure you, I hope and believe you have always felt, that I shall do, so far as it is humanly possible for me to do, the utmost in carrying out the policies that you define during my term of office.

Reports of Officers

REPORT OF BOARD OF TRUSTEES

Dr. E. L. Henderson, Chairman, presented the Report of the Board of Trustees as printed in the Handbook, which was referred to the Reference Committee on Reports of Board of Trustees and Secretary, with the exception of the Report of the Council on National Emergency Medical Service, which was referred to the Reference Committee on Emergency Medical Service; the Report of the Committee on Rural Medical Service, which was referred to the Reference Committee on Medical Service and Prepayment Insurance, and the Statement on the National Need for Blood Transfusion, which was referred to the Reference Committee on Executive Session but later was taken from that Committee and referred to the Reference Committee on Miscellaneous Business. The mimeographed copy of the supplementary Report of the Council on National Emergency Medical Service, distributed with the Handbook was referred to the Reference Committee on Executive Session

SUPPLEMENTARY REPORT OF BOARD OF TRUSTEES

Cooperation with the Secretary of the Interior

Dr. E. L. Henderson, Chairman, presented the following report, which was referred to the Reference Committee on Reports of Board of Trustees and Secretary.

By invitation from the Secretary of the Interior, the Honorable J. A. Krug, the executive committee of the Board of Trustees and certain officers of the American Medical Association became an advisory committee to the Secretary and have been associated with him in the sending of teams of physicians to study health conditions in outlying portions of the United States Government, to give aid to physicians to improve quality of medical care to the indigent. During the latter half of 1947 and the first half of 1948 groups of physicians visited the Navajo Indians; also Alaska, Puerto Rico and the Virgin Islands.

The group to Alaska included clinicians from the staff of the Cook County Hospital in Chicago. Their report on medical conditions in Alaska was published in The Journal for Oct. 25, 1947. Favorable comment concerning their visit came from leading physicans and surgeons in Alaska, from the Commissioner of Health, from the government of Alaska and also from the medical society. So favorably was their visit considered that another group will be sent to Alaska during the latter half of 1948.

A team developed from Southwestern Medical College and Foundation in Dallas, including six physicians from Texas, visited the Navajo Indians. The report of their visit is published in The Journal for Dec. 13, 1947, page 981.

A medical mission under the leadership of Dr. Ernest E. Irons, Secretary of the Board of Trustees, visited Puerto Rico and the Virgin Islands. Their report was published in The Journal for April 10, 1948, page 979. Approval of this visit has come from the Government of Puerto Rico, and the medical society of Puerto Rico has specifically requested another group during the coming winter.

This cooperation with the Secretary of the Interior has been especially important in presenting to the Congress of the United States the medical conditions under these portions of the United States Government. A special request has come to visit the Indians in the Northwest, and a group is now being formed under the leadership of Dr. William F. Braasch to visit the Northwest Indians during the coming summer.

The Board of Trustees invites attention to the fact that this movement was stimulated through the office of the Secretary of the Interior, the Honorable J. A. Krug, that he requested as his advisory group the executive committee of the Board of Trustees of the American Medical Association and its officers and that the activities met with the complete approval of every one concerned.

This activity is reported to the House of Delegates for its consideration and for such recognition as it may wish to give.

World Medical Association

Dr. Henderson presented the following report, which was referred to the Reference Committee on Reports of Board of Trustees and Secretary:

Since the last report on the World Medical Association was made to the House of Delegates in January, the Council of that Association has met in New York. The Council approved the selection of the location of the headquarters and secretariat at the New York Academy of Medicine, where suitable space has been obtained.

The Council elected Dr. Louis H. Bauer as Secretary-General, and he consented to serve on a part time basis. On his election as Secretary-General, he resigned from the Council of the World Medical Association and was replaced by Dr. E. L. Henderson.

The next meeting of the General Assembly was transferred from Prague, Czechoslovakia, to Geneva, Switzerland, and will be held Sept. 8-11, 1948. The Board of Trustees has designated Drs. E. L. Henderson and R. L. Sensenich as Delegates, Drs. E. E. Irons and Morris Fishbein as Alternate Delegates, and Dr. W. F. Braasch as observer, for this coming session.

Among the matters being considered and studied by the World Medical Association are the status of the physician; the standards of medical education; the methods of rating specialists; fraudulent advertising, and cult practice. It also is studying war crimes and the best methods of preventing recurrences; displaced physicians; graduate medical education; the various programs of social security, and the preparation of an international code of ethics.

It is hoped that a bulletin will be issued before the meeting of the next General Assembly. At that time plans will be adopted for a bulletin to be issued at regular intervals.

Also at the time of the meeting of the General Assembly there will be a meeting of the medical editors of the world. This meeting is being sponsored by the World Medical Association.

On a recent visit of the Council to the United States, the members were entertained in New York, Chicago, Minneapolis and the Mayo Clinic. It is believed that they acquired a good knowledge of how medicine is practiced in the United States and that a spirit of international understanding and good will was fostered.

As has been previously reported to you, the United States Committee is responsible for the entire cost of the upkeep of the secretariat and traveling expenses of the Council. This is necessary because of the financial condition of some national associations and the difficulty in transferring funds from one country to another. The funds of this committee are being raised by voluntary subscription from individual physicians, medical organizations, organizations allied to and serving medicine and other individuals and organizations.

All founder-sustaining members of the United States Committee will receive the bulletin of the World Medical Association and thus be kept informed of its activities.

To play a part in raising the standards of medicine and health throughout the world and to promote better international relations and world peace are certainly worth while and an aim to which we should all aspire. The Board of Trustees urges the support of the United States Committee by individual physicians and other medical organizations. No effort is too great to support the objectives of the World Medical Association.

Revision of National Health Program

Dr. Henderson presented the following report, which was referred to the Reference Committee on Reports of Board of Trustees and Secretary:

The Board of Trustees has given consideration to the National Health Program of the Association and recommends revision of point 7, "Veterans' Needs for Hospital and Medical Care," which now reads:

> A program for national health should include the administration of medical care, including hospitalization, to all veterans, such medical care to be provided preferably by a physician of the veteran's choice, with payment by the Veterans Administration through a plan mutually agreed on between the state medical association and the Veterans Administration.

The revision suggested is:

> The veterans shall be entitled to the highest available quality of medical care, in accordance with existing law, and preferably in his home community with a physician and hospital of his own choice.

Reports of Committee to Study Conditions of General Practice and Committee on Nursing Problems

Dr. Henderson presented the following reports of the committee to Study Conditions of General Practice and the Committee on Nursing Problems, mimeographed copies of which had been handed each delegate as he registered; these were referred by the Speaker to the Reference Committee on Medical Service and Prepayment Insurance.

REPORT OF COMMITTEE TO STUDY CONDITIONS OF GENERAL PRACTICE

The House of Delegates at the Atlantic City Session in June 1947 approved the recommendation of the President, Dr. H. H. Shoulders, that the Board of Trustees appoint a special committee which could "(1) define the term 'general practitioner,' or 'general physician,' on a functional basis; (2) determine whether or not there is need for a large increase in the number of medical graduates and, if so, its extent; (3) study the present program of medical education and training, both undergraduate and postgraduate, to determine whether or not the content and administration of the program is properly adjusted to the present day needs of the people; (4) study the possibility and feasibility of utilizing smaller community hospitals in a program for the training of general practitioners and the possibility of approving such institutions for such training when a teaching program is properly organized and administered; (5) study the means by which communities in need of additional services may be aided; (6) study such other questions as the committee itself may determine to be necessary in arriving at sound conclusions concerning the entire field of medicine, and (7) propose a long range program designed to overcome present insufficiencies and to meet future needs."

In accordance with the action of the House of Delegates, the Board of Trustees appointed the Committee to Study Conditions of General Practice. The Committee has given careful consideration to the suggestions for its work which were outlined in President Shoulders recommendation and at this time submits the following report with respect to those seven proposals:

"(1) Define the term 'general practitioner.'"

A general practitioner is a legally qualified Doctor of Medicine who does not limit his practice to a particular field of medicine or surgery.

"(2) Determine whether or not there is need for a large increase in the number of medical graduates and, if so, its extent."

It is recommended that this matter be referred to the Council on Medical Education and Hospitals and the Bureau of Medical Economic Research, since both the Council and the Bureau already have accumulated considerable data regarding it.

"(3) Study the present program of medical education and training, both undergraduate and postgraduate, to determine whether or not the content and administration of the program is properly adjusted to the present day needs of the people."

The Committee commends the approved medical schools of this country for their interest in broadening the curriculum to prepare medical students for general practice. It encourages them to continue and to place increasing emphasis on postgraduate training with a view to establishing courses of at least two years of training which will fit the graduate for entering general practice. It also commends the American Board of Internal Medicine for broadening the opportunities for admission to its examinations, and recommends that similar action be taken by other specialty boards.

The Committee also recommends that every general hospital be organized so as to give the general practitioners adequate staff privileges and representation.

"(4) Study the possibility and feasibility of utilizing smaller community hospitals in a program for the training of general practitioners and the possibility of approving such institutions for such training when a teaching program is properly organized and administered."

The Committee is agreed that the smaller community hospitals not directly associated with medical schools, if properly supervised, would be excellent training institutions for general practitioners. It recommends that the Council on Medical Education and Hospitals proceed with the development of such a program.

"(5) Study the means by which communities in need of additional services may be aided."

In view of the fact that many studies are being carried on by agencies of the American Medical Association as well as by state agencies, the Committee believes that these activities should be continued by those agencies. The essential responsibility of each community for developing its own facilities, social and educational as well as medical, is recognized by students in this field. The Committee believes that the organization of integrated hospital facilities based on trade areas and population needs is essential to the development of good community medical service. It also recognizes that financial and technical aid is necessary in certain areas. This should be provided in such a way as to meet essential needs and preserve community control.

"(6) Study such other questions as the committee itself may determine to be necessary in arriving at sound conclusions concerning the entire field of medicine."

It is the opinion of the Committee that the American Medical Association should be the evaluating agent in the following fields: (1) medical education; (2) hospital standardization; (3) intern training, and (4) residency training. It is also the opinion of the Committee that there should be the closest possible liaison between the various American specialty boards and the American Medical Association. No other medical society or organization, as such, should be represented in this work.

The Committee is further of the opinion that courses in the basic sciences at the postgraduate level should be so coordinated that, while supplementing, they will not interfere with the program of training in clinical subjects.

The Committee believes that the hospital staff should be the sole deciding body as to who may practice medicine in the hospital either as a staff member or as having hospital privileges, since the certifying boards pass only on the ability of a man to perform work in his specialty.

The Committee also believes that the general practitioner does not show adequate interest in organized medicine, local, state or national, and that he should be urged to participate in all activities of organized medicine, both scientific and organizational.

"(7) Propose a long range program designed to overcome present insufficiencies and to meet future needs."

It is the feeling of the Committee that it is impossible rationally to formulate any long range program designed to overcome present insufficiencies and to meet future needs, unless this or a similar committee be continued to consider various phases of these problems as they may arise.

Respectfully submitted,

Karl A. Meyer, Chairman.
Paul A. Davis.
Reginald Fitz.
Winfred B. Harm.
Paul B. Magnuson.
Walter B. Martin.
Stanley R. Truman.

REPORT OF COMMITTEE ON NURSING PROBLEMS

Following the vote of the House of Delegates at the Annual Session in Atlantic City, Dr. E. L. Bortz, the President of the American Medical Association, appointed a committee of five to study the nursing problem in the United States. The members of the committee are Drs. Warren F. Draper, Howard K. Gray, Leland S. McKittrick, Donald W. Smelzer and Thomas P. Murdock. The Committee made a report of progress at the Interim Session in Cleveland in January 1948.

Your committee has gone into the matter exhaustively and has explored all of the available sources of information. During the course of the study, conferences have been held with representatives of the American Hospital Association, the American College of Physicians, the American College of Surgeons, the American Nurses Association and various other nurses' organizations.

We estimate that about 400,000 nurses will be required to care properly for the American people in 1949. This estimate is based on figures obtained from "Facts About Nursing, 1946 and 1947," and from the report of the President's Commission on Higher Education.

In 1940, 38,000 students were admitted to training schools; in 1941, 41,397; in 1942, 47,500; in 1943, 53,074; in 1944, 67,051; in 1945, 57,000, and in 1946, 30,899. It will be seen from this that during the period of the nurse cadet program the number was at an all time high. Immediately after the war was over the number dropped about 50 per cent. This may be explained on the basis of patriotism or stipend—probably the former.

It is estimated that there are about 342,737 nurses now available. A bulletin issued by the Women's Bureau of the U. S. Department of Labor indicates that 550,000 nurses will be required to care for the American people in 1960 if current standards of nursing are maintained. It also states that to accomplish this 50,000 nurses must be graduated each year from 1951 to 1960. The largest number ever graduated was 44,700 in 1947. This was the graduating class that entered training schools in 1944 with an admission number of 67,051. The report of the Bureau further states that "this is a realistic appraisal of possible attainment in a given period rather than what is ideally desirable." To obtain what is described as "ideally desirable" would require twice this number. These are staggering and alarming figures and tell American medicine a story of what is before it in the years to come.

There is one ray of hope before the committee. A questionnaire was sent, by the American Hospital Association, to 3,800 member hospitals in 1947. Two thousand, three hundred and seventy-six replied. Thirty-seven per cent of these replied that they did not need more nurses. The New England area was in greatest need.

The committee has studied the problem under three headings: (1) immediate relief, (2) proposed training for all grades of nurses in the future, and (3) the economic situation.

1. Regarding the first it has recommended that retired nurses, including married nurses, be requested to fill in during the emergency. Through the efforts of Dr. W. W. Bauer and with the generous cooperation of the National Broadcasting Company and the Advertising Council, a great deal of publicity has been given this subject. Many editorials have appeared in *Hygeia* and state and county medical journals stimulating doctors to aid in recruitment of student nurses and urging retired nurses to return to the fold. Personnel trained on the job have been advised and used to supplement nursing services. *Trained* practical nurses under supervision are being used. Hospital administrators have been requested to use nurses only in nursing duties and to assign other work to auxiliary personnel. It is the feeling of hospital administrators and directors of nursing schools that the situation has begun to show improvement and that it is easier now to obtain nurses in various grades than it was one year ago. The Hospital Career Campaign for the recruitment of student nurses for 1948 gives promise of an increased student nurse enrollment.

2. Under the second heading, which relates to the proposed *training of all grades of nurses in the future*, your Committee is prepared to make definite and concrete recommendations. We have investigated and studied carefully the question of bedside nursing and the required training for this grade of nurse. We recommend two main classes of nurses: (*A*) professional nurses, and (*B*) *trained* practical nurses.

(*A*) *Professional Nurse.*—This group is to be subdivided into (*a*) nurse educators and (*b*) clinical nurses.

(*a*) Nurse educators are to be those with collegiate training and others who have shown an aptitude for teaching, administration and supervisory positions. These are to fill the positions of directors of nursing schools, teachers, department and clinical supervisors, public health nurses, etc. The training for these nurses should be collegiate training before entering the nursing field or combined collegiate and nursing training.

(*b*) The clinical nurse is to be comparable to the present day general duty or private duty nurse. Selected clinical nurses with an aptitude and ability for teaching may well be considered for some of the subordinate teaching positions. We recognize that there are many duties to be assigned to this grade of nurse which could not be filled by the *trained* practical nurse. We recommend that the course of training for the clinical nurse be reduced to two years.

(*B*) *The Trained Practical Nurse.*—Your committee has underscored the word *trained.* Unfortunately it seems to the committee, the term "practical nurse" bears the implication of no training. However, the term has already been written into the statutes of several states and a change of the name would be difficult. At the same time the committee feels that the name is not of major significance, but does feel, however, that it is very important that uniform standards of training and duties be established across the country. For this group your committee recommends one year of training made up of three months theoretical and nine months practical training. This can be accomplished completely in a hospital, or the three months theoretical training may be taken under a department of education and the nine months training in an acceptable hospital. Your committee feels that this group of *trained* practical nurses, under proper supervision of professional nurses and medical staff, will be able to do much of the routine bedside nursing now being done by professional nurses, but that the more delicate and intricate duties must be left to the professional nurse. We believe that sufficient bedside nursing care can be obtained economically and efficiently if the professional nursing staff is augmented by *trained* practical nurses. Provision should be made, and credits allowed, in selected cases, toward training for advancement from the grade of *trained* practical nurse to the grade of clinical nurse.

3. The last or economic problem presents certain features which should be corrected. Your committee urges that steps be taken to provide social security and retirement plans for all nurses. This is advised from the business and moral points of view. We also recommend that hospitals adopt a definite personnel policy, for all institutional nurses, with a view toward making salaries, hours, sick leave and vacations comparable to other fields of endeavor for women with equivalent education and training.

The committee recommends that the cost of essential special nursing care, to the patient, be covered by prepayment nursing plans or be tied into prepayment hospital and medical plans, if practicable.

The committee feels that the nurses innocently erred in their action in Atlantic City in 1946 when they voted to have their state organizations act as bargaining agents for them. They are members of a noble profession. They do not need bargaining agents. The term bargaining agent carries with it the implication to strike even though it is true that they have never gone on strike. Medical men, nurses, and other hospital employees have not the right to strike anywhere, any time. They are dealing with that most priceless possession—life itself. It is hoped that the nurses will correct this in the near future.

A permanent Conference Committee made up of representatives of the American Nurses Association and other nurse organizations, the American Hospital Association and the American Medical Association has been formed. The duties of this committee will be to study the problems common to all. Nursing problems are the most urgent and important at present. This committee might well be used to adjust any differences that any of the groups might have.

The committee wishes to thank Dr. E. L. Bortz, the President of the American Medical Association; Dr. Elmer Henderson and the Board of Trustees; Dr. Morris Fishbein, the Editor of The Journal, and the representatives of the American Hospital Association for their cooperation and aid in this study. The representatives of the various nurses' organizations have been very helpful to the committee. They are anxious to have this whole nursing problem solved and have cooperated fully. The committee expresses its gratitude for their aid.

And so we end, at least for the present, the study of the nursing problem and summarize it as follows:

1. It is estimated that about 400,000 nurses will be required to care for the American people in 1949. The committee feels that this can be accomplished.

2. Labor Department statistics indicate that about 550,000 nurses will be needed in 1960. To accomplish this about 50,000 nurses must be graduated each year between 1951 and 1960. This can be accomplished by the generous cooperation of all concerned.

3. The committee has proposed measures for the relief of the present situation and feels that much has been accomplished.

4. The committee recommends that changes be made in the present method of training nurses; that in the future nurses be made up of two main groups—the professional nurse and the *trained* practical nurse. The requirements, duties, and courses of training of both main groups have been outlined.

5. The economic situation has been reviewed and methods of correction suggested.

6. A permanent Conference Committee has been formed, made up of representatives of the American Nurses Association, the American Hospital Association and the American Medical Association.

7. The committee believes that this permanent Conference Committee will be the organization to implement your committee's recommendations and the recommendations that come from other interested groups.

Respectfully submitted,
Thomas P. Murdock, Chairman.
Warren F. Draper.
Howard K. Gray.
Leland S. McKittrick.
Donald W. Smelzer.

Supplementary Report of Committee on Rural Medical Service

Dr. F. S. Crockett, Indiana, presented the following supplementary report of the Committee on Rural Medical Service, which was referred to the Reference Committee on Medical Service and Prepayment Insurance:

The interest of farm people in their health problems is receiving increasingly widespread attention. In at least nineteen states, health councils on the state and community level have been organized under the stimulus and guidance of the medical profession. This cooperative activity of the medical profession with the laity in the promotion of public benefits will produce other advantages far beyond their immediate objectives.

The Board of Trustees has granted authority to this committee to employ a field secretary. The many existing organizations interested in promoting health measures need guidance in coordinating their activities in a common effort. In many states the assistance of this committee has been solicited. The members of this committee have given considerable time from their busy practices in furtherance of this objective. The demand has exceeded our limited ability. It is our hope that some one can be found able to represent us and with ample time to do a good job in portraying to our rural friends the active interest of the medical profession in the solution of their rural health problems.

The rural medical cooperative, as one form of prepaid medical care, should be organized to spread the costs of illness and hospitalization so as to prevent catastrophic, economic distress to its members. As a community effort to solve a local need without resort to governmental assistance when set up as a nonprofit insurance plan complying with the principles set down by the Council on Medical Service of the American Medical Association, it should then receive the support of the medical profession. Arrangements have been made for an early conference with representatives of the medical cooperatives to explore the possibility of mutual understanding of the problems involved. The Council on Medical Service and this committee will join in this meeting.

This committee was represented on the rural panel of the recent National Health Assembly at Washington and found opportunity to tell what the medical profession, through this committee, has accomplished in cooperation with the leaders of the major farm groups in helping our farm friends to help themselves.

F. S. Crockett, Chairman.
Norman H. Gardner.
H. B. Mulholland.
J. Paul Jones.
Allen T. Stewart.
L. W. Larson.
Fred A. Humphrey.
James F. Doughty.
Carll S. Mundy.
James R. Miller.
George F. Lull.

Proposed Amendment to By-Laws Re Committee on Rural Medical Service

Dr. Henderson presented the following statement regarding a proposed amendment to the By-Laws, which was referred to the Reference Committee on Reports of Board of Trustees and Secretary:

The Board of Trustees feels that the Committee on Rural Medical Service is, according to the Constitution and By-Laws, and logically, a function of the Council on Medical Service. Because it is at present in the formative stage and the Board does not wish to interfere with its development, it is being continued in its present status, but its formative plans should be completed within the next year, at which time it should be incorporated in the Council.

It is suggested that the By-Laws be amended to read that in addition to the regular members there shall be one additional member,. appointed by the Board of Trustees, who shall be Chairman of the Committee on Rural Medical Service.

Dr. Henderson asked permission to present in Executive Session a Supplementary Report of the Council on National Emergency Medical Service, which was granted.

Address of Rear Admiral C. A. Swanson (MC), U.S.N.

Dr. Henderson presented Rear Admiral C. A. Swanson (MC), United States Navy, who spoke as follows:

Honorable Chairman and Fellow Delegates: The present trend of world conditions has for some time been ominous and continues so. We hope and pray for the light of reason and common sense to dissipate the miasmic clouds of doubts, dogmas and differences, dependent on divergent political ideologies among nations. Meanwhile, every intelligent and thoughtful person in this nation would, I am sure, regard as foolhardy a failure on our part to be prepared for the worst. At no time in our history could we less afford to relax vigilance. I behooves civilian and military medicine, as never before, to go forward in thorough cooperation and complete understanding of the problems peculiar to both. Your thoughtful and sustained efforts toward arriving at workable solutions to these problems in the past have been deeply appreciated. Your continued help is sincerely solicited.

Your able support toward obtaining medical components at the highest level of planning, such as the National Security Resources Board, the Research and Development Board, the

Staff of the Joint Chiefs of Staff and the Munitions Board, will enable medical personnel to be more instrumental in formulating advance plans which include the distribution of medical care, as well as more widespread indoctrination in the expected possibilities as to required preparedness, anticipated duration and expected casualties.

The advent of new and fantastically more destructive weapons of war makes it mandatory that our ever deficient wealth of medical care be apportioned most carefully and planned with every caution. The Bureau of Medicine and Surgery is in wholehearted accord with the saving of medical officer manpower by such means as delayed "call-up" until actual time of need, deletion of protracted unnecessary military indoctrination, proper classification as to specialties, reasonable rotation between combat and rear areas of duty and rigid scrutiny of any possibility of overstaffing in any theater.

We fully concur in the deferment of induction of premedical, medical and scientific students, as well as medical professors and research scientists. This Bureau is, moreover, keenly and profoundly mindful of the absolute essentiality of taking into account the need of civilians in any plan dealing with the nation's medical resources. Any program which would be deficient on this score, would be fatally deficient.

The Medical Department of the Navy, we believe, has presently established an efficient and effective medical officer training program. We have at the present time 187 interns, 288 resident physicians, 99 medical officers undergoing instruction in civilian schools and naval hospitals. In addition to these, we have 30 medical officers undergoing instruction in naval medical specialties, such as aviation medicine, tropical medicine and submarine medicine. Our operating census of medical officers, exclusive of interns, is now 2,518. With your cooperation, the progress of this program has been excellent, but, unfortunately for the medical department, too many of these medical officers return at an early date to civilian life and the process begins again. To give you an idea of the cost of this type of program, we plan to expend, in the fiscal year 1949, $250,000 for courses in civilian schools and approximately $800,000 for the employment of civilian consultants to lead the training program and maintain high professional standards.

There are other facets to our problems which I desire to mention. Medical officers in the Navy are all too frequently considered numerically in relation to active duty personnel, whereas the medical department has many responsibilities not always related directly to active duty strength. Our medical officers afford a considerable measure of medical care to the dependents of service personnel, which number approximately 500,000. To visualize the portion of medical care that is afforded to these dependents, we now furnish about 1,250,000 office calls per year, with 40,000 home visits, 55,000 hospital admissions and 22,000 deliveries per year. We also afford care to approximately 50,000 fleet reserve and retired personnel. We furnish industrial medical care, plus treatment of emergency illnesses to about 340,000 civilian employees of the Naval Establishment. We have an average of approximately 4,000 Veterans Administration beneficiaries in our naval hospitals. We operate an outpatient clinic in Philadelphia for the Veterans Administration, affording about 125,000 treatments per year. The island natives of the Pacific Trust Territory, numbering 100,000, are also furnished medical care by our department. There are many other minor requirements demanding personnel with medical training, such as research, preventive medicine, medical preparedness planning and training of enlisted personnel. Furthermore, the nature of the assigned duties to isolated ships and stations often requires the presence of a medical officer despite the limited service personnel on board.

During the prolonged and at times heated debate with reference to the recently enacted Draft Law, there was considerable discussion and haggling over the ratio of doctors to the personnel under their care. With the sincerest kind of respect for those who were the leading persons concerned on this score, I must say that their views were not based on a sound understanding of the premises on which our ratio is based. Neither were they aware of the fact that the formula which may be applicable to the Army is not applicable to the Navy, and why this is true. We do not claim that we have too much work to do—that we have bitten off more than we can chew. We want to do all the work that we are doing and more—and by so doing we make a better medical department. It is better for those who comprise the medical department and it is better for the personnel of the Navy and other personnel which it serves.

Gentlemen, I point out the foregoing details so that you may be more thoroughly informed of the full picture within the service. The Navy, of which I have the honor to be Surgeon General, is the nation's Navy. Those whose lot it now is to guide the destinies of the Medical Department of the Navy realize that this nation must go forward if it is to survive. There is but one alternative—that is to go backward—to decline and fall. The armed forces must go forward with the nation. What is true for a whole organization is equally true for a component part of that organization. Therefore, the medical departments of the armed forces must keep pace not only with the progress of the military or naval forces, of which they are an important part—indeed, a vitally essential part—but with civilian medicine as well. And I want to say that not only do we have a responsibility toward civilian medicine, but civilian medicine has a real and solemn responsibility toward us. The Draft Act has passed. To what extent its language will be interpreted to provide for the drafting of doctors is still a moot question. I regret that the drafting of doctors should be necessary. The thought was distasteful to many—it was distasteful to me—but as head of an organization whose paramount mission is the protection and preservation of the health and the treatment of disease and injury, of members of the Navy and Marine Corps and their dependents, I am, of course, acutely aware of the absolute necessity for an adequate number of doctors. Here is where organized civilian medicine, under the care and able leadership of the American Medical Association, comes in. If American medicine were *so organized that it could guarantee* the armed services all the doctors needed, and the collaboration of civilian and military medicine were what it should be, the drafting of doctors need never come up. I hope that American medicine and the medical departments of the armed services are so organized and that its organization and rapport are such as to make this desideratum realizable. To the end that this may be accomplished, I want humbly to ask the offices of this leading agency of American medicine to come to our aid in this our hour of desperate need.

Address of Dr. R. Scott Stevenson

Dr. Henderson presented Dr. R. Scott Stevenson, London, England, who presented the following address:

MESSAGE FROM THE BRITISH MEDICAL ASSOCIATION

I am very glad to have the privilege and pleasure of conveying to you, at the request of the British Medical Association, most friendly greetings from the profession in Britain, and of expressing the warm thanks of the British Medical Association for the encouragement which it has received from your sympathy and good wishes in its recent struggle against the threat of state domination of medicine. I believe that you share our view that the conversion of medical practitioners into a corps of salaried medical officials, employed by the State, would be against the best interests of our profession and against the best interests of all whom it is the privilege of our profession to serve. *You may therefore feel that our successful fight to prevent the new Health Service Act from being used as a means of introducing a whole time state salaried service merits your commendation and that we have gained a victory for freedom which is of importance to the profession, not only in Britain, but wherever freedom is prized.* We have certainly been able to provide an interesting demonstration of the power of a *united* profession to force a change of mind in the most obstinate and bellicose of politicians.

In Britain we are short of professional personnel, buildings and equipment, and many years must pass before our new health service can become fully effective. You will no doubt watch its development with keen interest. The active participation of your Association in the proceedings of the World Medical Association is a source of great satisfaction to us in Britain, and we hope that both medical science and medical administration may benefit from ever closer ties between the doctors of our two countries.

I bring you from the British Medical Association most cordial wishes for the success of your present deliberations and for the continued prosperity of the American Medical Association in the years to come.

Address of Dr. H. B. Washburn, St. Paul

Dr. Henderson presented Dr. H. B. Washburn, St. Paul, President of the American Dental Association, who addressed the House as follows:

MUTUAL COOPERATION

American Dental Association Officially Opposed to Undesirable Federal Programs Just as Much as Is the American Medical Association

Our program of approach is based on policy of having ready, when we oppose, something which we think is better. Mere opposition through criticism is, in our opinion, a good way to get into the bad graces of people in and around Congress.

In my interview with President Truman I stressed the need of our knowing about federal health plans right from the beginning, rather than after they are well under way or actually before Congress. He agreed that our experience and training in the front line of health service should make our assistance in planning such measures mandatory.

This interesting idea has come out of my several conferences with the President and other high officials in Washington. They want able men to represent us, medical and dental, but too often the men we delegate have become slightly arrogant in their attitudes because of their professional success. Also, such men, it is pointed out, are high fee men, and for them to consider honestly and justly the plight of persons for whom any federal health measure is being considered seems to be difficult. The suggestion is made that perhaps we are overlooking the help that we need by not selecting men who practice in small communities, and especially some who practice in localities of widely separated population.

Let us not forget that both associations have committees known as medical dental relations; suppose we try to give them more to do.

There seems to be some truth in the ideas one hears going over the country as your president and I have this past year, that with our high membership of persons all trained in some branch of the health service we should be closer knit, each within our own association and between the two associations. In other words, we are not making the most of this splendid membership. Why not give a little more thought to this angle and, with the public's welfare first in our thinking, close ranks and make a militant approach to the problems that our political brethren are so anxious to solve for us, and in too many cases without any help from us.

Dr. Arthur J. Bedell, Section on Ophthalmology, moved that the House follow the suggestion of the Speaker that the Reference Committee on Executive Session meet and hold deliberations in executive session. The motion was seconded by Dr. H. B. Everett, Tennessee, and carried.

After the Speaker announced that it was his opinion that all matters referring to the Red Cross Blood Bank should naturally fall to the Reference Committee an Emegency Medical Service, it was moved by Dr. Charles H. Phifer, Illinois, seconded by Dr. H. B. Everett, Tennessee, and carried, that the Reference Committee on Emergency Medical Service conduct its hearings in executive session.

REPORT OF SECRETARY

Dr. George F. Lull, Secretary, presented the report of the secretary as printed in the Handbook and then read a statement as follows:

LABOR SITUATION

The changed process by which The Journal is now being produced, and the changed appearance of the Handbook of the House of Delegates and of the program of the Scientific Assembly, are the result of a work stoppage in the composing room of the printing plant of the Association. This work stoppage has been in effect officially since March 8, but actually since shortly after the first of the year. This work stoppage is not, as implied by the two letters sent to each of you by the union affected, due to the truculence and antiunion attitude of your headquarters officials but is a symptom of a condition that unfortunately is common in the Chicago area, both in the newspaper and in the so-called job or publishing fields of the printing industry. This condition is not of our making, nor is it of the making of the newspapers or of the job printers of Chicago.

A brief statement of the history and background of this dispute, of our printing operations and of our relations with all the printing craft unions seems indicated.

In the issuance of our publications the Association has as employees members of the following unions: (1) Chicago Typographical Union no. 16, a component member of the International Typographical Union; this union has jurisdiction over our composing room; (2) the Chicago Stereotypers' Union no. 4, a component member of the International Stereotypers' and Electrotypers' Union; (3) Chicago Printing Pressmen's Union no. 3, subordinate to the International Printing Pressmen and Assistants' Union of North America; (4) Franklin Union no. 4, affiliated with the International Printing Pressmen and Assistants' Union of North America; (5) Chicago Paper Handlers' Union, Local no. 2, an affiliate of the International Printing Pressmen and Assistants Union of North America; (6) Bookbinders' and Paper Cutters' Union of Chicago, no. 8, a member of International Brotherhood of Bookbinders; (7) Bindery and Specialty Workers' Union, no. 182 (so-called miscellaneous bookbinders' help), affiliated with the International Brotherhood of Bookbinders; (8) Bindery Women's Union, no. 30, affiliated with the International Brotherhood of Bookbinders, and, finally, (9) Chicago Mailers' Union no. 2, affiliated with the International Typographical Union. These various unions admittedly differ in the skills required in the performance of their duties, and over the years certain monetary differentials in their compensation have been generally recognized, though obviously this is an extremely delicate point. In any event, any disturbance in these differentials is apt to cause upheavals in the industry. Possibly, and at least in practice, the highest scale of wages is paid to the so-called compositors, the union that has written the two letters to you, to the pressmen and to the stereotypers. Their scales are, for practical purposes, roughly equivalent.

Let me emphasize, then, that the unions with which we deal are affiliated with four different international unions—the International Typographical Union, the International Printing Pressmen and Assistants' Union of North America, the International Brotherhood of Bookbinders and the International Stereotypers' and Electrotypers' Union. Now traditionally the job or commercial printing industry in Chicago has been dealing through a trade association with these unions on the basis of contracts of a year or more duration. Our contracts with all of these unions expired as of Dec. 31, 1947.

Shortly after the enactment of the Taft-Hartley Act in July 1947, the International Typographical Union in convention promulgated a policy that forbade its local unions from entering into contracts of any specified term with employers, attempted to impose unilateral conditions of employment on employers terminable in effect on the will of the union, and was designed to effect certain conditions of employment made unlawful by the new law, such as continuance of the closed shop and the refusal to execute so-called struck work. The other international unions indicated and followed a policy of complying with the new law. Before Jan. 1, 1948, The Franklin Association of Chicago, which is a trade association of employers that concludes contracts with the unions that are binding in the Chicago area, concluded contracts with the several press and bindery unions, strictly in compliance with the law and calling for a maximum raise in the weekly wage scale of $6. These unions have honorably and loyally abided by their contractural commitments. The International Typographical Union, particularly its local representing the compositors, refused to conclude any lawful agreement and prior to March 27 or 28, 1948, insisted on a unilateral arrangement that was, in the opinion of the industry, unlawful and unconscionably onerous. Without making this statement too long, suffice it to say that because of the failure of the newspaper publishers to comply with the conditions, Chicago Typographical Union no. 16, on Nov. 24, 1947 struck the Chicago newspapers. They are still on strike.

Meanwhile, the job printers in Chicago continue to negotiate with this union. The union continued to work in job shops after Jan. 1, 1948 on the expiration of their contract, but beginning Jan. 16, 1948 by what in effect was central direction, the job printers refused to work overtime, and a series of crippling slowdowns occurred. If an employer agreed to operate under the unilateral conditions dictated by the union, which included a basic weekly scale of $95 for a thirty-six and one-fourth hour work week (an increase of $14.89 a week over the scale called for in the expired contract), overtime work was permitted, all the help was supplied that the employer required and full production was assured. If an employer refused to bow, operating conditions might at any time become chaotic and did so become in many plants for extended periods of time. Conditions in the composing rooms of Chicago rapidly became worse in February. In late February the President of the International Typographical Union, Mr. Woodruff Randolph, told the job printing employers of Chicago in an address to a meeting of the members of the Franklin Association that he planned no strike in Chicago but that unless the union proposals were acceded to there would be chaos in Chicago printing plants. During the week ending Monday noon, March 8, *no work of any description* was forwarded from the composing room of the Association to the stereotyping room of the Association and it became a foregone conclusion that The Journal of the American Medical Association for March 13 would not be issued on time, since without type from the composing room there obviously could be no stereotyping, no press work, no bindery work and no mailing. The Association had no rational alternative but to close its composing room until conditions could be restored to normal. This course had been adopted beginning March 3 by practically all of the larger printer employers in the Chicago area because of slowdowns and the failure of printing employees to execute work. As can be seen, the American Medical Association was not alone in this move—it was in fact late in the move, and by the end of March 10 job composing rooms employing over 2,000 printers were closed.

The situation city wide now stands practically as it was March 10. About 1,500 men on the newspapers and about 1,600 to 2,000 men (figures are not exactly determinable because of job transfers to other towns and other shops) in the job shops are out of work. It is difficult to tell the exact number.

On March 27 a federal judge in Indianapolis issued an injunction which had the effect of inducing the International Typographical Union to rescind the no-contract policy previously issued to its local unions. Promptly thereafter the Chicago job printers reopened negotiations with the union and met with the union on the average of twice a week during April and May. A legal contract was offered the union providing a weekly wage increase of $9.29 for a fifteen month term (precisely what was accepted by the union in New York City). The Union, however, has rejected the raise and apparently intends to force a settlement somewhere near a $14.89 a week increase. The employers have offered a weekly scale of $89.40. The Union wants $95. So far as the American Medical Association is concerned, any extension of the $89.40 means a corresponding increase to the other printing craft unions. When the dispute will be settled no one can presently foresee. The scale committee of the union and the employers are meeting Tuesday morning, June 22, and possibly a settlement may ensue within the near future.

The Journal has continued publication mainly through the use of the Vari-Type process. I must emphasize that that substitute process could not have eventuated into a journal without the active and loyal help and cooperation of all our other union employees and that in the view of the employees of the other eight printing craft unions and of their unions neither the American Medical Association nor the other job printing employers of Chicago are antiunion or out to destroy the union movement. In fact, relations with those unions are most cordial. After all, let us not be confused. We have at the Association about 300 union employees, about 230 are now working, are walking through picket lines and are, I am sure, proud to be employees of the American Medical Association.

I desire to express the pride and satisfaction that the Board has, that in spite of the difficulties encountered, which difficulties are beyond all our previous experience in our printing operations, essential printing operations at headquarters have been carried on and our publications still are being issued.

NOMINATIONS FOR AFFILIATE AND HONORARY FELLOWS

Affiliate Fellows

The Secretary, Dr. George F. Lull, presented nominations for Affiliate Fellowship which were referred to the Council on Scientific Assembly for recommendation.

Honorary Fellows

Dr. Lull also presented a list of nominations for Honorary Fellowship and was informed that since there was a question of suspending the By-Laws this matter would have to be introduced under New Business and not acted on until tomorrow, but that at this time the applications should be referred to the Council on Scientific Assembly for recommendation. They were so referred.

INTRODUCTION OF ASSISTANT SECRETARY, DR. ERNEST B. HOWARD

Dr. Lull introduced to the House the Assistant Secretary, Dr. Ernest B. Howard, who spoke as follows:

Mr. Speaker, Members of the House: I would simply like to take this opportunity to tell you what an honor it is to me to be a member of your headquarters staff and to assure you that I shall do everything in my power to carry out the responsibilities.

Report of Committee on Intern Placements

Dr. William Bates, Chairman, presented the following report, which was referred to the Reference Committee on Medical Education:

The Committee on Intern Placements was appointed by the Speaker of the House after the last meeting of the House of Delegates in January 1948. The appointment was the result of a resolution from New Jersey presented by Dr. Hilton Read of Atlantic City, and modified by the Reference Committee to read:

> Whereas, The number of positions for intern training in approved hospitals exceeds by large numbers the available interns; and
>
> Whereas, It is becoming increasingly difficult each year for approved hospitals and those hospitals desiring approval to secure interns from approved medical schools; therefore be it
>
> *Resolved,* That the Speaker of this House appoint a special Committee on Intern Placement consisting of five members, including two general practitioners, (*a*) to study the supply and distribution of interns with particular emphasis on furthering interest in general practice, (*b*) to cooperate with the Council on Medical Education and Hospitals and other interested agencies in an effort to arrive at a method leading to a better distribution of interns and (*c*) to present a report of its findings and recommendations to this House at the annual session in 1948.

Since the appointment, members of the committee have consulted teachers, medical school and hospital authorities, interns, residents and many practicing physicians.

On Saturday, June 19, 1948, this committee met with the Joint Intern Committee representing the Association of American Medical Colleges, the American Medical Association, and the Catholic and American Protestant Hospital Associations, and three representatives of the Council on Medical Education and Hospitals. Besides the members of this committee there were present:

Father John Barrett—President-Elect of Catholic Hospital Association of United States and Canada.

F. Stanley Howe—Director, Orange Memorial Hospital; Chairman American Hospital Association Committee on Internships.

Charles T. Dolezal, M.D.—Secretary, Council on Professional Practices of the American Hospital Association.

J. A. Curran, M.D.—President, Long Island College of Medicine; Chairman of the Committee on Internships and Residencies of the Association of American Medical Colleges.

Council on Medical Education and Hospitals: Donald G. Anderson, M.D., Secretary; Victor Johnson, M.D.; E. H. Leveroos, M.D.

As a result of these deliberations we wish to present the following recommendations:

We recommend that hospitals and medical schools which do not cooperate with the Plan for Uniform Intern Placement be reported to the Council on Medical Education and Hospitals of the American Medical Association for investigation and appropriate action.

(Plan for the Year 1948-1949 for Internships Beginning July 1, 1949:

1. Applications and credentials to be submitted only through the dean's office to hospitals, with the date for filing applications and release of credentials by the medical schools set at Oct. 15, 1948. Credentials ordinarily will consist of an executed application blank and a letter from the dean but do not preclude such letters from members of the faculty as they may wish to write, unsolicited by the candidate.

2. Applicants may visit hospitals and be interviewed by hospital intern committees, but the hospital administration shall not commit the hospital or obligate the applicant, or potential applicants, before Nov. 15, 1948.

3. No intern appointments shall be made prior to Nov. 15, 1948 from applicants who are members of the senior class in medical school. Hospitals may decline an applicant at any time.

4. Applicants shall accept or reject hospital appointments before midnight of Nov. 18, 1948.

5. These regulations shall apply only to undergraduate medical students who have not completed the fourth year of their medical school course.)

(Contemplated Changes in 1948 Uniform Intern Placement Plan. The Committee moved that item 3 of the plan be amended to read:

"No intern appointments shall be tendered prior to Nov. 15, 1948 to applicants who are members of the senior class in medical schools. Notice by telegram is preferable. Hospitals may decline an applicant at any time."

Also that item 4 of the plan be changed to read:

"Applicants shall send acceptances or rejections of appointments so that they are received at the hospitals by midnight of Nov. 18, 1948; but commitments by applicants shall not be required prior to that time.")

Secondly, in the interest of promoting general practice and better to prepare a physician to choose a specialty, we recommend that all specialty boards require at least one year of approved rotating internship before allowing a physician to start his specialty training.

Thirdly, we recommend that an approved rotating internship shall be of one or two years' duration; should include an educational training program in medicine, both organic and functional; obstetrics, pediatrics and surgery with especial emphasis on diagnosis under the supervision of a qualified educational director of interns. More of these internships should be for a term of two years. The specialty boards should be requested to give credit toward certification for work in their respective fields during the second year.

Fourthly, we recommend that hospitals at present approved for internship should be reappraised on the basis of their educational program for interns.

Fifth, we recommend that any hospital which does not provide an adequate educational training program for interns may be approved for general residencies for graduates who have completed an approved, rotating internship of at least one year.

Lastly, being mindful of the difficulties involved because of the differences in medical school requirements, the differences in state laws, the differences in requirements of specialty boards and the differences in hospital regulations and organizations, we recommend that the Council on Medical Education and Hospitals be and it is hereby instructed immediately to begin implementaton of these recommendations and to report at the next session of the House of Delegates the progress toward accomplishment of each of these recommendations.

Respectfully submitted,
William Bates, Chairman.
Deering G. Smith.
Mather P. Pfeiffenberger.
B. R. Kirklin.
Wilburt C. Davison.

REPORT OF JUDICIAL COUNCIL

Dr. E. R. Cunniffe, Chairman, presented the report of the Judicial Council as printed in the Handbook, and a proposed Revision of the Principles of Medical Ethics, a mimeographed copy of which had been sent each delegate.

The Speaker ruled that the House would consider the proposed revision of the Principles of Medical Ethics section by section as a Committee of the Whole, after which the House, sitting as a Committee of the Whole, considered the proposed revision section by section, recommending amendments to certain sections.

The House as a Committee of the Whole recessed at 1 p. m., to reconvene at 2:30 p. m.

Monday Afternoon, June 21

The House as a Committee of the Whole reconvened at 2:30 p. m., with the Speaker, Dr. R. W. Fouts, presiding.

Dr. E. R. Cunniffe continued with the reading of the proposed revision of the Principles of Medical Ethics, and the Committee of the Whole, after considering each section, voted to recommit the entire proposed revision to the Judicial Council, on motion of Dr. Lowell S. Goin, California, seconded by Dr. Mather Pfeiffenberger, Illinois, and carried.

Report of Joint Committee for the Coordination of Medical Activities

Dr. Ernest E. Irons, Chairman, presented the following report of the Joint Committee for the Coordination of Medical Activities, *a mimeographed copy of which had been given each delegate*:

Four meetings of the Joint Committee for the Coordination of Medical Activities have been held since the last report was made to the House of Delegates at the Atlantic City Session. Matters discussed at these meetings have followed the general trend of medical affairs as they have developed during the year. The Joint Committee is a forum in which the opinions and ideas of its members, who represent a wide variety of interests in the medical field, are discussed freely and without prejudice.

Reports of the discussions at the meetings have been published in The Journal of the American Medical Association, and it is evident from correspondence received that these reports are widely read.

The Joint Committee is made up of representatives of the American Medical Association, the American College of Physicians and the American College of Surgeons, and of liaison members who represent the following organizations:

Advisory Board for Medical Specialties.
American Dental Association.
American Hospital Association.
American Pharmaceutical Association.
American Red Cross.
Association of American Medical Colleges.
Catholic Hospital Association.
Federal Security Agency.
Federation of State Medical Boards.
Office of the Surgeon General, U. S. Army.
Bureau of Medicine and Surgery, U. S. Navy.
U. S. Public Health Service.
Veterans Administration.

During the past year the committee has discussed such diverse questions as the Hospital Survey and Construction Program, the status now and in the future of the general practitioner, nursing problems, the problems of medical service in rural areas, the World Medical Association, graduate education for Army and Navy medical officers, the desirability of a uniform Pharmacy Practice Act, the various phases of the American Red Cross Blood Bank Program, disposal of war surplus supplies and, recently, questions arising from the National Conference on Family Life, the National Health Assembly and the medical implications of the reorganization of federal agencies.

It is not the purpose of the Joint Committee to make official pronouncements on any of the matters which it discusses, nor, without specific authorization, to commit the organizations which its members represent to any course of action. Its chief function is to give opportunity for exchange of information and ideas in the varied fields of medical interest, and thus in most instances to arrive at a common understanding.

Respectfully submitted for the Committee,
Ernest E. Irons, Chairman.

REPORT AND SUPPLEMENTARY REPORT OF COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

Dr. H. G. Weiskotten, Chairman, presented the Report of the Council on Medical Education and Hospitals as printed in the Handbook and the following Supplementary Report, which were referred to the Reference Committee on Medical Education:

To the Members of the House of Delegates of the American Medical Association:

The Council on Medical Education and Hospitals respectfully directs the attention of the House of Delegates to the functions of the Council as set forth in the By-Laws of the American Medical Association, which state under Chapter IX, Section 2, that "The functions of the Council on Medical Education and Hospitals shall be:

"1. To investigate conditions of medical education including premedical, undergraduate and graduate medical education, hospitals and associated subjects and to suggest means and methods by which the same may be improved;

"2. To endeavor to further the realization of such suggestions as may be approved by the House of Delegates."

In the past, from time to time, resolutions have been introduced into the House of Delegates providing for the Council's conditioning its approval of the educational programs of hospitals and medical schools on the financial arrangements that such institutions enter into with the members of their professional staffs.

The Council is of the belief that it is not the agency of the American Medical Association to pass on such matters. The Council has been advised that conditioning approval of educational programs of hospitals and medical schools on any other basis than educational standards might be interpreted as illegal by the federal courts.

Respectfully submitted,
H. G. Weiskotten, Chairman.
Harvey B. Stone.
Reginald Fitz.
Russell L. Haden.
William S. Middleton.
Virgil P. Sydenstricker.
Victor Johnson.
Donald G. Anderson, Secretary.

REPORT AND SUPPLEMENTARY REPORT OF COUNCIL ON MEDICAL SERVICE

Dr. James R. McVay, Chairman, presented the Report of the Council on Medical Service as printed in the Handbook and the following Supplementary Report, which were referred to the Referencee Committee on Medical Service and Prepayment Insurance:

REPORT OF THE MEDICAL CARE SECTION OF THE NATIONAL HEALTH ASSEMBLY IN WASHINGTON MAY 1-4, 1948

American medicine came out of the recent National Health Assembly in Washington with added friends, prestige, influence and stature. Complete failure on the part of those who desired to force a recommendation for a national sickness compulsory insurance plan through the Assembly placed the American Medical Association and the state and county medical societies in a position to make available the benefits of the Ten Point National Health Program for the health of the American people already outlined by the House of Delegates of the American Medical Association. Those favoring the compulsory program, which would bind both patient and physician in government regulation and red tape, concentrated their efforts on the Medical Care Section, one of the fourteen sections of the Assembly.

Their failure was due to the action taken by the Steering Committee of the Medical Care Section among whose members were Dr. James R. McVay and Dr. Thomas A. McGoldrick.

The Steering Committee made the following recommendations, which were adopted by the section, but as there was no form of voting on resolutions and recommendations, the delegates were not committed officially in any way:

1. Adequate medical service for prevention of illness, care and relief of sickness and promotion of a high level of physical, mental and social health should be available to all without regard to race, color, creed, residence or economic status.

2. The principle of contributory health insurance should be the basic method of financing medical care for the large majority of the American people, in order to remove the burden of unpredictable sickness costs, abolish the economic barrier to adequate medical services and avoid the *indignities* of a "means test."

3. Health insurance should be accompanied by such use of tax resources as may be necessary to provide additional (*a*) services to persons or groups for whom special public responsibility is acknowledged and (*b*) services not available under prepayment or insurance.

4. Voluntary prepayment group health plans, embodying group practice and providing comprehensive service, offer to their members the best of modern medical care. Such plans, furthermore, are the best available means at this time of bringing about improved distribution of medical care, particularly in rural areas.

5. The people have the right to establish voluntary insurance plans on a cooperative basis and legal restrictions upon such right (other than those necessary to assure proper standards and qualifications), now existing in a number of states, should be removed.

6. High standards of service, efficient administration and reasonable costs require: (*a*) coordination of the services of physicians, hospitals and other health agencies in all phases of prevention, diagnosis and treatment; (*b*) effective cooperation between the providers and the consumers of such services.

7. A medical care program itself will not solve the health problems of the nation. It must be coordinated with all efforts directed toward providing the people with adequate housing, a living wage, continuous productive and creative employment, under safe working conditions, satisfying recreation and such other measures as will correct conditions that adversely affect the physical, mental and social health of the people.

8. There are areas on which the Planning Committee is not yet prepared to report. In the meeting of the Medical Care Section, differing views were expressed as to the method of effectuating the principle of prepayment or insurance. Some believe it can be achieved through voluntary plans. Others believe that a national health insurance plan is necessary.

The following conclusions were approved by the section relative to points to be measured in determining the effectiveness of prepayment plans in meeting the medical care needs of the people:

Points On Effectiveness

1. The extent to which a prepayment plan makes available to those it serves the whole range of scientific medicine for prevention of disease and for treatment of all types of illness or injury.

2. The proportion a plan covers of the population of its areas —local, state or national, as the case may be. (Cost in relation to ability to pay, restrictions on enrolment imposed by actuarial considerations, income level, age, conditions of employment, means of securing enrolment and collecting premiums.)

3. The degree to which a plan makes use of and encourages the development of a high quality of medical care for its subscribers. (Standards of personnel and facilities; organization of services; emphasis on prevention of disease; promotion of health, health education.)

4. The degree to which freedom and willingness to experiment with methods of payment and operation are encouraged in a plan.

5. The degree to which a plan succeeds in arranging amounts and methods of payment and conditions of participation that are satisfactory to physicians, hospitals, and others serving the plan's subscribers.

6. The extent to which efficiency and economy in the operation of a plan are achieved and encouraged by its basic policies and its administrative techniques.

7. The extent to which the individuals or board who carry the ultimate responsibility for a plan represent the interest of those entitled to service and those who are paying the cost, as well as of the physicians, hospitals, or others who are providing the services.

How To Improve Them

The following principles for the improvement of voluntary prepayment plans were listed:

1. There should be the freest opportunity for full cooperation among the providers and consumers of service in the establishment and the administration of medical care plans, provided that full control of the practice of medicine in the program must remain with doctors.

2. The Medical Care Section strongly urges the importance of joint conferences at the earliest possible date among representatives of the American Medical Association and of groups representing the consumers of medical care and services to study the question of establishment and administration of medical care plans.

Among those who represented the American Medical Association, state medical societies and allied groups in the Medical Care Section according to the official list were:

Dr. Thomas A. McGoldrick, Brooklyn, Vice-President, American Medical Association, and member of the Council on Medical

Service; Dr. James R. McVay, Kansas City, Mo., Chairman, Council on Medical Service; Dr. E. S. Bagnall, Chairman Legislative Committee, Massachusetts Medical Society; Dr. E. Dwight Barnett, Detroit, American Hospital Association; Dr. Gunnar Gundersen, State Medical Society of Wisconsin; Dr. Augustus P. Hauss, President-Elect, Indiana State Medical Association; Dr. Charles C. Hayden, Medical Director, Massachusetts Medical Service; Mr. John H. Hayes, New York City, American Hospital Association; Mr. Thomas A. Hendricks, Secretary, Council on Medical Service; Dr. Elmer Hess, Erie, Pa., President, Medical Society of the State of Pennsylvania, and member, Council on Medical Service; Mr. Jay Ketchum, Michigan Medical Service; Dr. Walter B. Martin, Norfolk, Va., member, Council on Medical Service; Dr. E. J. McCormick, Toledo, Ohio, member, Board of Trustees, American Medical Association, and Council on Medical Service; Mr. Maurice F. Norby, American Hospital Association; Dr. Frederick Quigley, Medical Society of New Jersey; Dr. L. Howard Schriver, Cincinnati, President, Associated Medical Care Plans; Dr. James Stevenson, Tulsa, Okla, Oklahoma State Medical Association; Mr. E. A. Van Steenwyk, Philadelphia Blue Cross Commission; Mr. Charles Crownhart, Secretary, State Medical Society of Wisconsin, and Mr. Howard Hassard, California Medical Association.

In addition, representatives of American medicine on the Executive Committee of the Assembly who spoke at the Medical Care Section were: Dr. George F. Lull, Secretary and General Manager of the American Medical Association; Dr. R. L. Sensenich, President-Elect, American Medical Association; Dr. Edward L. Bortz, Philadelphia, President, American Medical Association; and Dr. Paul R. Hawley, Executive Officer, Blue Cross-A. M. C. P. organizations.

Other physicians and representatives of state medical societies attended the section from time to time.

Much has been written on the Assembly, but the final evaluation of this meeting can not be made until Oscar Ewing makes his report to President Truman.

Arrangements for discussion meetings with spokesmen for labor and the cooperative groups have been made by the Council on Medical Service and the Committee on Rural Medical Service.

In conclusion, no report can be made on the Medical Care Section without mentioning the fair and impartial method in which Dr. Hugh Leavell of the Harvard School of Public Health, Chairman, handled the sessions.

COOPERATION WITH NATIONAL CONGRESS OF PARENTS AND TEACHERS

The National Congress of Parents and Teachers has submitted a request to the American Medical Association that representatives of the state medical associations meet with them, together with representatives of other health agencies, to consider problems relative to child health in their several areas. The Council on Medical Service recommends that we comply with this request.

REPORT ON JUNE 19 MEETING

The Council on Medical Service desires to report to the House of Delegates on a meeting held at the headquarters of the American Medical Association on June 19 at the call of the Council. This meeting consisted of the official representatives of thirty-six state medical associations and the Hawaii Territorial Medical Association.

This meeting was called to consider problems relative to prepayment medical and hospital care plans.

After a period of free discussion participated in by a majority of the representatives present, the entire matter was referred to the Council on Medical Service for further study.

The Council will carry on this further study with the Blue Shield Commission and report at a later date to the House of Delegates.

WASHINGTON OFFICE OF THE COUNCIL ON MEDICAL SERVICE

Several months have elapsed since the writing of the original report, and we take this occasion to report what has happened in the meantime.

The two National Health bills, S. 545 and S. 1320, and S. 140, which would create a Department of Health in the cabinet, have all been pigeonholed, and no action has been taken on the companion bills in the House. The Medical Examination of School Children bills, S. 1290 and H. R. 1980, have been pigeonholed in their respective Houses. The same is true of S. 1679—Murray and H. R. 4303—Dingell Dealing with the Extension of Disability Insurance.

Of the Public Health Unit bills (S. 2189—Saltonstall, H. R. 5644—Dolliver, and H. R. 5678—Priest,) only Mr. Dolliver's bill was reported out by the House Committee, but will very likely die there.

S. 2215, Bridges' bill providing for Research in Diseases of the Heart and Circulation, was passed by both Houses and has gone to the President. Two similar bills, H. R. 5087—Keefe and H. R. 5159—Smathers, were tabled by the House Committee in favor of S. 2215.

The House Appropriations Bill, which was discussed in the previous report, was passed by the Senate with very few changes, and awaits the signature of the President.

In the meantime, a Supplementary Appropriations Bill has been passed by both Houses, providing for an additional $1,000,000 for Assistance to States, General; $9,028,000 for Mental Health Activities; $1,115,000 for Emergency Disease and Sanitation Investigations and Controls in Alaska, and $22,000,000 to the Children's Bureau, which approximately equals the fiscal budget. An item of $75,000 was added to meet the expenses of preparing for the 1950 White House Conference on Children and Youth. When this bill was considered by the Senate, a provision was included which would have authorized the setting aside from the $1,000,000 allowed for Assistance to the States, General, of $132,000 to finance twenty-five four-year scholarships to be used in educating persons who would practice in areas where there might be acute need of physicians, as in the Negro areas of the South, the Spanish-American areas of the Southwest and sections where migrant rural workers locate. In conference the House refused to accept the inclusion, and it was dropped. The bill also provides for the transfer of the United States Employment Service from the Department of Labor to the Federal Security Agency. The President objected to this legislation and vetoed the bill. Congress overrode his veto.

The Dental Research Bill, H. R. 6726, authorizing the establishment of a Research Center under the Public Health Service, was passed by both Houses and awaits the President's signature.

The Senate Committee on Labor and Public Welfare authorized its Subcommittee on Health (Chairman, Senator Smith) to continue its study of public health problems and to make a report by March 15, 1949. The committee has a budget of $10,000.

Our membership in the World Health Organization has been established, and delegates are being named. We understand that the House Foreign Affairs Committee Chairman and probably one or two members of the Committee will attend the Conference.

The Senate passed its Selective Service Bill, S. 2655, in which under Section 4 (c) all physicians under the age of 45 would be required to register for service. When it was being debated Senator Murray and Senator Pepper offered an amendment to the effect that no doctors should be called if a sufficient number volunteered. Senator Gurney, Chairman of the Armed Services Committee, said that he would accept the amendment, but it was defeated. It provides for supervision by a civilian board and designates those who were educated at Government expense or who were deferred for their education as the first group to be called. The House bill, H. R. 6401, under Section 4 (c) also required physicians under 45 years of age to register. The Council on National Emergency Medical Service presented an objection to the Committees in both Houses to their respective bills, particularly to the provision requiring the registration of physicians. Neither Armed Services Committee was inclined to withdraw the registration provision.

More time was allowed for developing opposition to the House bill. State societies were asked to communicate with their Congressmen, and there is abundant evidence that they did so. From the Washington office a night telegram was sent to each Representative the day before the bill was to be discussed on the floor of the House. When the bill was reached on the floor, Congressman Anderson, of California, offered an amendment providing that no physician should be called up before three months after the enactment of the Act and then only if an adequate number did not volunteer. Congressman William Miller, of Connecticut offered another amendment, calling for the elimination of Section 4(c). He ably stated his reasons and was staunchly supported by Dr. Fenton, Congressman from Pennsylvania, Dr. Judd, Congressman from Minnesota, and Dr. Miller, Congressman from Nebraska. Many others enthusiastically supported the amendment, and it was adopted on an aye and nay vote. While writing this report, the House passed its bill, and a Joint Conference Committee will be named immediately to study the two bills. It is altogether possible that some changes will be made, and we have filed with the conferees of both committees a protest against the section requiring registration of physicians under 45.

Dr. Paul Hawley, who was a member of the National Security Resources Board, retired, and Dr. James Crabtree, from the Public Health Service, has been appointed to succeed him.

The Brookings Institution has published its full report of the study it made on "The Issue of Compulsory Health Insurance." It has also published a most informative study entitled "Governmental Costs and Tax Levels." At the last day of the hearings on the National Health Bills, Senator Murray announced that he would file with the Committee a critique, prepared by the Committee for Research on Medical Economics in conjunction with the Public Affairs Institute of New York City, analyzing and refuting some of the statements included in the Brookings study.

The Citizens' Advisory Council, an organization set up by the Senate Committee on Finance about a year ago (Chairman, Edward R. Stettinius) has filed two reports thus far. The first contained a twenty-two point program for expanding and modernizing the Social Security Law to provide ultimate protection for virtually everybody in the United States under the Acts (Old Age Retirement and Survivors' Insurance Program) with much higher benefits than at present. The second report recommended monthly cash benefits to workers deprived of earning power because of permanent and total disability. Monthly benefits would be paid under the Social Security Acts and Old Age and Survivors' Insurance Program when a person covered by the program becomes permanently and totally disabled.

Activities of the Washington Office have multiplied very rapidly during the last few months. The mailing list has now passed the twenty-one hundred mark. We have mailed to each Congressman a copy of Dr. Rappleye's "Comments Made at Hearing Before the New York State Commission on the Need for a State University," as well as the pamphlet entitled "Extension of Rural Medical Service" which was prepared by the Committee on Rural Medical Service. We also sent out to the Congressmen the National Health Program of the American Medical Association.

Our night telegram to the Congressmen, outlining our objection to the draft bill, was much appreciated, if the acknowledgements that we have received can be used as a guide.

In several instances during the past year when a committee has been studying an important bill we have written a letter from this office to each member of the committee outlining the Association's attitude toward its provisions. Our efforts in this activity have been so well received by the Congressmen that we shall do it more often in the future.

Respectfully submitted,

James R. McVay, Chairman.
Alfred W. Adson, Vice Chairman.
Edward L. Bortz.
H. H. Shoulders.
E. J. McCormick.
George F. Lull.
Jesse D. Hamer.
Elmer Hess.
Thomas A. McGoldrick.
Walter B. Martin.
Joseph S. Lawrence, Director,
Washington Office.
Thomas A. Hendricks, Secretary.

REPORT OF COUNCIL ON SCIENTIFIC ASSEMBLY

Dr. Henry R. Viets, Chairman, presented the Report of the Council on Scientific Assembly as printed in the Handbook, which was referred to the Reference Committee on Medical Education but which was later withdrawn from that committee and referred to the Reference Committee on Sections and Section Work.

Report of Special Committee to Study Revison of the Constitution and By-Laws

Dr. F. F. Borzell, Chairman, requested the Speaker, in view of the lateness of the hour and the necessity of introducing new business, to defer presentation of this report, and the Speaker declared that it would be deferred until after the presentation of new business.

NEW BUSINESS

Resolutions on Specialty Boards

Dr. Edward P. Flood, New York, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

Whereas, It has always been the admitted aim of the American Medical Association to encourage hospital affiliations for all physicians; and

Whereas, Many hospitals are taking restrictive measures with respect to staff appointments and promotions in order to satisfy requirements established by Specialty Boards; and

Whereas, These requirements of the numerous self-appointed and self-perpetuating specialty boards are often arbitrary, variable and discriminatory; and

Whereas, The accepted method of granting license to practice medicine and surgery is reserved to the various states and the right to practice a specialty, being a logical extension of this method, should be state controlled by standards set up through the various state societies and associations and their components; and

Whereas, It has been accepted as a first principle in the administration of American justice that a man be judged by a jury of his peers; and

Whereas, The Council on Medical Education and Hospitals of the American Medical Association, with the concurrence of the Advisory Board for Medical Specialties, has stated that

> "Hospital staff appointments should depend on the qualifications of physicians to render proper care to hospitalized patients as judged by the professional staff of the hospital and not on certification or special society membership"; and

Whereas, This entire problem presents a challenge to the ability of the American Medical Association to regulate itself with justice to all members and to advance the cause of Public Health and Welfare through the improvement of medical standards; therefore be it

Resolved, That the Medical Society of the State of New York through its delegates requests the American Medical Association to take measures to arrest and correct this inequitable situation until such time as means may be found to place certification of specialists on a more reasonable, democratic and local basis; and be it further

Resolved, That, failing to obtain cooperation from the various Specialty Boards and hospitals, the American Medical Association is requested to withhold recognition from those hospitals which make certification by a Specialty Board a necessary qualification for appointment or promotion on a hospital staff.

Proposed Amendment to By-Laws Re Citation for Distinguished Service

Dr. William Weston, Section on Pediatrics, presented the following amendment to the By-Laws, which was referred to the Reference Committee on Amendments to the Constitution and By-Laws:

CHAPTER VI.—BOARD OF TRUSTEES

Section 6. Citation for Distinguished Service.—The Board of Trustees shall create and establish an award, to be known as the Citation for Distinguished Service, which shall consist of a suitably engrossed citation. The Board of Trustees shall consider the merits of nominees for this citation who shall be persons not of the medical profession and who have by their cooperation and aid in the advancement of medical science, medical education or medical care contributed to the achievement of the ideals of American medicine. The Board of Trustees shall nominate to the House of Delegates on the first day of the annual session of each year not more than three persons with the qualifications on which the Board of Trustees bases its recommendation. The House of Delegates shall vote immediately by voice vote on each of the persons thus nominated.

The Board of Trustees shall be charged with the duty of preparing a suitable citation and with arranging for the conferring of these citations at such time as may seem suitable.

Resolution on Cancer Detection Centers

Dr. George W. Kosmak, New York, presented the following resolution, which was referred to the Reference Committee on Medical Education:

Whereas, The detection and diagnosis of malignant disease is an essential medical function and responsibility; and

Whereas, As the result of public and professional demands, centers and clinics for this purpose have been organized and are operating widely throughout this country; and

Whereas, There is need for standards of operation, procedure, equipment and particularly of adequately trained personnel for the conduct of these institutions on a more or less uniform basis; and

Whereas, It is also essential that distinctions be drawn in the operation of such clinics and centers between the detection and/or diagnosis of possible malignant disease; therefore be it

Resolved, That the American Medical Association through its appropriate body take steps to cooperate with the American Cancer Society and other agencies engaged in this activity, for the purpose of formulating standards of procedure and conduct in the operation of cancer detection and diagnostic centers and that the results of these studies be adequately publicized to those concerned, including the medical profession and the public.

Resolutions on Closer Integration of Medical Services of Army, Navy and Air Force

Dr. Joseph P. Henry, New York, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

Whereas, It is apparent that a much closer integration of the medical services of the Army, Navy and Air Force would lead to greater efficiency, increased economy and a higher level of medical care; and

Whereas, Studies of means and methods of this integration have been undertaken by certain agencies or committees of the government; and

Whereas, It is believed that these studies should be developed with the greatest possible speed consistent with sound planning; therefore be it

Resolved, That the House of Delegates of the American Medical Association is heartily in favor of this integration; and be it further

Resolved, That the House of Delegates of the American Medical Association requests that the President of the United States and the Secretary of National Defense develop immediately ways and means to further this integration; and be it further

Resolved, That a copy of these resolutions be sent to all members of the Armed Services Committees of both the Senate and House of Representatives.

Resolution On Blue Cross

Dr. C. B. Conklin, District of Columbia, presented the following Resolution, which was referred to the Reference Committee on Medical Service and Prepayment Insurance:

Whereas, During the past several years, employees of the American Medical Association have been covered by Blue Cross; and

Whereas, The Blue Cross found it necessary to increase its rates and, when its officials were questioned by officers of the American Medical Association with regard to further increases, could give no assurances that they would not occur; and

Whereas, The American Medical Association saw fit to withdraw its hospitalization coverage from Blue Cross, contracting with a commercial insurance carrier for hospitalization and medical service coverage for its employees; be it

Resolved, That the Medical Society of the District of Columbia deplores the American Medical Association's failure to support voluntary nonprofit hospital and medical care plans, believing it will greatly handicap these plans in the future. It recommends that the Board of Trustees of the American Medical Association instruct the Secretary and General Manager to negotiate with Blue Cross officials in an effort to reinstate the contract for the coverage of employees of the American Medical Association at the expiration of its present policy.

Resolution on Association of Interns and Medical Students

Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

Whereas, The Association of Interns and Medical Students and the Association of International Medical Students are exhibiting communistic tendencies in their organization; and

Whereas, The American medical profession is opposed universally to any organization which advocates the overthrow of the United States government by force and violence; and

Whereas, These intern organizations and medical students favor strikes that are upsetting to proper medical education; and

Whereas, It is said that these organizations have communistic affiliations; therefore be it

Resolved, That our Council on Medical Education and Hospitals be requested to investigate these organizations as to facts, tendencies, affiliations and objectives, and that a report of the findings of the Council be given to the House of Delegates at the earliest opportunity.

Resolutions on Hospital Exploitation of Professional Medical Services

Dr. J. W. Bird, Maryland, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

Whereas, The practice of radiology, pathology and anesthesiology is recognized by the American Medical Association as the practice of medicine; and

Whereas, Leading hospital organizations of the United States have recognized the fact; and

Whereas, There is a tendency on the part of certain hospital administrators to utilize the profits resulting from the operation of these departments in their institutions; and

Whereas, This constitutes exploitation of professional medical services; and

Whereas, This is contrary to medical ethics; therefore be it

Resolved, That it is the sense of the Council that this practice should be condemned; and be it further

Resolved, That the Section on Radiology of the Baltimore City Medical Society urge the House of Delegates of the American Medical Association to instruct the Board of Trustees of the American Medical Association to direct the Council on Medical Education and Hospitals to refuse approval for training of residents and interns of any hospital exploiting professional medical services.

Resolution on Approval of Hospitals

Dr. S. J. McClendon, California, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

Resolved, That the Board of Trustees of the American Medical Association and the Association itself, acting through this House of Delegates, cause the Council on Medical Education and Hospitals of the American Medical Association to add to its basic requirements for the approval of a hospital for intern and resident training the express condition that the hospital establish to the satisfaction of the Council on Medical Education and Hospitals that no unethical practices by doctors of medicine, the hospital itself or others have been permitted to exist or to take place within the hospital.

Resolutions on Medical Education

Dr. S. J. McClendon, California, presented the following resolutions, which were referred to the Reference Committee on Medical Education:

Whereas, The preservation of freedom is essential to progress and the continued complete separation of schools, (public and private) from the Federal Government is essential to the preservation of freedom; and

Whereas, Federal subsidization of medical students is clearly not a function of the Federal Government and would violate the Tenth Amendment to the Constitution; now, therefore, be it

Resolved, That the American Medical Association is unequivocally opposed to any invasion by the Federal Government into any phase of the schools or students of the country, except for the military academies of the armed services; and be it further

Resolved, That the American Medical Association is specifically opposed to the report of the Committee for the Improvement of Child Health of the American Academy of Pediatrics recommending federal support for pediatric education; and be it finally

Resolved, That minority specialty groups should be restricted by the American Medical Association from advancing and/or approving proposals affecting the interests of the public and the medical profession generally before proper endorsement by the American Medical Association.

Resolutions on Emergency Medical Service

Dr. Ralph B. Eusden, California, presented the following resolutions, which were referred to the Reference Committee on Emergency Medical Service.

Resolved, That the American Medical Association, through its Council on National Emergency Medical Service, its Board of Trustees and/or other appropriate bodies, councils or committees, offer its full services to the armed forces of the United States Government in planning orderly methods of selection and induction of medical officers for military and civilian service in case of need; and be it further

Resolved, That a survey of all physicians in the United States, its territories and possessions, be made, with reference to location, ratio of physicians to population, sex, age, health, dependency status, professional training, military service, holding of reserve commissions, probable availability for military service and any additional data which may be deemed advisable so that plans and methods may be considered and drawn up for determining availability for military and civilian service.

Resolutions on Hospitals and Medical Schools Engaging in the Practice of Medicine

Dr. Robert E. Schlueter, Missouri, presented the following resolutions, which were referred to the Reference Committee on Medical Education:

Whereas, There is an ever increasing tendency on the part of hospitals and medical schools throughout the United States to engage in the practice of medicine for profit; and

Whereas, This corporate practice of medicine is a professional evil second only in its consequences to socialized medicine; and

WHEREAS, Such practice constitutes not only exploitation of the medical profession but perhaps also of the patient; therefore be it

Resolved, That the House of Delegates of the Missouri State Medical Association in convention assembled condemns the practice of medicine for profit by either hospital or medical school; and be it further

Resolved, That our Delegates to the American Medical Association be instructed to present this information to the House of Delegates of the American Medical Association; and be it further

Resolved, That the American Medical Association remove every hospital engaged in the practice of medicine from its list of hospitals approved for internship and residency training; and be it further

Resolved, That the American Medical Association remove any offending medical school from its list of institutions approved for medical teaching.

Resolution on Life Insurance Fees

Dr. William F. Costello, New Jersey, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, The life insurance companies of the United States have been requested by various state medical societies, including the Medical Society of New Jersey, to increase the standard medical fee for regular life insurance examinations from $5 to $10, and to increase other medical insurance fees in like proportion; and

WHEREAS, These fees have not been changed in more than fifty years, and should be adjusted in recognition of changing economic conditions and advancing standards of medical practice; and

WHEREAS, This is a matter of national policy in which the action of single state societies is futile, and relief can be hoped for only by action of the American Medical Association; therefore be it

Resolved, That the House of Delegates of the American Medical Association request the Board of Trustees to negotiate with representatives of the life insurance industry with a view to obtaining a nationwide upward adjustment in the level of fees paid by life insurance companies to physicians for regular medical examinations and other medical services rendered on request of life insurance companies on behalf of their policy holders.

Resolution on Policy of Federal Children's Bureau

Dr. William F. Costello, New Jersey, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, The United States Children's Bureau administers Federal grants-in-aid to states operating tax-supported programs of service to crippled children; and

WHEREAS, These grants in-aid are made on the basis of a plan submitted by each state crippled children's agency as subsequently approved by the United States Children's Bureau; and

WHEREAS, In administering these grants-in-aid, the United States Children's Bureau has advised various states on standards of care including qualifications of various types of professional personnel who may render services in the state programs; and

WHEREAS, The United States Children's Bureau had adopted as its policy a recommendation of its Advisory Committee on Services for Crippled Children formulated by that Committee on October 10, 1936, and providing that:

> Only surgeons who are certified by the American Board of Orthopedic Surgery, or are eligible for such certification, should be approved by a State agency for surgical services for children suffering from orthopedic conditions.
>
> These surgical services include prescriptions for any prosthetic appliances which the orthopedic condition requires; and

WHEREAS, The observance of this policy by a State Crippled Children's Commission, as a prerequisite to its receiving federal aid, excludes many qualified orthopedic surgeons and general surgeons from rendering services for children suffering from orthopedic conditions and constitutes an arbitrary limitation on their right to practice medicine within the scope of their state licenses and their recognized professional qualifications; therefore be it

Resolved, By the House of Delegates of the American Medical Association that the Board of Trustees be directed to enter a formal protest against this policy with the United States Children's Bureau recommending to that Bureau that its policy be liberalized in such a way as to permit all Fellows of the American College of Surgeons, whether or not certified by the American Board of Orthopedic Surgery, to be approved by the respective state agencies for crippled children, in order that their signatures may be honored on reports of such cases and on prescriptions for prosthetic appliances required in the treatment of these patients.

Resolutions on Single Examination Acceptable to Armed Forces

Dr. Deering G. Smith, New Hampshire, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

WHEREAS, It is considered that in the examination of selective service candidates during World War II a great many physician man-hours were wasted by needless reexaminations of candidates; and

WHEREAS, The elimination of such waste of physician man-hours is highly desirable; therefore be it

Resolved, That the House of Delegates of the New Hampshire Medical Society is in favor of a single examination, acceptable to the armed services, in the event of the passage of a Selective Service Act or a Universal Military Training Program; and be it further

Resolved, That the House of Delegates of the American Medical Association be asked to take similar action and that its resolution be transmitted to the appropriate federal authorities.

Resolutions on Paying Physicians Engaged in Examinations for Armed Forces

Dr. Deering G. Smith, New Hampshire, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

WHEREAS, It is estimated that 1,200,000 candidates for Selective Service or Universal Military Training will be examined each year; and

WHEREAS, The examination of these candidates is in itself a large volume of work; and

WHEREAS, It is considered that the most equitable means of having this work done on a just basis is that it be done on a fee basis; therefore be it

Resolved, That the House of Delegates of the New Hampshire Medical Society recommends that physicians engaged in these examinations be paid for their work; and be it further

Resolved, That the House of Delegates of the American Medical Association be asked to take similar action and that its resolution be transmitted to the appropriate federal authorities.

Resolutions on Opposition to Amendment to Present Constitution, Article 8, Section 1

Dr. Allen H. Bunce in behalf of the Medical Association of Georgia, presented the following resolutions, which were referred to the Reference Committee on Amendments to the Constitution and By-Laws:

WHEREAS, The Medical Association of Georgia entered into a solemn covenant with other similar state, territorial and district associations to form the American Medical Association as it is now constituted; and

WHEREAS, This covenant is known as the reorganization act of 1902, as evidenced by amendments to the American Medical Association's Articles of Incorporation of 1897 as amended in 1902, known as the "Constitution, or Articles of Incorporation" of 1902; and

WHEREAS, Article 8, Section 1, of the present Constitution of the American Medical Association is a vital part of the aforesaid covenant; therefore be it

Resolved, That the Medical Association of Georgia, in convention assembled, hereby voices its opposition to any change in said Article 8, Section 1, of the present Constitution of the American Medical Association; and be it further

Resolved, That a copy of this resolution be sent to the Secretary, the Speaker of the House of Delegates and the Chairman of the Committee on Revision of the Constitution and By-Laws of the American Medical Association.

Resolution on Staff Personnel at Headquarters

Dr. Allen H. Bunce, Georgia, presented by title a Resolution on Staff Personnel at Headquarters, which was referred to the Reference Committee on Executive Session.

(To be continued)

FOREIGN REGISTRATION AT THE ANNUAL SESSION

Foreign registrations at the Annual Session in Chicago on the first day were 124; second day, 122; third day, 29, and the fourth day, 29, for a total of 304.

Here is a breakdown of the registrations:

South America	57
Central America	4
Canada	52
England	21
Philippines	14
Cuba	14
Mexico	11
Spain	10
China	9
Hawaii	9
Belgium	8
France	6
Australia	6
Sweden	6
South Africa	5
Switzerland	5
India	5
Czechoslovakia	5
Greece	5
Puerto Rico	4
Holland	3
Norway	3
Egypt	3
Hungary	2
Jerusalem	2
New Zealand	2
Palestine	2
Alaska	2
Scotland	2
Turkey	2
Netherlands East Indies	2
Iraq	1
Italy	1
Algeria	1
Yugoslavia	1
Nova Scotia	1
Japan	1
Denmark	1
Ireland	1
	289
Miscellaneous	15
Total	304

South America, 57: Argentina, 25; Brazil, 13; Chile, 7; Colombia, 1; Ecuador, 1; Peru, 6; Venezuela, 4.

Central America, 4: Canal Zone, 2; Guatemala, 1; Salvador, 1.

Registration at the Chicago Session

The total registration at Chicago was 11,963. Below are summaries by sections and daily by states:

Registration by Days and Sections

Section	June 20 & 21	22	23	24	25	Total
Internal Medicine	814	898	431	398	28	2,569
Surgery, General and Abdominal	470	661	358	357	16	1,862
Obstetrics and Gynecology	150	220	186	167	16	739
Ophthalmology	88	124	74	68	4	358
Laryngology, Otology and Rhinology	51	75	71	51	6	257
Pediatrics	97	128	127	82	15	449
Experimental Medicine and Therapeutics	26	26	12	5	1	70
Pathology and Physiology	65	91	58	46	3	263
Nervous and Mental Diseases	58	94	106	74	9	341
Dermatology and Syphilology	76	110	101	34	4	325
Preventive and Industrial Medicine and Public Health	72	107	57	61	2	299
Urology	54	65	40	64	3	226
Orthopedic Surgery	52	58	47	55	5	217
Gastro-Enterology and Proctology	125	200	55	11	3	394
Radiology	131	142	73	74	3	423
Anesthesiology	32	...	38	51	4	125
General Practice of Medicine	398	625	347	360	29	1,759
Miscellaneous Topics						
Session on History of Medicine	2	1	...	3	..	6
Session on Physical Medicine	38	20	8	7	..	73
Session on Allergy	24	16	28	6	..	74
Session on Diseases of Chest	142	54	32	30	..	258
Two or more sections or no sections marked	125	261	205	249	26	876
Total	3,070	3,976	2,454	2,256	207	11,963

Daily Registration by States

States	June 20 & 21	22	23	24	25	Total
Alabama	31	28	14	5	..	78
Arizona	21	19	6	1	..	47
Arkansas	18	17	5	2	..	42
California	222	172	44	27	4	469
Colorado	32	45	17	12	..	106
Connecticut	45	21	5	6	2	79
Delaware	3	9	2	1	..	15
District of Columbia	59	40	17	24	..	140
Florida	60	30	17	5	2	114
Georgia	28	43	13	9	..	93
Idaho	4	7	2	3	..	16
Chicago	357	871	587	660	53	2,528
Illinois at Large	104	329	205	448	31	1,217
Indiana	70	160	266	170	8	674
Iowa	54	89	44	53	5	245
Kansas	32	48	11	15	..	106
Kentucky	49	64	31	10	1	155
Louisiana	35	37	15	4	..	91
Maine	4	4	2	..	..	10
Maryland	43	43	28	15	13	142
Massachusetts	81	73	26	19	3	202
Michigan	156	190	117	113	7	583
Minnesota	83	80	51	53	13	280
Mississippi	13	15	5	4	1	38
Missouri	144	110	71	41	6	372
Montana	4	8	4	2	..	18
Nebraska	42	43	15	14	3	117
Nevada	4	3	..	..	..	7
New Hampshire	3	4	3	..	1	11
New Jersey	58	60	21	8	6	153
New Mexico	4	8	..	..	1	13
New York	304	207	152	45	4	712
North Carolina	31	24	11	10	..	76
North Dakota	5	15	2	4	..	26
Ohio	130	235	140	70	7	582
Oklahoma	31	39	20	11	1	102
Oregon	14	21	39	3	..	77
Pennsylvania	189	180	32	48	4	453
Rhode Island	11	10	2	2	..	25
South Carolina	12	17	3	2	..	34
South Dakota	4	11	2	3	..	20
Tennessee	48	64	11	16	2	141
Texas	123	100	46	47	2	318
Utah	18	10	3	3	..	34
Vermont	2	2	1	1	..	6
Virginia	18	40	10	10	1	79
Washington	26	28	13	8	..	75
West Virginia	29	32	10	3	..	74
	75	135	164	212	22	628
	4	2	..	..	..	6
Canada	22	23	..	7	..	52
Foreign	105	111	29	27	4	276
Hawaii	3	..	..	..	..	3
						11,963
Total	3,070	3,976	2,454	2,256	207	11,963

Washington Letter

(From Our Regular Correspondent)

June 30, 1948.

U. S. Delegation Attends First World Health Conference

The twenty-one persons representing the United States at the first World Health Assembly in Geneva, Switzerland, are headed by Dr. Thomas Parran as chairman. Additional delegates are: Dr. Martha M. Eliot, associate chief, U. S. Children's Bureau, and Dr. James R. Miller, American Medical Association. Five alternate delegates are: Dr. Francis P. Corrigan, political adviser on Latin America of the American Delegation to the United Nations at New York; James A. Doull, chief, Office of International Health Relations, Federal Security Agency; Dr. Wilton Halverson, director, California Public Health Service, San Francisco; Dr. H. van Zile Hyde, alternative U. S. Representative, interim commission, World Health Organization, and Durward V. Sandifer, deputy director, State Department, Office of United Nations Affairs. The following thirteen persons are advisers: Howard B. Calderwood, State Department, Division of United National Economic and Social Affairs; Nelson H. Cruikschank, American Federation of Labor; D. Albert W. Dent, president, Dillard University, New Orleans; Morton Kramer, chief of research and information for international health relations, U. S. Public Health Service; Mrs. David M. Levy, president, Citizens Committee of Children of New York City; Dr. James E. Perkins, managing director, National Tuberculosis Association, New York City; Miss Lucile Petry, director, Division of Nursing, U. S. Public Health Service; Alvin Roseman, U. S. Budget Bureau; Dr. Paul F. Russell, malariologist, Rockefeller Foundation; James S. Simmons, dean, School of Public Health, Harvard University; John Tomlinson, State Department, Division of United Nations Economic and Social Affairs; Col. Tom Whayne, U. S. Army Medical Corps, and Professor Abel Wolman, Johns Hopkins University.

Permanent Civilian Defense System Stresses Medical Care

Medical care during national emergencies is an important phase of the new civilian defense program. This was revealed when Civil Defense Director Russel J. Hopley said that he expects to complete by next month a plan for a permanent civil defense system affording protection for Americans against germ warfare, atom bombs and guided missiles. Members of the medical profession will be expected to provide leadership and trained personnel for this voluntary civilian program.

Funds for Health Institute

One of President Truman's last acts before adjournment of the eightieth session of Congress for the national political conventions was to sign the second deficiency bill, carrying funds for a wide variety of federal agencies. Among the projects was the provision of $1,000,000 for the new Heart Institute, part of the fund to be spent at the $40,000,000 research center and laboratory to be built soon at Bethesda, Md.

Agency Awards Funds for Nine Cancer Projects

Federal Security Administrator Oscar R. Ewing announced the awards of $162,073 in federal grants for nine cancer control projects. Largest was for $43,320 to the California Department of Public Health to establish a cancer training center at the University of California. With these awards a total of forty-six cancer control projects have been approved since last July 1. A total of $766,748 in grants is involved. In addition, three new grants totalling $1,134,368 have been made for cancer research. These go to Emory University, Atlanta, Ga.; the University of Rochester, Rochester, N. Y., and the University of Texas.

ARMY

RESERVE OFFICERS INVITED TO ACTIVE DUTY

In extending an invitation to Medical Department reserve officers to enter on tours of extended active duty, the Surgeon General announced that current requirements total 1,411 officers, who may be called during the month of June. These requirements, he said, are subject to increase in future months with Army expansion. More than half of the total officers required to fulfil the Medical Department quota will be nurses, of whom 320 are needed. The remainder are divided as follows: Dental Corps, 10; Medical Corps, 203; Veterinary Corps, 20; Medical Service Corps, 265, and Women's Medical Service Corps, 75. Virtually all officers to be recalled will be lieutenants and captains.

MEDICAL MEETING IN KOREA

At the monthly medical meeting of officers stationed in Korea at the 71st Station Hospital, May 10, a symposium was presented on the diagnosis and treatment of leprosy by Dr. Paul S. Crane, medical advisor to the Yosu Leprosarium, Southern Presbyterian Mission, and Dr. D. S. Lowe, medical advisor to the Taegu Leprosarium, Northern Presbyterian Mission. During the afternoon the officers were transported to the Pusan Leprosarium, which houses 250 lepers and where the comparative clinical results obtained in patients treated with "promin" (sodium p,p' diaminodiphenylsulfone - N,N didextrose sulfonate), with "diasone" (disodium formaldehyde sulfoxylate diaminodiphenylsulfone) and with chaulmoogra oil were demonstrated. Col. Charles P. Ward, Surgeon, U. S. Army Forces in Korea, presided at the business meeting. The next monthly medical meeting will be held at the 332nd Station Hospital.

PERSONAL

Dr. Lawrence S. Kubie, professor of psychiatry and mental hygiene, Yale University School of Medicine, New Haven, Conn., and Dr. John M. Lyon, professor of psychiatry, University of Colorado Medical School of Denver, have been appointed consultants to the Surgeon General of the Army.

AWARDS AND COMMENDATIONS

Capt. Edwin B. Anderson

The Army Commendation Ribbon was awarded on June 8 to Capt. Edwin B. Anderson, M. C., U.S.A. The citation read in part as follows: For meritorious rendition of services as Assistant Attending Surgeon, Regional and Station Hospital, Maxwell Air Force Base, Montgomery, Ala., from November 1946 to May 1948. Capt. Anderson consistently displayed intelligence, initiative and extremely high devotion to duty. Dr. Anderson graduated from Vanderbilt University School of Medicine in 1945 and entered the military service in July 1946.

NAVY

MEDICAL HISTORY OF WORLD WAR II

Capt. Louis H. Roddis (MC), Chief, Publications Division of the Bureau of Medicine and Surgery, has been invited to the conference of Official Medical Historians Liaison Committee at Oxford, England, August 3-7. The committee is a group of medical historians from various parts of the British Empire engaged in preparing an official medical history of World War II. Invitations have been extended to representatives of the U. S. Army also. The Liaison Committee met in Ottawa, Canada, last year, when Captain Roddis presented the program of the U. S. Navy Medical History. The meetings of the group are called to exchange views and to discuss problems pertinent to the production of the official World War II medical histories of the United States and the British Empire.

OFFICERS APPROVED FOR GRADUATE TRAINING

The Advisory Board of the Bureau of Medicine and Surgery on June 2 approved the following medical officers for postgraduate training:

Capt. Donald E. Dement, course in hazards of nuclear radiation, University of Rochester.

Capt. Edward S. Lowe, course in surgery, University of Pennsylvania.

Comdr. Wallace E. Allen, residency in otolaryngology at the Naval Hospital, Long Beach, Calif.

Comdr. Frank R. Philbrook, course in public health at Harvard University School of Public Health.

Comdr. Robert E. Rock, course in virus diseases at the G. W. Hooper Foundation, University of California Medical School.

Lieut. Comdr. Byron E. Bassham, fellowship at Northwestern University.

Lieut. Caesar F. Orofino, residency training at the Naval Hospital, Long Beach, Calif.

Lieut. (jg) Leland C. Brannon, residency in surgery at a Naval Hospital to be designated.

Lieut. (jg) Neal D. Sanborn, course in general practice at the University of Colorado.

SYMPOSIUM ON ISOTOPES

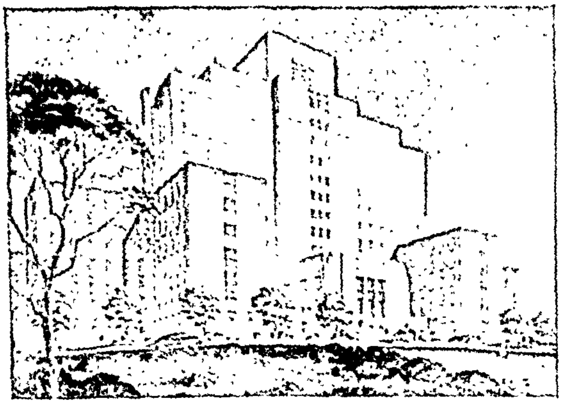
The Bureau of Medicine and Surgery has prepared a Supplement to the Naval Medical Bulletin on the "Preparation and Measurement of Isotopes and Some of Their Medical Aspects." The volume contains papers read at the symposium on isotopes before the division of biological chemistry at the New York meeting of the American Chemical Society in 1947 and two articles by authors from the Medical Department of the Navy. The material is not too far advanced for the ordinary medical reader; it should be interesting, particularly to readers interested in research and in the clinical use of isotopes. The volume may be purchased for 35 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

PERSONAL

Capt. Charles F. Behrens, commandant of the Naval Medical Research Institute, Bethesda, Md., addressed the Volunteer Medical Reserve Division in Philadelphia, June 15, on "Atomic Energy in Relation to Medicine."

VETERANS ADMINISTRATION

THOUSAND BED HOSPITAL AT NEWARK, N. J.



Veterans' hospital being built at Newark, N. J.

The contract has been awarded and excavation work is under way for the construction of the sixteen story veterans' general hospital at the common boundary of Newark, East Orange and South Orange, N.J. Col. Charles F. Williams, district army engineer of New York, announced that because of consideration of the welfare and comfort of patients, the scientific technical planning and the finest in medical equipment and artistic beauty, this institution will be far in advance of anything that New Jersey has to offer. The site of the hospital is the 35 acre former Bamberger Estate. The main hospital building will be H shaped, sixteen stories high on the east side and thirteen stories above ground on the front. The hospital will be surrounded by a fine residential area. The site is beautifully landscaped, and all existing shrubberies and gardens will be preserved. The main building will have 18 acres of floor space, and to walk around its perimeter would total a half mile. South of the main building will be erected a ten room manager's residence and two duplex cottages of two apartments of six rooms each. The nurses' home will be connected to the main hospital by a service tunnel. An attendants' building is also planned for eighteen single rooms. Living quarters for sixty-seven resident physicians and interns will be on the lower floors of the hospital.

CONTRACTS FOR HOSPITAL

The general construction contract has been awarded for a two hundred and eight bed hospital at Erie, Pa. In addition, other contracts were awarded for the heating system, electrical work and elevators.

PERSONAL

Dr. Edward S. Post, formerly supervisor of veterans' hospitals in the Chicago branch of the Veterans Administration, has been assigned as manager of the 2,400 bed veterans' hospital at Fort Custer, Michigan.

PUBLIC HEALTH SERVICE

FELLOWSHIPS AVAILABLE IN MENTAL HEALTH

The U.S. Public Health Service announces that a limited number of mental hygiene fellowships for graduate work will be awarded. The fellowships are open to psychiatrists, psychologists, social workers and other qualified persons interested in research in mental health. These fellowships will be at the predoctorate and postdoctorate levels, while a special research fellowship will be awarded to applicants who qualify for a postdoctorate fellowship and who in addition have demonstrated outstanding ability or who possess special training; this particular fellowship does not carry a set stipend. The stipends for the various kinds of fellowships vary from $1,200 a year to $3,600, depending on the applicant's qualifications and the number of his dependents. Applicants are required to file a statement outlining the investigation on which they will work. Requests for information should be addressed to Division of Research Grants and Fellowships, National Institute of Health, Bethesda 14, Maryland.

LEADING ACCIDENTAL CAUSES OF DEATH—1946

The Federal Security Administrator announces that the six leading accidental causes of death for 1946, based on a study by the Office of Vital Statistics of the U. S. Public Health Service, were: (1) motor vehicle accidents, 33,411; falls, 22,581; drowning, 5,577; burns (except conflagration), 4,856; conflagration, 3,017; railway accidents (excluding collision with motor vehicles), 2,937; other accidents accounted for 25,654, increasing the total number of deaths from accidents in 1946 to 98,033.

CANCER RESEARCH

The Federal Security Administrator announced March 17 cancer research grants totaling $588,032 to be given to institutions, medical schools and hospitals. The largest sum in this list, $90,960 went to Johns Hopkins University, Baltimore, for investigation of mass roentgenologic methods for the early detection of cancer of the stomach.

MISCELLANEOUS

DR. FAILLA ORGANIZES HEALTH PHYSICS BRANCH

The U.S. Atomic Energy Commission announces that Dr. G. Failla, professor of radiology, Columbia University College of Physicians and Surgeons, New York, has been appointed to organize the health physics branch, division of medicine and biology, for the commission. This branch is concerned with protection of persons from radioactive materials. Dr. Failla during the war was consultant to the Metallurgical Laboratory, University of Chicago, and the Manhattan District; he is now consultant to the U.S. Public Health Service and the Veterans Administration. Dr. Failla was awarded the Leonard prize of the American Roentgen Ray Society in 1923 and 1925, the Janeway medal of the American Radium Society in 1935, and the gold medal of the Radiological Society of North America in 1947.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Albro, W. A.	Boston
Alexander, R. M.	Lynbrook, N. Y.
Allen, C. G.	Memphis, Tenn.
Anderson, K. J.	Boise, Idaho
Arrick, M. S.	New Haven, Conn.
Askue, W. E.	Larchmont, N. Y.
Atchison, M. V.	Dallas, Texas
Bacorn, R. W.	Elmira, N. Y.
Baden, W. F.	Raymondsville, Texas
Baird, W. C.	Columbus, Ohio
Balin, B. R.	Philadelphia
Balsley, R. E.	Reidsville, N. C.
Barr, J. H. Jr	Euclid, Ohio
Bateman, A. V.	Portland, Ore.
Bear, J. M.	Hamburg, Pa.
Beilstein, E. H.	Cleveland
Berezin, S. W.	New York
Billows, J. A.	New York
Birtch, P. K.	Buffalo
Black, H.	Indian Hill, Ohio
Blackwell, R. C.	Pomona, Calif.
Booker, N. U.	Naples , Fla.
Bortin, M. M.	Milwaukee
Boswell, H. P. Jr	New Albany, Miss.
Brashear, H. R. Jr	Washington, D. C.
Brasino, J. J.	Glendale, N. Y.
Brigham, D. P. B.	Omaha
Broadrick, B.	Chickasha, Okla.
Brown, D. E.	Beverly, Mass.
Brown, E. M. Jr	Princeton, W. Va.
Brown, J. M.	Gadsden, Ala.
Bruecken, A. J. Jr	Pittsburgh
Butterly, J. M.	Forrest Hills, N.Y.
Cannon, B. W.	Brownsville, Tenn.
Caruthers, D. F. Jr	Memphis, Tenn.
Caylor, C. C. Jr	Silver Spring, Md.
Childers, E. M.	Humboldt, Kan.
Chow, I. D.	Fresno, Calif.
Cochran, B. C.	Glenside, Pa.
Coe, J. I.	Minneapolis
Cohen, J. G.	Burlington, Vt.
Coles, R. S.,	New York
Cook, C. D.	Brookline, Mass.
Cook, E. E. Jr	Baltimore
Cook, T. D.	Framingham, Mass.
Cooke, R. W.	Windsor, Conn.
Cooley, D. A.	Houston, Texas
Corman, H. H.	Dorchester, Mass.
Covington, T. Jr	Muskogee, Okla.
Creager, R. O.	Walton, Ind.
Crocker, T. T.	San Diego, Calif.
Cross, A. J.	Scranton, Pa.
Culberson, A. W.	Morristown, N. J.
Cummings, A. J.	Scranton, Pa.
Cytryn, S.	Long Island, N. Y.
Dauphin, R.	Fountain, Ala.
Davis, J. J.	Connelly Springs, N. C.
Davis, R. M.	Marion, Ind.
D Elia, L. N. Jr.	Longmeadow, Mass.
Denham. H. C.	Vanceburg, Ky.
Distefano, A. J. Jr	Worchester, Mass.
Doherty, D. D.	Freewater, Ore.
Dolan, C. V.	Downingtown, Pa.
Donovan, J. J.	Ligonier, Pa.
Doukas, J. A.	Havre de Grace, Md.
Duerksen, E. C.	El Morrow, N. Mex.
Du Mont, C. C.	Spokane, Wash.
Edwards, J. B.	Arkansas City, Kan.
Edwards, W. S. III	Birmingham, Ala.
Elias, K.	New York
Ellis, T. K.	Massilon, Ohio
Falloon, E. L.	Chicago
Fassett, J. R.	Davis, Calif.
Fiest, M. J.	Fresno, Calif.
Finch, S. C.	Broadalbin, N. Y.
Flowers, C. E. Jr	Zebulon, N. C.
Flynn, R. T. Jr	Portland, Ore.
Forester, V. R.	Shawnee, Okla.
Fox, M.	Columbus, Ohio
Friedman, H. P. Jr	Virginia Beach, Va.
Frierson, J. H. Jr	Charleston, S. C.
Friend, F.	Cincinnati
Frieswyk, M. J.	Grand Rapids, Mich.
Gallagher, M. A.	Providence, R. I.
Garner, M. J.	Mattapan, Mass.
Garrison, S. C. Jr	Nashville, Tenn.
Gates, W. L. Jr	Canandaigua, N. Y.
George, D. I.	Johnstown, Pa.
Giesen, C. P.	Superior, Wis.
Gill, J. H.	Portland, Ore.
Gillett, F. S.	Grand Rapids, Mich.
Gilson, S. B.	New York
Goade, W. J. Jr	Batavia, N. Y.
Goldberg, D.	New York
Goldensohn, S. S.	Newark, N. J.
Goldware, R. R.	Los Angeles
Gould, W. J.	New York
Graham, R. E.	San Diego, Calif.
Greenspan, E. M.	Brooklyn
Greve, M. J.	Houston, Texas
Haberlin, J. P.	Providence, R. I.
Hassett, A. J. Jr	Weymouth, Mass.
Hays, D. M.	Riverside, Calif.
Helsing, W. J.	Rochester, Pa.
Henschel, E. V.	St. Louis
Hensley, C. D. Jr	Wichita, Kan.
Herlihy, R. M.	Fairmont, W. Va.
Hill, W. E.	Carrollton, Ala.
Himes, R. S.	Dayton, Ohio
Hoffman, C. J.	Churchville, Pa.
Holloway, J. W.	Portland, Ore.
Holt, E. K. II	Harding, Mass.
Honaker, W.	Denver
Hopkins, R. J.	Orofino, Idaho
Horn, L. G. Jr	Magee, Miss.
Horton, J. H.	Bloomington, Ind.
Howard, R. J.	Fort Worth, Texas
Howe, B. E. Jr	New York
Howe, G. W.	New York
Hudson, R. A.	Buffalo
Hulme, H. B.	Manti, Utah
Hyde, J. S.	Chicago
Ingle, G. W.	Montebello, Calif.
Ingram, J. M. Jr	Tampa, Fla.
Isaacson, N. H.	Brooklyn
Jankowski, V.	Elmhurst, N. Y.
Jenkins, F. E.	Knoxville, Tenn.
Johnson, H. Jr	Louisville
Johnson, R. M.	Lima, Ohio
Jones, A. W.	River Edge, N. J.
Jones, H. H.	Altoona, Pa.
Josselson, A. J.	Ahoskie, N. C.
Kaplan, H. M.	Hartford, Conn.
Kaufman, S. A.	New York
Kausel, H. W.	Beach Bluff, Mass.
Kietel, H. G.	New York
Kelly, J. F. Jr	Omaha
Kendrew, L. J.	Easthampton, Mass.
Kenney, B. A.	Santa Fe, N. Mex.
Keuper, C. S.	Schulenberg, Texas
Knoff, W. F.	Syracuse, N. Y.
Koeing, P.	
Kozlowski, A. W.	Buffalo
Kudarauskas, E. N.	Worcester, Mass.
Kurland, W.	Washington, D. C.
Lambrecht, P. B.	Chicago

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ALABAMA

Fifty Year Club.—The Medical Association of the State of Alabama this year inaugurated its fifty year club with one hundred and thirty-two members. Physicians who graduated fifty or more years ago were asked to sign the "Fifty Year Club" register. Their names were printed in the program; on the morning of the second day of the annual session recognition of the "Golden Anniversary in the Practice of Medicine" was made and certificates were awarded to those who were present.

CALIFORNIA

Personal.—Dr. Norman C. Paine, Glendale, Calif., former assistant football coach at the University of Chicago, was awarded a citation of merit at the University of Chicago Alumni banquet June 11, in recognition of public service to the community, the nation and humanity. He is a member of the faculty of the University of Southern California School of Medicine, Los Angeles, and a graduate of Rush Medical College, Chicago.

Venereal Disease Demonstration Project.—Santa Clara County is conducting a venereal disease demonstration project sponsored by the Palo Alto City, Santa Clara County, and San Jose City health departments, the county medical society, the state department of public health and the U. S. Public Health Service. The purpose is (1) to demonstrate that strengthening of the private physician and health department relationship is an essential of a sound venereal disease control program and on a continuing basis will result in increasing the number of patients under the care of private physicians and (2) to demonstrate that a public information program integrated with the general health education program and on a continuing basis will result in accelerated case finding both for the private physician and the health departments.

COLORADO

Dr. John Ryan Awarded the Gold-Headed Cane.—In a commencement day ceremony at the University of Colorado School of Medicine, Denver, the Gold-Headed Cane was passed on from Dr. James J. Waring, professor of medicine at the school, to Dr. John G. Ryan, associate professor of medicine, "for his devotion to students and patients over a period of many years." Dr. William J. Kerr, who instituted the gold-headed cane ceremony at the University of California, gave the baccalaureate address on this occasion. His subject was "Immortality of Inspiration." Dr. Ryan, a graduate of Rush Medical College, Chicago, in 1910, and member of Alpha Omega Alpha and Sigma Xi honorary fraternities, has practiced medicine in Denver since returning from service in the Army medical corps in World War I.

A cane with a gold top was, at least in England, an essential part of the physicians' equipment in the eighteenth century. John Radcliffe (1650-1729), who attended King William and Queen Mary, carried such a cane and passed it on to his successor in practice, Richard Mead. The cane was passed down to various successive physicians (Askew, Pitcairn and Baillie), then in the early nineteenth century was deposited in the Royal College of Physicians, where it remains to this day.

Isador H. Coriat of Boston, in his paper on "The Symbolism of the Gold Headed Cane" (*Annals of Medical History*, March 1924, page 126) said, "Thus the gold-headed cane became a sort of symbolic carrier of the power of the physician or the immortal transmitter or bearer of power as it passed from one physician to another." The gold-headed cane ceremony has been instituted at certain medical schools in the United States. Among other physicians who have thus been honored are: George Dock, Pasadena, Calif.; George Blumer, San Marino, Calif.; Herbert C. Moffitt, San Francisco; James B. Herrick and Ernest E. Irons, Chicago; William S. Middleton, Madison, Wis., and James J. Waring, Denver.

CONNECTICUT

Dr. Lindskog Heads Yale Department of Surgery.—Dr. Gustaf E. Lindskog, associate professor of surgery, has been appointed William H. Carmalt professor of surgery and head of the department of surgery, Yale University School of Medicine, New Haven. The professorship was formerly held by Dr. Samuel C. Harvey, now Yale's first professor of surgery in oncology and president of the Connecticut State Medical Society. Dr. Lindskog received his medical degree at Harvard Medical School, Boston, in 1928.

State Diabetes Association.—The Connecticut Diabetes Association, organized last April during the annual meeting of the state medical society, plans for statewide operation next fall. Professional memberships will be open to all physicians, and policy control will be vested in this group. Associate members will include diabetic persons, their relatives and friends, nurses, pharmacists, public health officials, laboratory technicians, social workers, nutritionists and other allied groups. The program of the association is to include education of relatives and friends in the proper care of diabetic patients, standardization of treatment and promotion of the principle of early diagnosis. Officers of the association are: Dr. Barnett Greenhouse, New Haven, president, and Dr. John Dobkins, Stamford, secretary.

DISTRICT OF COLUMBIA

Personal.—Dr. Walter A. Bloedorn, medical director of the George Washington University Hospital, received the honorary degree of doctor of science at convocation exercises at the university March 23.

Dr. Davidson Honored.—At a meeting of the Medical Society of the District of Columbia, April 14, a portrait of Dr. Edward Y. Davidson was unveiled in the society building. The physician was being honored for his service to the society, particularly in relation to the erection of its building, instigated while he was president in 1916 and completed in 1920. Dr. Davidson was present at the ceremonies.

Dr. Rossiter to Retire as Chief of Staff.—It is reported that Dr. Percival S. Rossiter will retire on September 1 as chief of staff at Gallinger Municipal Hospital, a position he has occupied since retiring as Surgeon General in 1938, after serving thirty-five years in the Navy. George Washington and Georgetown universities jointly will nominate the next chief of staff of the hospital. The Rev. Paul A. McNally, S.J., dean of Georgetown Medical School, said, "Dr. Rossiter has made a magnificient contribution to the education of Georgetown men at Gallinger Hospital, and the university is deeply appreciative of his contribution."

Francis R. Hagner Memorial Library.—A group of colleagues and friends recently dedicated the Francis R. Hagner Memorial Library in the room at Garfield Hospital, which was the site of the former solarium. The memorial was planned in 1941, a year after Dr. Hagner's death, but building was delayed by the war. Dr. John H. Cunningham, Boston, unveiled Dr. Hagner's portrait, a gift from the American Genitourinary Association. The hospital has employed a full time medical librarian. The library was formally presented to Garfield Memorial Hospital by the chairman of the memorial committee, Dr. Harry H. Kerr, Washington, and was accepted by Mr. George Dunlop, vice president of the board of directors.

ILLINOIS

Doctor Otten Memorial.—A portrait of Dr. Harry Otten, purchased by members of the staff of Memorial Hospital, Springfield, has been placed in the doctors' lounge. This is the initial action on the proposed Otten Memorial, concerning which a board of trustees has been appointed to recommend the type of memorial to be established. Dr. Otten, who died Feb. 18, 1948, was a member of the executive committee and former president of the medical staff of the hospital.

Chicago

Cancer Clinic for Men.—Chicago's second cancer detection clinic for men opened June 3 at Mercy Hospital and will operate each Thursday. Appointments can be made by calling Whitehall 4373.

Research on Preoperative Preparation.—The University of Illinois College of Medicine has received a grant of $4,500 from Abbott Laboratories for the study of procedures and germicides in the preoperative preparation of surgeon and patient. The investigation is under the direction of Dr. Milan V. Novak, head of the department of bacteriology and public health.

Loyal Davis Heads Passavant Staff.—Dr. Loyal Davis became chief of staff at Passavant Memorial Hospital June 18, succeeding Dr. Howard B. Carroll. Dr. Davis is chairman of the division of surgery at Northwestern University Medical School and is editor of *Surgery, Gynecology, and Obstetrics*. Since 1925 he has been consulting neurologic surgeon at Hines Veterans Hospital.

Society Installs Officers.—At the annual meeting and dinner of the Chicago Medical Society June 16 at the Drake Hotel Dr. J. Roscoe Miller, dean of Northwestern University Medical School, was installed as president. Dr. Willard O. Thompson was made president-elect and Dr. H. Kenneth Scatliff, secretary. Dr. Warren H. Cole gave an address on "Socialized Medicine in England."

Portal House Leased to Committee on Alcoholism.—The city council has leased Portal House, a retraining center for alcoholic addicts, without rental for the rest of 1948 to the Chicago Committee on Alcoholism, headed by Anton J. Carlson, Ph.D., emeritus professor of physiology, University of Chicago School of Medicine. Portal House was organized a year ago and was to have been abandoned June 15 by the city welfare department because of lack of funds. Clients of the welfare department will be treated for $5 a day and outside paying patients for $8 a day.

INDIANA

Social Hygiene Association.—At a meeting in May, Dr. Arthur F. Weyerbacher, Indianapolis, treasurer of the Indiana State Medical Association, was elected president of the newly organized Indiana Social Hygiene Association. Units will be organized in each county. Mrs. A.W. Ratcliffe, Evansville, immediate past president of the Woman's Auxiliary to the state medical association, was named secretary, and Harold B. West, Indianapolis, treasurer.

Conference on School Health.—The committee on school health and physical education of the Indiana State Medical Association will sponsor a conference of physicians, public school executives, health educators and physical education instructors at Indianapolis October 6. The objective will be to bring about better participation by physicians in the school health field. Fred V. Hein, Ph.D., Chicago, Bureau of Health Education, American Medical Association, is assisting the committee in arranging the conference.

LOUISIANA

Society Election.—At the twenty-fourth annual business meeting of the New Orleans Gynecological and Obstetrical Society on May 12, the following officers were installed: Dr. Woodard D. Beacham, president; Dr. Conrad G. Collins, president-elect; Dr. Harry Meyer, secretary, and Dr. Eugene H. Countiss, treasurer.

University Appointments.—G. John Buddingh, formerly professor of bacteriology, Vanderbilt University School of Medicine, Nashville, Tenn., has been appointed professor of microbiology at the Louisiana State University School of Medicine, New Orleans. Other recent appointments to the full time faculty include: Ruth A. Miller, formerly of Johns Hopkins University School of Medicine, Baltimore, as assistant professor of anatomy; William J. Obrinsky, New York, instructor in pediatrics; Thomas Hernandez, New Orleans, instructor in biochemistry; Irving M. Essrig, New Orleans, instructor in surgery; Jack G. Miller, New Orleans, instructor in obstetrics and gynecology.

MINNESOTA

Certificate of Merit.—Drs. Earl H. Wood and Edward H. Lambert, Rochester, received the President's Certificate of Merit on May 18 at a luncheon meeting at the Mayo Foundation House, Rochester. The awards, made by Rear Admiral Frederick L. Conklin, Commandant of the Ninth Naval District, were made in recognition of outstanding services in experimenting with the effects of high acceleration of the human body.

New Head of Bacteriology Department.—Dr. Jerome T. Syverton, professor of microbiology, Louisiana State University School of Medicine, New Orleans, has been appointed professor and head of the department of bacteriology and immunology at the University of Minnesota Medical School, Minneapolis, succeeding the late Dr. Robert G. Green. Dr. Syverton is a graduate of Harvard Medical School, Boston, 1931.

NEW YORK

Public Health Service.—The annual conference of New York State Health Officers and Public Health Nurses is scheduled for July 21-23 at the Grand Union Hotel, Saratoga Springs. The program will emphasize tuberculosis control, nutrition in public health and development of county health departments. Among the speakers will be Dr. Leonard A. Scheele, Surgeon General, U. S. Public Health Service, and Dr. Leo F. Simpson, Rochester, president of the Medical Society of the State of New York.

Community Honors Dr. Smallman.—Citizens of Ellicottville and the surrounding area recently honored Dr. Alfred W. Smallman at a testimonial dinner and reception. Public officials, medical colleagues and business men were among those attending. Dr. Smallman began practice in Ellicottville in 1888. He has been president of the Bank of Ellicottville for sixteen years, was mayor for six years and served thirteen years on the board of education. He was recently honored by the Medical Society of the State of New York for his long service.

New York City

Memorial to Dr. Lewi.—The New York Infirmary has received $14,000 to start an endowment fund in honor of Dr. Emily Lewi, who was a former director of pediatrics at the infirmary. The sum, presented by friends, will support a room in the new infirmary buildings, to be known as the Emily Lewi Memorial Room.

Dr. Browder Director of Department Surgery.- Dr. E. Jefferson Browder will become director of the department of surgery of the Long Island College Hospital July 1, succeeding Dr. Emil Goetsch, who is retiring as director after twenty-nine years of service. Dr. Goetsch will continue as attending surgeon at the hospital and a member of the board of regents. Dr. Browder is at present an attending neurosurgeon at Brooklyn, Methodist and Kings County hospitals and consultant neurosurgeon at other hospitals.

Dr. Van Etten Honored.—On his retirement as chairman of the board of directors of United Medical Service (The Doctor's Plan), Dr. Nathan B. Van Etten, who has served the medical and surgical prepayment plan since its inception, was presented with an illuminated scroll in recognition of the "enduring appreciation and affectionate regard of his fellow directors." The presentation was made by Dr. Charles Gordon Heyd, president, on May 26 at a combined meeting of the board of directors of Associated Hospital Service, New York's Blue Cross Plan and United Medical Service held at the Gramercy Park Hotel, New York.

New Home Care Departments.—To reduce the demand for beds in the city's twenty-four hospitals, a new department of home care is to be established in each hospital to serve persons who no longer need the full run of hospital services and who can recover at home under medical and nursing care. According to Dr. Edward M. Bernecker, hospitals' commissioner, it is planned that Bellevue Hospital, Kings County Hospital and Goldwater Memorial Hospital will be set up to care ultimately for 200 home patients each; that Queens General, Morrisania, Harlem, Lincoln, Fordham, City and Metropolitan hospitals will take care of 100 cases each, and that Coney Island, Greenpoint, Cumberland and Gouverneur Hospitals will take care of 50 home patients each. This is equal to adding 1,500 beds to this department or constructing buildings costing at least $22,000,000. Average cost of the home patient is $2.23 per day, and the average cost in hospital is $9 per day.

OHIO

Cleveland Contributions for Hospital Beds.—The Academy of Medicine of Cleveland recently participated in a drive to raise $9,000,000 to provide additional hospital beds. Setting a goal of $300,000 for themselves, Cleveland physicians found that they had actually donated $419,104.50 when the drive was completed.

Research in Nutrition—The Robert Gould Research Foundation recently made annual grants of $10,000 for a three year period to the University of Cincinnati College of Medicine for promoting research in nutrition. The foundation also gave scientific research equipment and a technical library valued at $25,000.

Alumni Achievement Award.—The first Alumni Achievement Award of the Ohio State University College of Medicine, Columbus, was presented recently to Dr. Verne A. Dodd, professor in the department of surgery at the university and chief of staff of University Hospital, and to Dr. Robert A. Moore, dean of the Washington University School of Medicine, St. Louis.

Academy of General Practice.—Dr Joseph W Lindner, Cincinnati, was elected president of the Ohio Academy of General Practice, March 30, in Cincinnati; other officers elected were: Dr Emery G Kyle, Newton Falls, president-elect; Dr Earl W Burgner, Akron, secretary, and Dr. Henry W. Lehrer, Sandusky, treasurer. Ohio is the twenty-first state to become affiliated with the national organization.

SOUTH CAROLINA

Society News.—At the meeting of the county medical society in Greenville, June 7, Dr. Curtis J. Lund, professor of obstetrics and gynecology, Louisiana State University School of Medicine. New Orleans, spoke on "Recent Advances in the Management of Abortions" and Dr. David F. Watson, Greenville, "Management of the Third Stage of Labor."

Royster Club.—A group of younger physicians in Raleigh have formed a club in honor of Dr. Hubert A. Royster, Raleigh, retired surgeon, who is the honorary president. The club is devoted to medical research, the presentation of original work and the discussion of advanced scientific knowledge. Membership at present is limited to eighteen.

VIRGINIA

Personal.—Dr. Edward J. Van Liere, dean of the West Virginia University School of Medicine, Morgantown, W. Va., was awarded the honorary degree of doctor of letters by the Medical College of Virginia, June 8.

Dr. Porter Goes Abroad.—Dr. William B. Porter, Richmond, left June 9 for London as a representative of the American Medical Association, the American Board of Internal Medicine and the Medical College of Virginia, Richmond, at a meeting of the British Medical Association, June 21-July 2 at Cambridge University, Cambridge, England. After the meeting Dr. Porter will be sent by the U. S. Army Surgeon General on a lecture tour in the United States zone of Germany and Austria. He will also inspect military medical schools in fifteen of the major cities of the two countries and will return to the United States early in August. Dr. Porter served throughout the war and is still serving on the civilian consultant staff for the Surgeon General.

GENERAL

Visiting Orthopedic Surgeons.—Thirteen British orthopedic surgeons are currently visiting medical centers in the United States and Canada on a six week tour sponsored by the American Orthopaedic and Canadian Orthopaedic associations.

Argentina Confers Awards.—Drs. Chevalier Jackson, Philadelphia, and Jacob C. Geiger, Stanford University, Stanford University, San Francisco, were recently honored by Argentina when the Order of San Martin the Liberator was conferred on them.

Chinese College Seeks Scientific Books.—The United Board for Christian Colleges in China, representing thirteen institutions, is attempting to secure up-to-date books for its forty-one colleges, four of which are medical colleges. China has largely depended on these colleges for well trained physicians to staff American missionary hospitals and to promote public health work. The board will pay parcel post charges on any available books.

Coordination of International Congresses.—Representatives of ten organizations met on April 12 in Paris to plan for a bureau to coordinate international congresses as to dates, places, common interest and borderline subjects. Representatives from the following organizations attended the meeting: International Union Against Tuberculosis, International Council of Nurses, International Union Against Venereal Diseases, World Medical Association, International Pediatric Association, International Society of Surgery, International Union Against Cancer, International Congress of Radiology, International Congress on Mental Health and International League Against Rheumatism.

Research in Heart Disease.—An additional $103,000 in research funds for heart disease, including twelve student fellowships, three postgraduate fellowships and nine grants in aid to hospitals and universities, has been announced by the Life Insurance Medical Research Fund, New York. The purpose of the fellowships is to help meet the need for qualified men and women trained in research technics. Student fellowships, amounting to between $1,500 and $1,800, go to students who have not yet received their doctorate degrees and provide for a year's additional undergraduate training under leading scientists. Postgraduate fellowships, amounting to between $2,500 and $4,000, go to graduate workers for similar study. The list of awards is the second announced this year and brings the 1948 allocations to $637,000.

Surgical Society Opposes Resolution of Anesthesiologists.—The American Surgical Association has taken the following action relative to the resolution adopted by the American Society of Anesthesiologists, Inc., June 11, 1947 (THE JOURNAL, August 2, 1947, page 1189) concerning the training of persons other than doctors of medicine as anesthetists. In so far as the resolution pertains to the training and employment of nurses as technicians under competent medical supervision, the American Surgical Association has made its position of record for the following reasons: 1. The number of physician anesthetists trained or at present in training is totally inadequate to carry the present work load of essential surgery. 2. In view of the increased demand for physicians in all branches of medicine, it is improbable that there will be a flow of recent graduates into anesthesiology sufficient to correct this shortage. 3. As a general policy it is safer to employ nurses trained and working under medical supervision than it is to revert to the use of medical graduates without special training and working without specialist supervision. 4. Trained and working under medical supervision, the nurse-technician anesthetist can continue to carry a portion of the work load with full protection to the safety of the patient.

LATIN AMERICA

Congress on Cancer in Havana.—The third National Congress on Cancer was held May 2 in Havana at the new Curie Institute for Cancer, under the presidency of Dr. Rufino Moreno. Among those participating were: Hyman I. Goldstein, Camden, N. J.; Chevalier L. Jackson, Jacques P. Guequierre and Reuben Friedman, Philadelphia; E. W. Alton Ochsner, New Orleans; Charles P. Bailey, Philadelphia; Irving A. Sarot, New York; Henry A. Brodkin and Eugene V. Parsonnet, Newark, N. J.; Michael Scott and Moses Behrend, Philadelphia; Howard W. Jones Jr., Baltimore, and Eugene M. Bricker, St. Louis.

MEXICO

Course in Tropical Dermatology.—Under the auspices of the Sociedad Mexicana de Dermatologia, a second two week course on tropical dermatology will be given August 15-28 in Mexico, D.F., similar to the first course conducted especially for American doctors in 1945 at the request of Dr. Howard Fox, New York, and Dr. Leon Goldman, Cincinnati. The course will include clinical and laboratory features of several dermatologic conditions often seen in tropical America: mal del pinto, onchocerciasis, parasitic diseases of animals, leprosy, deep mycosis, leishmaniasis and chemical control of insects. This course will be limited to American dermatologists and the number of registrations to fifty doctors. The fee will be $100, payable at the time of registration in Mexico, D.F. All written material will be presented in English. Information may be obtained from Dr. Fernando Latapi, Permanent Secretary, Sociedad Mexicana de Dermatologia, Zacatecas 220-6, Mexico City, or Dr. Leon Goldman, Department of Dermatology and Syphilology, College of Medicine, University of Cincinnati, Cincinnati, Ohio.

FOREIGN

World Health Mission to Greece Report.—An emergency program to improve health conditions in the Dodecanese Islands has been mapped by representatives of the World Health Organization Interim Commission's Mission to Greece. According to Dr. J. Miller Vine, Grimsby, Lincolnshire, England, who was responsible for a survey made in recent weeks, tuberculosis is the most serious health problem on the islands. An extensive program of organizing health centers and dispensaries on the main islands of the Dodecanese group is immediately necessary, Dr. Vine said. It is planned now to set up a public health center with five clinical sections on the three islands of Rhodes, Cos and Colymnos, as well as a mass x-ray program for Rhodes. Malaria was an extremely serious problem until DDT spraying was introduced by the World Health Organization in 1947; the incidence was then reduced by more than 80 per cent, according to the report. In Greece proper forty-five tuberculosis dispensaries and two mass x-ray centers have been put into operation under the tuberculosis program. Despite the efforts of the Greek staff and of the health mission, only twenty-five of the forty-five dispensaries are reported to be functioning satisfactorily. Economic difficulties, lack of trained personnel and the civil war are continuing to hamper the health program in Greece. The first semirural center for mass x-ray is now being installed in Elefsis Sanatorium. Personnel of the Interim Commission are helping to operate the center during the first three months and are training Greek staff members to continue the work. Col. D. E. Wright, chief sanitary engineer of the World Health Organization, who is in charge of the malaria and sanitation programs, has announced the purchase of additional aircraft for use in DDT spraying.

Marriages

NATHAN RALPH to Dr. ALICE LESCHIN GROSS, both of Philadelphia, April 4.

WILLIAM BRODHEAD GEORGE, Verona, N. Y., to Miss Mary Casham Mills in Irondequoit, April 10.

ROBERT NELSON RICKETTS, Oil City, Pa., to Miss Jane Forsyth at Seminole, Fla., April 17.

LOUIS JACKSON FRYMIRE to Miss Louise McCalmont, both of Pittsburgh, recently.

GARTH KINSEY GRAHAM, Elmhurst, Ill., to Miss Jeanne Natalie Williams of Lynn, Mass., May 22.

DUDLEY PENNINGTON JACKSON, Baltimore, to Miss Ada Patricia Custer of Ashland, Va., May 15.

WILLIAM HARRISON HIGGINS to Miss Emily Armistead Peyton, both of Richmond, Va., May 29.

FRANKLIN TALMADGE BUCHANAN, Bristol, Va., to Miss Marjorie Ann Haas in Akron, Ohio, May 29.

JAMES JOSEPH FINNERTY, New York, to Miss Anna Lowell Putnam of Springfield, Mass., April 8.

LLOYD LAGERQUIST, East Providence, R.I., to Miss Barbara Marilyn Drummond at Barrington, May 8.

JOHN CALHOUN RISHER to Miss Anne Hume Nash, both of Charlottesville, Va., April 10.

Deaths

Charles Albert Elsberg ⊕ died at his home in Stamford, Conn., March 18, aged 76, of coronary heart disease. Dr. Elsberg was born in New York on Aug. 24, 1871. He graduated from the College of Physicians and Surgeons, medical department of Columbia College, New York, and began to practice in New York in 1893. In 1909 he was one of the founders of the New York Neurological Institute, where he became chief of the neurologic service and, at the time of his death, emeritus chief. He was an emeritus professor of neurologic surgery at his alma mater and formerly professor of neurologic surgery at the New York Post-Graduate Medical School and Hospital, Columbia University. He was a fellow of the American College of Surgeons, member and past president of the American Neurological Association, a member of the Society of Neurological Surgeons, the Association for Research in Nervous and Mental Diseases and the American Association for the Advancement of Science. He was an honorary member of the Société Internationale de Chirurgie and the Società Radio-neuro-chirurgical Italiana. During World War I, Dr. Elsberg was requested by the Surgeon General of the Army to organize in New York a school for instruction in neurosurgery and was designated as military director of the institution. He was consultant surgeon at the Vassar Brothers Hospital in Poughkeepsie, Flower and Fifth Avenue Hospital, Knickerbocker, Montefiore and Mount Sinai hospitals. In 1938 he delivered the eighth Walter M. Brickner Lecture at the Hospital for Joint Diseases. He was a recipient of the Harsen Clinical Prize and Medal of Columbia University and also received the Townsend Harris Medal offered by alumni of City College. When City College celebrated its hundredth anniversary, an honorary doctorate was conferred on Dr. Elsberg. On his sixty-fifth birthday the medical staff of the New York Neurological Institute presented him with a special volume of the bulletin of the institute, containing forty original articles contributed by his colleagues and students.

Cullen Francis Welty, San Francisco; University of Pennsylvania Department of Medicine, Philadelphia, 1890; specialist certified by the American Board of Otolaryngology; member of the American Medical Association; member and past president of the San Francisco County Medical Society and of the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; served on the staff of the San Francisco Polyclinic; died in Franklin Hospital March 8, aged 82.

William Rudisel Fringer ⊕ Rockford, Ill.; Chicago Medical College, 1888; past president of the Winnebago County Medical Society; member of the American Academy of Ophthalmology and Oto-laryngology and the Chicago Ophthalmological Society; specialist certified by the American Board of Ophthalmology; fellow of the American College of Surgeons; served during World War I; for many years on the staff of the Rockford Memorial Hospital; died March 7, aged 34, of cerebral thrombosis.

George Clifford Gould, Mount Vernon, N. Y.; born Oct. 15, 1879; Columbia University College of Physicians and Surgeons, New York, 1903; member of the American Medical Association; fellow of the American College of Surgeons; formerly on the staff of the Manhattan Eye, Ear, Nose and Throat Hospital in New York; for many years associated with Mount Vernon Hospital; died in the Neurological Institute of the Columbia Presbyterian Medical Center, New York, March 26, aged 68, of brain tumor.

Edwin Rahn Fleming ⊕ Medford, Mass.; Jefferson Medical College of Philadelphia, 1904; member of the New England Obstetrical and Gynecological Society; specialist certified by the American Board of Obstetrics and Gynecology; affiliated with the Charles Choate Memorial Hospital, Woburn, and the New England Sanitarium and Hospital in Melrose; consulting obstetrician and gynecologist at the Lawrence Memorial Hospital; died March 4, aged 68, of cerebral hemorrhage.

Henry Randel Baremore Jr., ⊕ Akron, Ohio; University of Vermont College of Medicine, Burlington, 1913; an officer serving overseas during World War I; served on the staff of the City Hospital, where he died March 4, aged 60.

Ellsworth Francis Brandon, Edon, Ohio; Michigan College of Medicine and Surgery, Detroit, 1900; died in Blythe, Calif., March 10, aged 73, of coronary occlusion.

Paul Frederick Bremer, Philadelphia; Temple University School of Medicine, Philadelphia, 1906; died March 3, aged 69.

Arthur H. Brown, Oswego, S. C.; Medical College of the State of South Carolina, Charleston, 1900; died in the Tuomey Hospital, Sumter, March 6, aged 76.

Walter Herbert Brown, Youngwood, Pa.; University of Maryland School of Medicine, Baltimore, 1889; member of the American Medical Association; died March 4, aged 79, of coronary artery disease.

John Norris Bull, Plainville, Conn.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1878; member of the American Medical Association; for many years health officer; died March 7, aged 91.

Christian Frederick Carstens ⊕ Hibbing, Minn.; Johns Hopkins University School of Medicine, Baltimore, 1908; served as village and township health officer; during World War I served in the medical officers' training camp at Fort Riley, Kan.; on the staff of Hibbing General Hospital, where he died February 19, aged 68, of cerebral hemorrhage.

Malcolm Hugh Clark, De Kalb, Miss.; University of Nashville (Tenn.) Medical Department, 1899; died in the Anderson Infirmary, Meridian, March 9, aged 71, of hemorrhages from gastric ulcers.

James W. Coon, Des Moines; Physio-Medical College of Indiana, Indianapolis, 1891; College of Medicine and Surgery (Physio-Medical) Chicago, 1904; member of the American Medical Association and the Missouri State Medical Association; died February 14, aged 84, of cerebral hemorrhage.

George W. Crock, Vicksburg, Miss.; Hahnemann Medical College and Hospital of Philadelphia, 1889; died in the Vicksburg Hospital March 2, aged 80, of carcinoma.

Henry Glover Davis, Franklin, Ind.; Ensworth Medical College, St. Joseph, 1909; died March 4, aged 65.

John Lewis Davis, Gordo, Ala.; University of Nashville (Tenn.) Medical Department, 1891; Vanderbilt University School of Medicine, Nashville, 1891; for many years mayor of Gordo; member of the American Medical Association; died March 2, aged 81, of coronary thrombosis.

Florence Le Verne Eby, New York; Loyola University School of Medicine, Chicago, 1945; certified by the National Board of Medical Examiners; interned at the Ellis Hospital in Schenectady; served a residency at the Willard Parker Hospital and New York Post Graduate Medical School and Hospital in New York; killed March 7, aged 26, when a tractor trailer truck skidded into the automobile in which she was riding.

Frederick Luther Everett, Springfield, Mass.; Cornell University Medical College, New York, 1902; member of the American Medical Association; died in a hospital at Watertown, N.Y., March 6, aged 75.

Samuel D. Fry, Ladonia, Texas; Louisville, (Ky) Medical College, 1890; member of the American Medical Association; died February 27, aged 81, of of diabetes mellitus and heart disease.

Philip J. Genthner ⊕ Brooklyn; University of the City of New York Medical Department, 1886; died March 9, aged 85.

Bruce Lock Gilfillan ⊕ Keokuk, Iowa; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1908; served during World War I; colonel, medical reserve corps, not on active duty; died March 6, aged 64, of coronary occlusion.

Lewis H. Graves, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1906; associated with the staff of the Stetson Hospital; died March 19, aged 66.

Eugene Everett Hamilton ⊕ Dayton, Ind.; Medical College of Indiana, Indianapolis, 1903; served as health officer of Grant County, N.D.; died March 9, aged 69.

Charles P. Harshbarger ⊕ Port Republic, Va.; Kentucky School of Medicine, Louisville, 1892; member of the county school board; associated with Rockingham Memorial Hospital, Harrisonburg; trustee of the Bridgewater (Va.) College; director of Rockingham National Bank; died March 22, aged 80, of coronary thrombosis.

Emanuel Alexander Henkle, New London, Conn.; Cornell University Medical College, New York, 1899; member of the American Medical Association; died February 26, aged 73, of carcinoma.

William Yetter Herrick ⊕ Wakeeney, Kan.; Keokuk Medical College, College of Physicians and Surgeons, 1901; *for many years county health officer*; city councilman; surgeon for the Union Pacific Railroad; examiner for draftees during World War I and II; died in Hadley Memorial Hospital, Hays, March 9, aged 77, of cerebral hemorrhage.

Clyde B. Hoffman ⊕ Kent, Wash.; Rush Medical College, Chicago, 1901; died March 5, aged 77, of heart disease.

Hiram D. La Plant, Waverly, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1891; died in Robert Packer Hospital, Sayre, March 5, aged 88.

John Francis Loomis, Marion, Ind.; Cincinnati College of Medicine and Surgery, 1890; member of the American Medical Association; past president of the Grant County Medical Society; formerly county coroner; served on the staff of Grant County Memorial Hospital; died in St. Petersburg, Fla., March 3, aged 83, of pulmonary embolus, following a fractured hip received in a fall.

Thomas B. Loughlen, Olean, N.Y.; University of Buffalo School of Medicine, 1890; member of the American Medical Association; affiliated with the Olean General Hospital; died February 25, aged 79, of a skull fracture received in a fall and cerebral embolism.

John A. McWilliams, Bucklin, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1881; died in St. Francis Hospital, Marceline, Mo., March 7, aged 90, of bronchopneumonia.

Theodore Maddux, Union, S.C.; Atlanta College of Physicians and Surgeons, 1902; member of the American Medical Association; served during World War I; died in Aston Park Hospital, Asheville, N. C., March 12, aged 73, of carcinoma.

Robert Bascom Miller, Goldsboro, N.C.; Medical College of Virginia, Richmond, 1898; member of the American Medical Association; past president of the Wayne County Medical Society; examiner for the draft board during World Wars I and II; affiliated with the Goldsboro Hospital; died March 6, aged 71, of heart disease.

Granderson Edgar Mitchell, Reed, Ky.; Kentucky School of Medicine, Louisville, 1898; member of the American Medical Association; died in a hospital at Henderson March 2, aged 77.

Leo Patrick Mooney ⊕ Graceville, Minn.; University of Minnesota Medical School, Minneapolis, 1927; died March 12, aged 51.

Leonard J. Munson, Wilmette, Ill.; Jenner Medical College, Chicago, 1906; formerly head of the medical bureau of Marshall Field & Company in Chicago; died in St. Luke's Hospital, Chicago, March 13, aged 72, of myocardial infarction.

Harry Willard Nichols, Brooklyn; Long Island College Hospital, Brooklyn, 1897; member of the American Medical Association; affiliated with St. John's and Long Island College Hospitals; died in the Methodist Hospital March 6, aged 71, of cerebral accident.

James Pratt Northrop ⊕ Picayune, Miss.; Tulane University of Louisiana School of Medicine, New Orleans, 1940; affiliated with the Martin Sanatorium; died March 2, aged 33, of an accidental gunshot wound.

John Charles O'Brien ⊕ Greenfield, Mass.; University of Vermont College of Medicine, Burlington, 1887; an Affiliate Fellow of the American Medical Association; on the staff of Farren Memorial Hospital, Montague City, where he died March 18, aged 84, of uremia and arteriosclerosis.

Charles Ralph Ozias, Kansas City, Mo.; University of Oklahoma School of Medicine, Oklahoma City, 1914; served during World War I as an officer in the regular army; died March 10, aged 56.

Azro John Pardee ⊕ Ashtabula, Ohio; Cleveland-Pulte Medical College, 1912; formerly city health officer; served as medical officer in charge of the U. S. Public Health Service Relief Station, on the staff of the Ashtabula General Hospital, died January 18, aged 62.

Noah G. Pirkle, Buford, Ga.; University of the South Medical Department, Sewanee, Tenn., 1898; died January 5, aged 75.

Abraham Potasnic, Meridian, Miss.; Mississippi Medical College, Meridian, 1911; died January 7, aged 56.

Dalton Harbord Ray, Mayfield, Ky.; University of Louisville Medical Department, 1907; member of the American Medical Association; president of the Graves County Medical Society; an officer during World War I; served as city and county physician; died January 23, aged 64.

Allen Pierce Richmond, Hingham, Mass.; Bellevue Hospital Medical College, New York, 1889; member of the American Medical Association and the New Hampshire Medical Society; for many years practiced in Dover, N.H., where he was on the staffs of Hayes and Wentworth hospitals; died March 17, aged 87, of chronic myocarditis.

Carl James Robertson ⊕ Captain, U. S. Navy, retired, Coronado, Calif.: Detroit College of Medicine and Surgery, 1916; entered the U. S. Navy on Nov. 1, 1920, and retired March 1, 1941, for incapacity resulting from an incident of service recalled to active duty during World War II; fellow of the American College of Surgeons; died in the U. S. Naval Hospital, San Diego, February 16, aged 56, of hypertensive heart disease.

Samuel Herbert Rutledge, Rogers City, Mich.; Queen's University Faculty of Medicine, Kingston, Ontario, Canada, 1904; member of the American Medical Association; owner of the Rogers City Hospital; died recently, aged 69, of Parkinson's disease.

N. Louis Schappert ⊕ Wilkes-Barre, Pa.; Medico-Chirurgical College of Philadelphia, 1896; past president of Luzerne County Medical Society; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; on the staff of Wilkes-Barre General Hospital; died March 9, aged 71.

Aaron Franklin Schmitt, Minneapolis; Rush Medical College, Chicago, 1902; member of the American Medical Association; past president of the Southern Minnesota Medical Association; formerly member of the state board of medical examiners; fellow of the American College of Surgeons; died March 15, aged 78, of coronary disease.

Max Seide, Brooklyn; New York Homeopathic Medical College and Hospital, New York, 1927; medical superintendent of the Cumberland Hospital; formerly deputy medical superintendent and superintendent of Coney Island Hospital; served in the medical corps of the Austrian Army during World War I; died February 23, aged 49, of coronary occlusion and diabetes mellitus.

Louis M. Smirnow, Brooklyn; Yale University School of Medicine, New Haven, 1895; member of the American Medical Association; died February 23 aged 73.

John Fogg Smith, Paulsboro, N.J.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; died February 23, aged 74, of cerebral hemorrhage, hypertension and chronic interstitial nephritis.

S.F. Smith, Glennville, Ga.; University of Georgia Medical Department, Augusta, 1902; died February 19, aged 73.

Carl Louis Spohr, Columbus, Ohio; Starling Medical College, Columbus, 1895; member of the American Association; emeritus clinical professor of pathology at the Ohio State University College of Medicine; affiliated with the University, St. Francis and Children's hospitals; died March 8, aged 77, of cerebral hemorrhage.

Dudley Stennis, Newton, Miss.; University of Nashville (Tenn.) Medical Department, 1900; member of the American Medical Association; affiliated with the Newton Hospital, where he died February 26, aged 72, of coronary occlusion.

Franz O. Stern, St. Louis; Julius-Maximilians-Universitat Medizinische Fakultat, Wurzburg, Bavaria, Germany, 1932; member of the American Medical Association; affiliated with the Jewish Hospital, where he died February 25, aged 40, of arteriosclerosis.

Frank Adolph St. Sure ⊕ San Diego, Calif.; Rush Medical College, Chicago, 1909; died January 24, aged 67, of cerebral hemorrhage, hypertension, generalized arteriosclerosis and bronchopneumonia.

Ross Oren Taylor, San Diego, Calif.; University of Illinois College of Medicine, Chicago, 1912; member of the American Medical Association; died February 25, aged 59, of acute left ventricular failure and myocarditis.

George Alton Tibbetts ⊕ Portland, Me.; Medical School of Maine, Portland, 1915; fellow of the American College of Surgeons; past president of the Cumberland County Medical Society; member of the New England Surgical Society; served overseas during World War I; for many years on the staff of Maine General Hospital; died February 21, aged 61, of coronary thrombosis

John Robert Tobin, Elgin, Ill.; Rush Medical College, Chicago, 1901; member of the American Medical Association; fellow of the American College of Surgeons; affiliated with Sherman and St. Joseph's hospitals; died February 23, aged 71, of carcinoma of the colon and diabetes mellitus.

Charles Holmes Traber ⊕ Reedley, Calif.; Chicago College of Medicine and Surgery, 1913; formerly mayor; affiliated with the Reedley Hospital; died March 19, aged 74, of cerebral hemorrhage.

John Trotter ⊕ Troy, N.Y.; University of Vermont College of Medicine, Burlington, 1898; fellow of American College of Surgeons; formerly vice president of the Vermont State Medical Society; affiliated with the Samaritan Hospital and Troy Orphan Asylum; died February 28, aged 73, of coronary thrombosis.

Wilfrid Trudeau, Fall River, Mass.; Victoria University Medical Department, Coburg, Ontario, Canada, 1884; died February 28, aged 88, of arteriosclerotic heart disease.

James W. Twitchell, Belleville, Ill.; Marion-Sims College of Medicine, St. Louis. 1898; member of the American Medical Association; affiliated with St. Elizabeth Hospital, where he died March 11, aged 78, of heart disease.

Harry D. Vail, Seattle; Western Reserve University Medical Department, Cleveland, 1903; at one time practiced in Quincy, where he served as county coroner and as mayor; died February 24, aged 71.

Luther Edgar Vincent, St. Louis; Meharry Medical College, Nashville, Tenn., 1917; affiliated with Peoples and St. Mary's Infirmary; died February 18, aged 64, of cardionephritis.

Henry Morris Weisman ⊕ New York; University and Bellevue Hospital Medical College, New York, 1910; chief pediatrician at the Bronx Hospital; formerly associate pediatrician in the outpatient department at Mount Sinai Hospital; died March 16, aged 63, of arteriosclerotic heart disease.

Alexander A. Whamond, Chicago; Rush Medical College, Chicago, 1896; member of the American Medical Association; died in the Norwegian-American Hospital March 7, aged 77, of diabetes mellitus and coronary thrombosis.

John Emerson Whitehill, South Bend, Ind.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; member of the American Medical Association; died March 23, aged 63.

Charles LaFayette Williams, Independence, Kan.; Northwestern University Medical School, Chicago, 1900; served on the staffs of Christ Hospital, Topeka, St. Anthony Hospital, Dodge City and Mercy Hospital; died in Huntington Station, Long Island, N.Y., March 1, aged 79, of a fractured femur, diabetes mellitus and nephritis.

Harley Arthur Williams ⊕ Cleveland; Western Reserve University School of Medicine, Cleveland, 1929; assistant clinical professor of medicine at his alma mater; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; associated with University Hospitals; died March 5, aged 47.

Julia L. Woodzicka, Royalton, Wis.; Northwestern University Woman's Medical School, Chicago, 1899; died in Waupaca, February 22, aged 82.

Gordon Dulin Wright, St. Joseph, Mo.; University Medical College of Kansas City, Mo., 1898; member of the American Medical Association; affiliated with the Missouri Methodist and St. Joseph's hospitals; died February 27. aged 76, of heart disease.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 29, 1948.

The British Medical Association Accepts the National Health Service

A meeting of the Representative Body of the British Medical Association has accepted the National Health Service scheme of the Government by a majority of 167 votes to 148. As the minority was so large, requiring only 10 votes to be converted into a majority, the opposition was very strong. The chairman, Dr. Dain, moved that in spite of the insufficiency of the safeguards and the misgivings of a substantial section of the profession the Representative Body is prepared to advise the profession to cooperate in the new service on the understanding that the Minister will continue negotiations on outstanding matters. The concessions made by the minister, he said, went a long way toward establishing the freedoms thought by the profession to be essential. It was necessary to face the fact that a cleavage of opinion existed. He hoped that the members would stand together. An amendment was offered to advise the profession to cooperate in the new service only on condition that the results of continued discussion were concrete and acceptable to all sections of the profession. The Minister said that they were free to join the service or remain outside; but he was using the big stick by refusing compensation for loss of the right to sell practices unless doctors signed on the dotted line by July 5. "Sign or starve" was a strange interpretation of the word freedom. Lord Horder, in supporting the amendment, referred to the chairman's appeal for unity. It would not help any of them to be together if they sank. A few persons still swimming were better than the whole number drowned. It was fear of loss of compensation which caused men and women to sign. He appealed for resistance, which would grow and eventually succeed against defeatism. Replying, the chairman denied defeat and said that the profession had gained a great victory over the Government. It was no use talking about fighting when 26 per cent of the practitioners under the previous National Health Insurance Act in England and 36 per cent in Scotland had already accepted. The amendment was defeated. As stated above, the meeting accepted the National Health Service by a small majority – a result which no one can regard as satisfactory, particularly when the fact is taken into account that acceptance was largely the result of fear and did not indicate approval of the Act. Moreover, the plebiscite showed disapproval of the Act by a large majority of the profession, but not so great as the British Medical Association laid down as the condition for refusal to cooperate.

Lord Horder on the Socializing of Medicine

In previous letters to THE JOURNAL it was pointed out that in the struggle over the National Health Service the negotiators for the profession, while fighting about details, had failed to make any stand in regard to the fundamental evil—the socializing of the whole practice of medicine. At last this evil has been emphasized in an address to the Society of Individualists by Lord Horder. He said that the taking over of Medicine by the State would be as disastrous as was the domination by the Church in the Middle Ages—a greater disaster because at least the Church was cultured. The boot of bureaucratic control threatened to stamp on a plant whose development is so little understood "We have not won this fight" he said, "but we have not lost it. I propose to persist in it, and there are many with me in this, men and women of my own calling. So long as the Minister of Health possesses such tremendous power he can turn the screw on the economic or administrative side of the machine, until the doctors' freedom or the freedom of medicine is entirely lost."

The Treatment of Spastic Paralysis in Children

At a meeting organized by the British Council for the Welfare of Spastics on the Medical, Educational and Social Aspects of the Cerebral Palsy Problem, Professor Alan Moncrieff opened the discussion. He said that American figures suggested that there might be between 600 and 700 children up to the age of 16 with cerebral palsy in every million of population who could be trained to various degrees of efficiency, but British surveys were not yet complete. Treatment comprised specialized physical therapy and occupational therapy, training in correct speech and instruction of parents on how to get the best out of their crippled children. Three types of organization were required—diagnostic and instructional centers for outpatients, inpatient residential units for the severer types and schools for the physically handicapped with visiting instructors.

PARIS

(From Our Regular Correspondent)

April 30, 1948

A New Test in Liver Diseases

At a meeting of the National Academy of Medicine, Professor M Loeper presented a new test which makes possible an estimate of the action of the liver in the acid-base regulation and especially in the destruction of the fatty ketogenic acids. The author has made a study of the alkaline reserve in 40 persons with hepatic disease, serious in 20 of them. The acid-base unbalance is, he says, in proportion to alteration of the cells Since sodium salicylate initiates in most patients an unnoticeable lowering of alkaline reserve of 4 to 5 volumes per cent, the author used this product as a test of hepatic insufficiency. He gave this salt for two days to 40 patients and found that the alkaline reserve falls more with hepatic disease than with normality; the discrepancies between initial figures and those following the administration of sodium salicylate are from 8 to 14 volumes. The decrease is more noticeable in cirrhotic persons and in subjects with large neoplasms and acute icterus. The effect of sodium salicylate can be lessened by the simultaneous administration of hepatic extracts, insulin and sulfur. Loeper and Parrod reported previously their research on the innocuity of salicylsulfuric acid, which does not produce the same variation of alkaline reserve or the same clinical signs of intoxication as pure salicylate. The salicylic test not only provides a means to measure the function of the liver and its cellular activity but brings a new element in the prognosis of hepatic diseases and indicates the value of a therapy with liver extracts, sugar and sulfur.

First International Congress of the Surgical Film

The first International Congress of the Surgical Film was held April 7 in Paris under the presidency of the Minister of Public Health and the patronage of the dean of the Paris Faculty of Medicine. Over 2,500 persons attended. Great Britain presented a sound film by Professor Stanford on the surgical treatment of the blue disease (persistency of Botalli's duct); the United States, a sound color film on anesthesia with curare; the Soviet, the surgical realization of artificial esophagus in patients with gastric fistulas by Professor Youdine; Switzerland, Bacht's obstetric maneuver; France, lumbodorsal sympathectomy according to Smithwick's process, subtotal colectomy, commented on by Professor Patel; surgical treatment of cancer of the larynx, commented on by Professor Portmann; surgical treatment of sciatica by Professor de Seze; surgical treatment of cancer of the rectum by Professor d' Allaines. Dr. Cherigie commented on a film representing an operation on his own hand, which had been injured in an airplane accident, performed by Dr Sterling Bunnel of San Francisco.

Modifications of Bacteria by Penicillin

A. Boivin, E Tulasne, R. Vendrely and R. Minck have succeeded in rendering visible the nucleus of numerous bacteria and cocci by means of a special staining process. After fixation, treatment by ribonuclease to eliminate the ribonucleic acid of the cytoplasm and staining with Giemsa's stain, the nucleus alone remained basophilic on account of the desoxyribonucleic acid it contains. With this staining method the authors have been able to observe the mechanism of action of penicillin. A strain of Staphylococcus aureus and Bacillus coli cultivated on ordinary gelose always appeared uniformly basophilic with direct staining; ribonuclease shows in B coli sometimes two to three nuclei, in the staphylococcus one to three nuclei. Staphylococcus cultivated in the presence of 0.075 penicillin units per cubic centimeter and B. coli cultivated in the presence of 300 units per cubic centimeter do not appear uniformly basophilic in any phase with direct staining. In the latent phase they are larger, especially the colon bacilli, which continue to grow in length, forming long threads (scores to hundreds of microns) with active multiplication of their nuclei (scores to hundreds). On certain points, ribonuclease shows abundant nuclear matter (desoxyribonucleic acid) appearing in various forms. In the staphylococcus under the influence of penicillin ribonuclease shows three to five nuclei per cocci in the latent phase. After a longer conctact with penicillin, staphylococci and B. coli undergo lysis. The authors conclude that penicillin, at the beginning of its action, does not hinder the nuclear division of microbes but restrains the cytoplasmic division.

BUENOS AIRES

(From Our Regular Correspondent)

May 26, 1948.

A New Antibiotic

The Argentine Ministry of Agriculture announces a new antibiotic of the group of organisms which produce streptomycin. The agricultural engineer Augusto P. Cercós, working with Septoria Nodorum Berk on a fungus which causes a serious disease of crops, observed an infection of their cultures by a micro-organism coming from the air and that the colonies it produced had a great antibiotic effect on certain bacilli. The fungus was cultured and found to belong to the Actinomyces group. The active substance which was extracted is extremely heat resistant, easy to produce and extract and has an intense inhibitory action on some gram-positive bacilli and a minor but still appreciable action on gram-negative bacilli, some of which are pathogenic for plants. The new antibiotic is called "actinomicelina," and experiments with bacteria which infect man have been initiated.

New Plan For The Medical Curriculum

The new plan elaborated by a special commission of eleven professors of the Medical Faculty of Buenos Aires aims to diminish the theoretical and to intensify the practical studies, to reintroduce the compulsory internship and to require the doctoral thesis before a jury. The plan becomes effective immediately. Topographic anatomy has been eliminated; physiology has been divided into physiology proper, biologic physics and biologic chemistry. In the specialties, dermatology and venereal diseases, ophthalmology, otorhinolaryngology, gynecology, urology, psychiatry and pathology of tuberculosis, the examinations have been eliminated and a certificate of the professor who is responsible for the practical studies has been substituted.

The student can undertake the studies of the following year only after having passed completely the examinations of the preceding year. The certificates for practical studies are valid only for two years, so that students must continue their studies without interruption, as some did for personal or economic reasons. The school year has thirty weeks. The distribution of theoretical and practical classes during the year also has been reorganized. The hours per week vary in the six different years, from 22 to 29, and annually from 675 to 877.

During the one year compulsory internship after the examination on clinical medicine has been passed, the daily work is at least six hours, and assistance on an obstetric service, for two and one-half months, is compulsory. The study of medicine comprehends, including the practical year, seven years; i.e., as much time as it did before, when the practical year did not exist.

Paroxysmal Ventricular Tachycardia

The various causes of ventricular tachycardia, its prognosis and treatment and the modifications observed in the electrocardiogram induced Dr. F. C. Arrillaga, at the Medical Faculty of Buenos Aires, and Dr. L. de Soldati to study a group of 4 patients. Most of the paroxysms observed (three in 1 patient, one in another) could be controlled. In all of them the electrocardiographic post-tachycardiac syndrome observed consisted in a depression of the ST segment, negativity of the T wave and (less frequently) a lengthening of the Q-T interval. The post-tachycardiac syndrome assumed different characteristics, depending on the direction of the electric axis during paroxysm, i.e., according to the location of the focus which originated the stimuli. The syndrome was reversible in a short time in one case. In another case it persisted more than two months, one reason which induced them to consider that it is due to ischemia of the myocardium.

Practically all drugs known as efficient were administered in treating these patients. The only really active drug, however, was quinidine, particularly when given intravenously. One patient whose condition was refractory even to large doses of quinidine reacted well after receiving a large dose of digitalis intravenously ninety minutes beforehand. The authors concluded that a great percentage of patients suffering from paroxysmal ventricular tachycardia do not suffer from earlier organic cardiopathy, which may develop afterward. The absence of cardiopathy does not necessarily modify the usually serious prognosis, which to a certain degree is not related to the duration of the paroxysm.

Correspondence

MEDICAL CONDITIONS IN GREECE

To the Editor:—The Medical Mission of the Unitarian Service Committee after a month in Greece is nearing the end of its stay in that country. The Mission includes two internists (P. D. White, chairman, and C. M. Jones), a pediatrician (E. L. Pratt), a surgeon (E. L. Howes), a neurosurgeon (A. R. Elvidge), and an anesthetist (R. D. Dripps), two dentists and oral surgeons (R. F. Sognnaes and H. De Wilde), and a pharmacologist (H. B. Van Dyke), bacteriologist (A. M. Pappenheimer Jr.) and physiologist (R. W. Gerard). Since the entire group meets daily to discuss the varied experiences of the men, a fairly complete coverage has been achieved.

The two medical schools are at Athens and Salonika, the latter only five years old in a young university. The continued wars which have ravaged this unfortunate land have left heavy imprints on the universities and hospitals. Several important buildings were badly damaged by the Germans, and even more by the guerilla fighting; many are still pock-marked with bullet hits. Equipment was mostly destroyed or lost. Much of the space of the preclinical science buildings in Athens is still transformed into a busy military hospital handling some 50 new casualties a week in its three hundred beds, with a mortality of 1.5 per cent. (Incidentally, land mines laid by the guerillas are responsible for many casualties, especially blindness and amputations.) Also, many of the physicians are removed from teaching and practice by needed army service. The inflation has impoverished the academic teachers. Consequently, medical science is only slowly struggling up from complete inactivity. Yet a small number of able and energetic men remains active, and it is heartening to see some significant research in progress.

The peak of the postwar tide forced 1,300 freshmen medical students on Athens (and 1,800 on the one dental school, also there), and even this year there are classes of over 300 at Athens and 200 at Salonika. Two hundred graduates a year would meet the needs of the country, and, despite great efforts, the press of students is preventing their obtaining a satisfactory preclinical experience. Students may even be taking surgery before anatomy. Hospital facilities are also strained to the limit, with only 8,000 beds available in the Athens area for a population of 1,500,000, and new buildings, nurse training and the like have high priority.

Hospital and clinic practice, at least by the recognized physicians and surgeons, is at a high level. The doctors have well developed clinical skill and, even with limited facilities for roentgenologic, clinical and other laboratory services, make good diagnoses. Technical surgical work is excellent, especially in gastric resection, which is the treatment of choice for the very prevalent peptic ulcers. Plastic and intrathoracic surgery is less well developed. Preoperative and postoperative care is more limited than at home, and anesthesia as a medical specialty is still unknown. Measures to relieve pain in childbirth are seldom used. The solicitude for a patient's comfort, psychologic state and general welfare is also — as elsewhere in central Europe — less developed than with us, with our acute consciousness of the individual. The 2,500 monks of Mount Athos are essentially without medical care, yet our brief visit disclosed many with serious illness.

Nutrition now seems reasonably good, even in the half-million refugees from guerilla territory supported entirely by the government, but more calories and better protein are desirable. The traces of recent starvation (2,000 of the 7,000 in Lavrion died) are apparent in the size of the children—girls of 12 are judged as 6 or 7 years of age—and in the manyfold increase in tuberculosis. There are now some 300,000 cases of tuberculosis in Greece and only 5,000 beds in sanatoriums. Streptomycin is being used vigorously but often wastefully, and BCG vaccination is being introduced on a large scale by a Danish Red Cross mission. Diphtheria is another important public health problem, immunization not having been pushed as it might be with locally prepared toxoid. Echinococcosis is also prevalent and, although operative treatment is excellent, no preventive measures are being taken with regard to canine carriers or otherwise.

In contrast, a splendid DDT spray program, initiated by the United Nations Relief and Rehabilitation Administration has cut malaria to 5 per cent of its recent prevalence. Typhus is also well under control, and the general incidence of disease seems much as at home. The public health work of the American Mission for Aid to Greece, as indeed all phases of the work of this group, is well carried out and much appreciated by the government and people of Greece. These people have suffered greatly, but they are able and eager to rebuild. They do need help to enable them to help themselves. In the medical field this has been the central purpose of the medical mission. By working through the universities, the scientific and clinical teachers, the medical mission is reaching the future doctors and medical scientists of Greece. With lectures on newer observations, clinical conferences, ward rounds and operations, demonstration teaching, new books and apparatus on a small scale and friendly contacts that will lead to increasing interchange of personnel and experience, there is some basis for the belief that the Unitarian Service Committee's medical group will succeed in its mission.

R. W. GERARD, M D., Ph.D.,
University of Chicago,
Athens, Greece.

Medical Motion Pictures

FILM REVIEW

Scabies 1946. 16 mm., black and white, sound, 1,300 feet (1 reel), showing time thirty-eight minutes. Prepared for the Ministry of Health by the Ministry of Information, London, and procurable on loan from the American Medical Association, Committee on Medical Motion Pictures, 535 North Dearborn Street, Chicago 10.

This excellent teaching film of the British Information Services covers the problem of scabies, the natural history (life cycle) of the Sarcoptes and the clinical and microscopic diagnosis of the condition. The method of extracting the mite from the skin is excellent. Treatment is critically discussed and antiscabies drugs are reviewed; since the film was made several other equally effective preparations have come into general use. Particularly instructive is the presentation of the therapeutic management of the cases with the necessary emphasis on the family and group examination of the infected persons. The hygienic measures for the eradication and prevention of scabies are also fully considered.

This film can be highly recommended for county medical society meetings, industrial medicine and medical students. The black and white photographs and photomicrographs are beyond reproach. The speech of the British narrator is clear and distinct.

The Medical Motion Picture—Its Development and Present Application. 16 mm., color, sound, 1,100 feet (one reel), showing time thirty minutes. Produced for the American Medical Association in 1947 by Audio Productions, Inc., New York; technical adviser, Ralph P. Creer. Procurable on loan from the Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10.

The film demonstrates applications for medical films: it neither asserts nor denies that a film can shake a thermometer, but it does prove that a film could show how a thermometer is shaken. It shows that by various camera and film production technics a film can improve on first-hand observation, facilitating the transfer of knowledge or skill from one person to another. It is to be regretted that the film did not carry demonstration a step further and show how and when films are best used in medical teaching—for here it is that most of the misconceptions of the role of the medical motion picture exist.

The historical development of motion picture materials and technics is seen in a series of "period" sequences. Improvements in photographic reproduction are demonstrated by comparison of three cinematic records made at intervals between 1916 and 1930. All concern the same action (caesarean section), and the comparative merits of orthochromatic, panchromatic and color film are easily observed. Similarly, other advantages discovered with time are exhibited through excerpts from films employing these technics--sound film, diagrammatic animation, photomicrography, high speed camera work for slow motion, and combination of the motion picture camera with roentgen ray photography. The advantages of the film as a means of preserving unusual clinical material for student observation are demonstrated; an early silent, black and white record of a case of Oppenheim's disease (congenital myotonia); later color films of two congenital anomalies (ectopic heart and complete prolapse of the cloaca and urogenital sinus); and a clinical record, in sound, of speech difficulties in a case of myasthenia gravis, before and after treatment. Beautifully photographed sequences demonstrate three types of endoscopic cinematography in color--through the proctoscope, the laryngoscope and the gastroscope. The possibilities inherent here in extending clinical observation from small to large groups are exciting.

The last ten minutes of the film serve to illustrate both careful production planning and the decidedly worth while results thus obtainable. This is addressed to every man who has considered recording medical experience for the scrutiny of others. In a well planned and executed production the varied technics in motion picture photography are employed in a history of the diagnosis and management of a case of carcinoma of the thyroid with metastasis to the hip, treated with radioactive iodine. The mechanical sounds of the Geiger counter are recorded and reproduced, animated diagrams clarify certain involved points, and color reproduces faithfully physical characteristics. The technic of diagnostic aspiration biopsy is demonstrated. This, together with the indications for the use of a radioactive isotope, provides yet another evidence of the value of medical films in bringing to the attention of the profession new technics and procedures, and thus expediting their adoption. The film warns the prospective producer of the problems of film-making. It is unfortunate that the warning to avoid the use of the master print for screening was not included. Too often valuable medical information has been lost because the original print wore out or was lost or destroyed. This motion picture should do much to clarify the role of the film in medicine and to extend its use. The selection of studies in the film are disposed to point to the advantage of films as additional teaching instruments and it is, of course, in the medical schools that the peculiar advantages of the film may be best utilized.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners in the basic sciences were published in THE JOURNAL, June 19, page 749.

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners: Parts I & II. Various centers, Sept. 13-15. Final date for filing application is Aug. 13. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: Written. Various Centers, July 16. Oral. Philadelphia, Oct. 10, Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

American Board of Dermatology & Syphilology: Oral. Groups A & B. Ann Arbor, Oct. 21-23. Final date for filing application is Aug. 2, 1948. Written. Ann Arbor, Sept. 9, Sec., Dr. G. M. Lewis, 66 E. 66th St., New York 21.

American Board of Internal Medicine. Written. Oct. 18. Asst. Sec., Dr. W. A. Werrell, 1 W. Main St., Madison 3.

American Board of Neurological Surgery: Oral. Chicago, June 1949. Final date for filing application in Jan. 1949. Sec., Dr. W. J. German, 310 Cedar Street, New Haven, Conn.

American Board of Obstetrics and Gynecology: Part I. Various Centers, Feb. 4, 1949. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 1.

American Board of Orthopedic Surgery: Part II. Chicago, January 1949. Final date for filing application is August 15. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

American Board of Otolaryngology: Examination. Chicago, Oct. 4-9. Sec., Treas., Dr. D. M. Lierle, University Hospital, Iowa City, Ia.

American Board of Pathology: Chicago, Oct. 8-9. Final date for filing application is Oct. 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

American Board of Pediatrics: Oral. Seattle, Sept. 10-12. Atlantic City, Nov. 17-19. Written, July 30. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines, Iowa.

American Board of Plastic Surgery: Examinations are given in June and November of each year in the hometown of applicants. Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis.

American Board of Psychiatry and Neurology: Oral. All Groups, San Francisco, October. Final date for filing application is July 15. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S. W., Rochester, Minn.

American Board of Radiology: Nov. Final date for filing application is Sept. 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Urology: Chicago, Feb. 12-16, 1949. Final date of filing application is Sept. 1. Sec., Dr. Harry Culver, Route #13, Sunnyside Rd., Minneapolis 4.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Food and Drug Acts: Spectro-Chrome Misbranded as to Therapeutic Value.—The defendant was convicted of introducing into interstate commerce misbranded devices intended for use in the treatment and prevention of disease. From such conviction he appealed to the circuit court of appeals, third circuit.

The devices in question consisted of a cabinet equipped with a 1,000 watt electric light bulb, an electric fan and water container for cooling purposes, two glass condenser lenses to focus the rays from the electric light bulb and five ordinary glass slides, each of a different color. The devices were accompanied by various pieces of printed matter, which contained statements relative to the therapeutic value of the devices in the cure, mitigation, treatment or prevention of disease and directions for their use. The directions called for "irradiating" the body of the patient with "attuned color waves" projected by the device through the colored glass slides. The particular slide or combination of slides required to produce the exact color said to be needed to treat a given disorder was specified in the "Spectro-Chrome Home Guide." The patient was advised to adhere to a designated diet. He was directed to subject himself to "irradiation" while facing south or lying in a north and south position with his head to the north. The "tonations" from the Spectro-Chrome were to be taken at times specified by the defendant in the "Favorscope," which it was alleged, was compiled on the basis of solar, lunar and terrestrial radiant, gravitational influence.

The government presented a large amount of evidence, which, if believed, was amply sufficient to support a finding by the jury that the labeling of the defendant's Spectro-Chrome device was false and misleading within the meaning of the Federal Food, Drug and Cosmetic Act, in that the device did not have the therapeutic value which the labeling claimed for it. The jury, said the court of appeals, evidently believed the government's evidence.

We have examined with care each of the points raised by the defendant, concluded the court of appeals, and we find each to be wholly lacking in merit. Our consideration of the case has left us completely satisfied that the defendant had a fair trial. Indeed, the court concluded, the trial judge, if anything, leaned over backward to afford him the fullest opportunity to establish his defense and submitted the case to the jury in a charge to which no objection was or fairly could be made. The judgment of the district court was accordingly affirmed. —*United States v. Ghadiali, 165 F. (2d) 957 (1948).*

Malpractice: Liability of United States for Negligence of Army Surgeon.—This was an action for damages under the federal Tort Claims Act. It came up for a hearing on a motion by the defendant to dismiss the complaint and was argued in the district court of the United States, district D, Maryland.

The question, said the district judge, was whether the act authorizes a suit by a former member of the military forces to recover damages allegedly caused by a negligent abdominal operation performed on the soldier on or about July 3, 1945, by an Army surgeon in the state of Virginia (the plaintiff being a citizen of Maryland), while both were on active duty. Among other things, the act itself provides that " 'Employee of the Government' includes.... members of the military or naval forces of the United States" and that "'acting within the scope of his office or employment, in the case of a member of the military or naval forces of the United States, means acting in line of duty."

The federal Tort Claims Act, said the district judge after thoroughly discussing the cases cited by both plaintiff and defendant, represents a decided departure by the United States with respect to the waiving of sovereign immunity. It is a comprehensive act which, subject to the exceptions therein contained, acknowledges liability of the sovereign for injuries and damages to property and persons generally where the damage results from negligence in the performance of duties by its employees. This comprehensive act was passed subsequent to the various special acts waiving immunity under certain conditions and to a limited extent. Outside of the specific exceptions it applies to " any claim against the United States, for money only, accruing on and after January 1, 1945." It is also made expressly clear that it applies (subject to exceptions concerning combatant activities) to damages occasioned by the negligent action of members of the military or naval forces of the United States acting in the line of duty.

Continuing, the court said that the only open question here seems to be whether the comprehensive authority "to adjudicate any claim" should be narrowed by construction to exclude a claim by military personnel arising from the negligent action of other military personnel while both were on active governmental service, by reason of the special relationship existing between the government and its military forces, and particularly in view of the administrative disability benefits provided for disabled veterans under long established congressional legislation. The district court concluded that it was not presently convinced that the broad and comprehensive language of the Tort Claims Act should be narrowed by construction to exclude a case not included in the numerous exceptions expressed in the act itself. The contention to the contrary, said the court, would seemingly bar any redress to a soldier for the negligent acts of other soldiers under any circumstance (combatant activities being specially excepted by the act). Thus, for instance, a soldier on furlough injured by the negligent action of another soldier on active duty as a result of an automobile collision, would not be entitled to sue under the Tort Claims Act. Accordingly, the defendant's motion to dismiss the complaint was denied.—*Jefferson v. United States, 74 F. Supp. 209 (1947).*

Malpractice: Verdict as to Cause of Cancer Cannot Be Based on Guess or Speculation.—This was an action to recover damages for the alleged negligent conduct of the defendant dentist. From a judgment for the plaintiff in the trial court, the defendant appealed to the United States Court of Appeals, District of Columbia.

The plaintiff, a man aged about 70, had been in delicate health for a number of years. In 1943 he procured a denture from a New York dentist; some sharp points or prongs on it caused a puncture wound in his tongue. When he first noticed the wound it was about the size of a pinhead. This wound caused him considerable pain and in September 1944 he consulted the defendant, a licensed dentist in Washington, D. C. By that time the wound was about the size of the phosphorous end of a match and exposed raw flesh. It showed no tendency to heal. The defendant expressed the opinion that the wound was caused by a faulty denture, warned the plaintiff to discontinue using it and agreed to make a new one. He also gave the plaintiff a prescription for an antiseptic mouthwash, "metaphen" (nitromersol), and advised the plaintiff to use it on his tongue three times a day. According to the plaintiff, the defendant further told him that he could do as much for him as any physician. The wound continued to grow and spread, however, and by June 1945 covered a large part of the plaintiff's tongue. During that month the plaintiff consulted a general practitioner for a physical examination. The physician noticed the lesion and observed that the glands in the plaintiff's neck were swollen; he advised the plaintiff to go to a pathologist, who diagnosed the condition as cancerous. The plaintiff subsequently went to a cancer specialist who performed an operation on the glands of the plaintiff's neck. It was the plaintiff's contention that the treatment by the defendant dentist was the cause of the cancer.

At the trial three physicians were called by the plaintiff. The first, the general practitioner, testified that he knew about as much, and no more, on the subject of cancer as the average general practitioner in the District of Columbia. He admitted not only that he did not know whether the sore on the plaintiff's tongue was cancerous but that he did not know what caused the sore or the cancer. The pathologist testified that he did not know what caused the cancer or when the plaintiff's tongue had first become cancerous. In his opinion the application of "metaphen," either diluted or in full strength, would ordinarily have no deleterious effect. The plaintiff's medical witness, the cancer specialist, was asked whether, from his own examination or from any manifestations of cancer that he observed, he could testify as to when or how the cancer originated. He replied in the negative. He was unwilling to say whether the cancer had existed ten years or a much shorter period and testified that from his examination it was not possible to tell what the condition of the tongue had been one year prior to the time he saw it. He was likewise asked whether the wound in the tongue, if it was originally caused by a puncture from a sharp protruding object, would have caused a cancerous condition. He answered that he did not know, that the point was debatable.

A careful search of the record, said the Court of Appeals, discloses no word of testimony from any witness on which a jury could base a conclusion that the dental work done by the defendant, some months after the wound on the tongue developed, was the responsible cause of plaintiff's cancer; and there is likewise not a word of evidence to show any causal connection between the defendant's work in fitting and making the dentures and the cancerous condition. We hold, continued the court, that the record is wholly and entirely devoid of any evidence on which a jury could reach a conclusion that anything done by the defendant actually caused the plaintiff's cancer; hence, in telling the jury they might find that the defendant caused the cancer, the trial court erred. The subject matter of the controversy is the highly specialized subject of cancer, as to which laymen have no knowledge and as to which both court and jury must depend on expert evidence. Here, as we have seen, there is not a jot or tittle of evidence as to what caused the cancer. There is accordingly a total lack of evidence on which to base a conclusion that anything the defendant did or failed to do produced that result. Clearly the case is one in which the plaintiff must rely on his medical evidence. And this, given its full force and effect, goes no further than to show a possibility that irritation produced by the dentures made by the defendant might have produced or spread the cancer. This is not enough, concluded the Court of Appeals, and leaves the question wholly to guess and speculation. Accordingly, the judgment of the trial court was reversed and the case remanded for a new trial.—*Kasmer v. Sternal, 165 F. (2d) 624 (1948).*

Charitable Hospitals: Liability for Nurse's Negligence.—The plaintiff sued for damages for burns suffered while she was a patient in the defendant hospital. From a judgment for the plaintiff, the hospital appealed to the supreme court, appellate division first department, New York.

Following the plaintiff's return to her room after an operation under spinal anesthesia and while she was being given an intravenous injection, the plaintiff complained of feeling cold. At the doctor's direction a hospital nurse procured hot water bottles, which the doctor and nurse placed in the plaintiff's bed adjacent to her feet. According to the plaintiff's testimony, she complained of warmth within five minutes and thereafter at five or ten minute intervals repeatedly complained of a burning sensation. To these complaints the nurse paid no attention, until the plaintiff screamed in agony. Nurses and doctors then removed the bottles. According to the nurse's testimony, the bottles were removed on the first complaint. The plaintiff suffered a number of third degree burns.

The legal premise, from which consideration of this case must start, said the court on appeal, is that the hospital, being a charitable organization, is not liable for the negligence of a doctor or nurse acting in a medical capacity. A hospital is liable, however, for the administrative acts of its servants and would be liable for the act of a nurse acting in an administrative capacity for the hospital rather than in a medical capacity for the patient. The legal basis for the distinction, the appellate division continued, is that medical service, although procured by the hospital, is professional service rendered to the patient by a doctor or nurse; administrative work, on the other hand, is part of the hospital service and is performed by servants of the hospital. The question, therefore, is whether the nurse's failure to remove the hot water bottles on plaintiff's complaints was an administrative failure or medical default.

In the trial court, liability was predicated on the theory that the use of the bottles was medical treatment, but the failure to remove them on complaint was administrative rather than medical neglect. The appellate division said that the use of the hot water bottles was a medical or professional service. As the use was medical, the default of the nurse, whether of misfeasance or nonfeasance, was likewise medical. It cannot be said that failure to discontinue medical treatment in time is an administrative failure rather than a medical failure or that the complaints of plaintiff converted medical neglect into administrative neglect. The complaints might be considered sufficient notice to a prudent nurse that the treatment should have been discontinued, but her failure to respond to such notice was a failure of professional judgment. Liability could be imposed on the hospital, therefore, only by holding that the nurse had an administrative duty, over and above her professional duty, to heed the plaintiff's complaints and to remove the hot water bottles. Such a holding would not conform with reality, said the appellate division. The nurse was acting as a nurse, not as a servant doing administrative work, and her failure, whether of action or inaction, was nurse failure. Under the law the defendant hospital is not liable. Accordingly, the judgment in favor of the plaintiff was reversed and the case dismissed.—*Sutherland v. New York Polyclinic Medical School and Hospital, 75 N.Y.S. (2d) 135 (N. Y. 1947).*

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago
75:1-134 (Jan.) 1948

Survey of Patients with Juvenile Diabetes Mellitus. A.L. Chute. -p. 1.
Attempts to Infect Ameba Proteus with Poliomyelitis Virus. J. A. Toomey, W. S. Takacs and M. Schaeffer. -p. 11.
*Blood Levels of Penicillin with Oral Use of Buffered and Unbuffered Solutions: Studies on Series of Infants and Children. S. Q. Cohlan, J. M. Lewis and E. Seligmann. -p. 15.
*Epidemic Poliomyelitis in Children: Clinical Study, with Special Reference to Symptoms and Management of Bulbar Polioencephalitis. C. G. Grulee Jr. and T. C. Panos. -p. 24.
Functional Intestinal Obstruction on Congenital Neurogenic Basis in Infancy. W. W. Zuelzer and J. L. Wilson. -p. 40.
Titer of Antistreptolysin O in Human Serum and Cerebrospinal Fluid. W. W. Igersheimer. -p. 65.
Hyperlipemia Following Intravenous Infusion of Hypertonic Solution of Sucrose. W. Heymann and Mary E. Hartman. -p. 68.

Blood Levels with Oral Penicillin.--Stressing the advantages of oral administration of penicillin, Cohlan, Lewis and Seligmann show that a divergence of opinion exists as to the necessity of buffering penicillin for oral administration. Further data were needed under controlled conditions on the effect of the oral administration of buffered and unbuffered penicillin on the blood levels of infants and children. If acidity of the gastric juice plays a prominent role in the destruction of penicillin, it would seem that buffering penicillin would have less effect in securing higher blood levels in infants, since the *p*H of gastric juice is considerably higher in infants than in children. Studies were made on 16 children ranging in age from 2 to 12 years and on 14 infants, 10 days to 4 months of age. Comparable amounts of buffered and unbuffered penicillin were given. Dosage of penicillin ranged from 3,000 to 5,000 units per kilogram of body weight. Levels of penicillin in the blood were considerably higher in children who received the buffered preparation, whereas no appreciable difference in the concentration of penicillin in the blood was noted in infants with the buffered and with the unbuffered preparation. The authors regard it as necessary to use a buffer when penicillin is administered orally to children. On the other hand, the higher *p*H of the gastric juice of infants causes no appreciable destruction of penicillin in the stomach, and for this reason no buffer is necessary when the drug is administered orally to infants.

Epidemic Poliomyelitis in Children.—Grulee and Panos describe the symptoms and clinical management in 464 cases of acute poliomyelitis. Twenty-three per cent of all cases were of the bulbar type; all the deaths occurred in this group. Central cardiorespiratory failure was considered to be responsible for all but 1 of the deaths. Arterial hypertension was encountered in 85 per cent of cases of bulbar poliomyelitis. Encephalitic manifestations were present in 17 per cent of all cases studied. Prevention and treatment of hypoxia by interrupted aspiration of accumulated secretions, tracheotomy and administration of oxygen, the respirator or other means are emphasized.

American Journal of Ophthalmology, Cincinnati
31:137-276 (Feb.) 1948

*Ocular Lesions Following Atomic Bombing of Hiroshima and Nagasaki. J. J. Flick. -p. 137.
Role of Diencephalon in Regulating Ocular Tension. E. Schmerl and B. Steinberg. -p. 155.
Cystic Malignant Melanomas of Uveal Tract. H. E. Kennedy. p. 159.
Periphlebitis Retinalis Associated with Intracranial Manifestations. E. R. Veirs. -p. 168.
Histologic Study of Experimental Corneal Transplantation. H. M. Katzin and P. K. Kuo. -p. 171.
Effects of Practice and Consistency of Repeated Measurements of Accommodation and Vergence. J. Brozek, E. Simonson, W. J. Bushard and J. H. Peterson. -p. 191.
Notes on History of Ophthalmology in Canada. J. A. MacMillan. -p. 199.
Concerning Choroiditis Proliferans. C. Yen. -p. 207.
Lymphocytoma of Orbit Successfully Treated by Roentgen Irradiation: Report of Case. S. Van Wien. -p. 209.

Ocular Lesions from Atomic Bombing.--Flick describes ocular lesions that are directly related to deficiency in blood elements and in no way directly related to the action of radiant energy on the eye. On repeated examinations of the same lesions it seemed likely that the exudative lesions represented milder involvement. Persons manifesting both hemorrhage and exudation were on the average closer to the site of the explosion and had lower white blood cell counts than did those with either hemorrhage or exudation alone. The witnessing of a transition from the fluffy exudate to the "Roth" type hemorrhage and preretinal hemorrhage was rather impressive. It would seem logical to conclude that local areas of the retina could become swollen by transudation of serum through the walls of hyperpermeable capillaries in the presence of anemia, oligocythemia and consequent lowered oxygen tension in the blood. If this process was to become so intense as to cause tissue breakdown in the lesion itself as a result of stasis and anoxemia, the extravasation of whole blood elements could occur, superimposing itself on the original lesion and coming to surround it as "the hemorrhage with the white center." The locations of these lesions near large vessels is explained by the increased intravascular pressure in vessels of larger size. In those persons who recovered from the hemopoietic depression, the ocular lesions were observed to disappear without residual damage to the eyes.

American Practitioner, Philadelphia
2:357-428 (Feb.) 1948

Treatment of Ten Common Skin Diseases. J. G. Downing. p. 357.
Medical Management of Hypertension and Tests for Selection of Patients. J. Q. Griffith Jr. and M.A. Lindauer. p. 369.
Sterility as Related to Benign Lesions of Uterus and Ovary. G. F. Douglas. -p. 374.
Acute Rheumatic Pericarditis. D. C. Peete. -p. 379.
Acute Pancreatitis: Study of 80 Patients. J. M. Howard and I. S. Ravdin. -p. 385.
Contributions to Clinical Electromyography: I. Case Report on Guillain-Barre Syndrome. P. Liebesny, H. Fleck and S. L. Frank. -p. 396.
Practical Approach to Gynecologic Diagnosis. W. J. Reich and M. J. Nechtow. -p. 401.
Rheumatic Fever. W. R. Akenhead. -p. 405.
Physiologic Basis for Treatment of Diabetic Acidosis. C. Moses. -p. 409.

Annals of Surgery, Philadelphia
127: 193-384 (Feb.) 1948

Syndrome of Thrombotic Obliteration of Aortic Bifurcation. R. Leriche and A. Morel. -p. 193.

Problem of Maintaining Continuity of Artery in Surgery of Aneurysms and Arteriovenous Fistulae: Notes on Development and Clinical Application of Methods of Arterial Suture. H. B. Shumacker Jr. -p. 207.

*Conservative Surgery in Tumors of Bone with Special Reference to Segmental Resection. B. L. Coley and N. L. Higinbotham. -p. 231.

Closure of Colostomies. G. B. Sanders, H. Haffner and H. B. Lynn. -p. 243.

Modern Concepts of Ureteral Calculi. C. C. Higgins and J. G. Warden. -p. 257.

*Carotid Body Tumors. W. S. MacComb. -p. 269.

Mesenchymoma, Mixed Tumor of Mesenchymal Derivatives. A. P. Stout. -p. 278.

Lingual Goiter: Report of 3 Cases. E. Goetsch. -p. 291.

Concerning Surgical Treatment of Traumatic Injury of Upper Division of Brachial Plexus (Erb's-Type). A. Lurje. -p. 317.

Observations upon Patients with Penetrating Wounds Involving Cerebellum. J. E. Webster, R. C. Schneider and J. E. Lofstrom. -p. 327.

Subarachnoid Use of Vasoconstrictors in Spinal Anesthesia R. J. Whitacre and J. K. Potter. -p. 338.

Method of Partitioning Liver Proteins and Its Application to Study of Effects of Acute Hemorrhage in Dog. W. H. Fishman and H. H. LeVeen. -p. 342.

Blood and Liver Proteins in Surgical Patients as Related to Protein Depletion. H. H. LeVeen and W. H. Fishman. -p. 352.

Simplification of Diagnosis of Varicose Veins. C. A. Steiner and L. H. Palmer. -p. 362.

Giant Intracanalicular Fibroadenoma of Breast: Report of Case. J. C. Clarke. -p. 372.

Massive Resection of Small Intestine. H. D. Cogswell. -p. 377.

Conservative Surgery in Tumors of Bone.—Coley and Higinbotham point out that in recent years there has been a growing tendency to rely more on surgical measures and less on roentgen therapy in neoplasms of bones. They have devoted considerable thought to the possibilities of procedures less radical than amputation and have come to the conclusion that the patient stands to benefit rather than to suffer from the surgeon's conservatism. The authors define conservative surgery as an elective operation which either avoids amputation entirely or which places it at a lower level with greater prospects of improved function. They discuss the more conservative measures and show that curettage, partial resection, segmental resection and excision are methods which may at times be used in lieu of amputation. If these procedures are successful in eradicating the primary tumor and in avoiding a local or regional recurrence, they may be considered as justified. High thigh amputation for osteogenic sarcoma and chondrosarcoma of the lower femur may in selected cases be a safe substitute for disarticulation of the hip and offers greater advantages to the patients who survive. Illustrative case reports are supplied.

Carotid Body Tumors.—MacComb discusses various aspects of tumors of the carotid body on the basis of 10 cases observed at the head and neck service of the Memorial Hospital in New York. Whereas some observers believe that the majority of these tumors are noncancerous, it has been shown in other series and in the present series that about half are cancerous. Microscopically, the benign tumors are found to be extremely vascular. Small cells predominate in a uniform pattern. In the more malignant group pleomorphism occurs. Most authors agree that tumors of the carotid body should be removed surgically. Yet the necessity of ligation of the common and internal carotid arteries occurs so frequently that, because of the high postoperative mortality, it might be better to refrain from this procedure when it is possible to be certain of the noncancerous nature of the tumor. In the present series of 10 patients the tumor of the carotid body was resected without injury to the arteries in only 3 instances. In the other 7 patients it was necessary to include the carotid arteries in the resection of the tumor. There were 4 postoperative deaths. Hemiplegia preceded death in each instance. Fatalities following ligations of the carotid arteries are usually the result of insufficient collateral cerebral circulation or an ascending thrombosis in the internal carotid artery. External compression of the common carotid artery, as described by Matas, is undoubtedly of value in testing for the efficiency of the collateral cerebral circulation. The use of increasing periods of daily external compression may be of some aid in improving the compensatory flow of blood through the circle of Willis. The author suggests the use of heparin postoperatively as a possible means of preventing an ascending thrombosis in the internal carotid artery.

Archives of Physical Medicine, Chicago
29:71-122 (Feb.) 1948

Abuses and Pitfalls of Physical Medicine. R. Kovacs. -p. 71.

Use of Physical Therapy in Postoperative Management of Tendon Transfers and Grafts in the Hand. G. S. Phalen. -p. 77.

*Physiology of Respiration. As Applied to the Treatment of Bulbar Poliomyelitis. W. G. Kubicek, G. W. Holt and F. J. Kottke. -p. 84.

*Medulla Oblongata in Anoxia. E. Gellhorn. -p. 86.

Electromyographic Studies of Paralyzed and Paretic Muscles in Anterior Poliomyelitis. O. L. Huddleston and J. G. Golseth. -p. 92.

Evaluation of Training of Physical Educationists for Reconditioning and Rehabilitation. H. H. Clarke and E. C. Elkins. -p. 99.

Physiology of Respiration in Bulbar Poliomyelitis.—According to Kubicek, Holt and Kottke, many lives can be saved by the early correction of the respiratory deficiencies encountered in bulbar poliomyelitis. Because hypoxia quickly destroys neurons, the aim of oxygen therapy should be to maintain an uninterrupted normal arterial oxygen tension of at least 100 mm. of mercury. Examination of the hemoglobin saturation curve reveals that small decreases in the percentage of oxygen saturation of hemoglobin represent large changes in partial pressure of oxygen in solution in the plasma. The difference in partial pressure of oxygen between plasma and the fluid surrounding the oxygen-consuming cell is one of the factors which determines the rate at which oxygen flows from plasma to cell. Cyanosis is seldom detectable if saturation of hemoglobin is above 80 per cent. When cyanosis is first visible the flow of oxygen from capillary blood plasma to nerve cell may be decreased by at least 65 per cent; thus patients who become cyanotic usually succumb. Edema, perivascular infiltration, hemorrhage and debris may be considered as other important factors increasing the resistance to diffusion of oxygen from plasma to cell by the increased distance from capillary to cell, by the physical obstruction by particulate matter and by the increased oxygen consumption due to infiltrating white cells. If laryngeal and pharyngeal paresis are observed along with rise of temperature and increase in pulse rate, tracheotomy should be performed and oxygen therapy started immediately to prevent hypoxial damage to already infected nerve cells. Indecision in diagnosis and delay in treatment of hypoxia will fail to decrease the present high mortality rate of bulbar poliomyelitis.

Medulla Oblongata in Anoxia.—Gellhorn's physiologic studies of the effect of anoxia on the respiratory and circulatory system have shown that in acute conditions anoxemic stimulation of the chemoreceptors of the sinoaortic region results in an increased respiratory volume and increased blood pressure. Elimination of the chemoreceptors causes respiratory and vasomotor failure under conditions of acute anoxia. Data in the physiologic literature suggest that in chronic anoxia respiration and possibly blood pressure are regulated through the medullary centers alone. These data make it understandable that even mild degrees of chronic anoxia may have fatal effects if they act on diseased medullary neurons. This seems to be the physiologic rationale for oxygen therapy in bulbar poliomyelitis.

Cancer Research, Baltimore
7:417-480 (July) 1947

Inhibiting Effect of Ethyl Urethane on Development of Lymphatic Leukemia in Rats. J. B. Murphy and E. Sturm. -p. 417.
Electron Microscope Study of Chicken Tumor Cells. A. Claude, K. R. Porter and E. G. Pickels. -p. 421.
Some Morphologic Features of Cultured Rat Sarcoma Cells as Revealed by Electron Microscope. K. R. Porter and Helen P. Thompson. -p. 431.
Role of Sebaceous Glands and Hair Follicles in Epidermal Carcinogenesis. V. Suntzeff, C. Carruthers and E. V. Cowdry. -p. 439.
Carcinogenic Activity of 2-Acetaminofluorene. R. H. Wilson F. DeEds and A. J. Cox Jr. -p. 444.
Cytotoxic Effect of Avian Lymphoid Tumor Antiserum. B. R. Burmester. -p. 459.
Presence and Significance of Bound Aminoazo Dyes in Livers of Rats Fed Para-Dimethyl-Aminoazobenzene. Elizabeth C. Miller and J. A. Miller. -p. 468.

Journal of Clinical Endocrinology, Springfield, Ill.
8:1-110 (Jan.) 1948

Results of Administration of Anterior Pituitary Adrenocorticotropic Hormone to Normal Human Subject. H. L. Mason, M. H. Power, E. H. Rynearson and others. -p. 1.
Clinical Studies with Pituitary Adrenocorticotropin. P. H. Forsham, G. W. Thorn, F. T. G. Prunty and A. G. Hills. -p. 15.
Further Studies on Metabolism of Therapeutic Doses of Natural Estrogens in Human Subjects. C. L. Stealy and B. F. Stimmel. -p. 67.
Cytologic Cycle of Urinary Sediment and Its Parallelism with Vaginal Cycle. E. B. Del Castillo, J. Argonz and C. G. Mainini. -p. 76.
Social and Psychologic Readjustment of Pseudohermaphrodite Under Endocrine Therapy. Rita S. Finkler.-p. 88.

Journal of Immunology, Baltimore
58:1-108 (Jan.) 1948

Plasma Cellular Reaction and Its Relation to Formation of Antibodies in Vitro. Astrid Fagraeus. -p. 1.
Demonstration of "M" Protein in Culture Filtrates of Hemolytic Streptococci of Group A. J. Olarte. -p. 15.
Shigella Rio, New Type of Shigella. A. J. Weil, A. de Assis and H. Slafkovsky. -p. 23.
Study of Role of Thymus and Spleen in Formation of Antibodies in Rabbit. T. N. Harris, J. Rhoads and J. Stokes Jr. -p. 27.
Responses of Human Subjects to Vaccines in Saline-in-Mineral Oil Emulsion: I. Shigella Paradysenteriae Vaccines. S. Mudd, S. P. Halbert and J. Smolens.-p. 33.
Id.: II. Hemophilis Pertussis Vaccines. S. Mudd, Harriet M. Felton and J. Smolens. -p. 41.
Purified Animal Viruses. J. W. Beard. -p. 49.

Journal of Nervous and Mental Diseases, New York
106:619-718 (Dec.) 1947

Serial Electro-Encephalograms in Brain Injury. M. W. Laufer and R. F. Perkins. -p. 619.
Neurologic Examination of the Soldier. C. J. Bellis. -p. 631.
Three Types of Thinking Disorder: Investigation of Behavior on Special Tests of Schizophrenics, General Paretics and Cerebral Arteriosclerotics. H. A. Rashkis. -p. 650.
Follow-Up Study of Army Enlisted Psychoneurotic Dischargees. F. Feldman and E. Kezur. -p. 671.
*Tubercle Bacilli in Cerebrospinal Fluid of Dementia Precox. R. A. Darke. -p. 686.

Tubercle Bacilli in Dementia Precox.—Darke says that the question of a positive relationship between tuberculosis and dementia precox recurs periodically. In the studies presented here a total of 20 spinal fluids from psychotic patients without tuberculosis were examined by centrifuging the fluids, injecting the supernatant fluid subcutaneously into the groin of guinea pigs and staining and examining the sediment. The spinal fluids were examined also for sugar, protein and cells; Kolmer and colloidal gold curve tests were made. There was no evidence that tubercle bacilli were present in the nontuberculous patients, and the data obtained thus tend further to confirm the observations of those who believe that there is no etiologic relationship between the tubercle bacilli and schizophrenia.

Military Surgeon, Washington, D. C.
102:85-168 (Feb.) 1948. Partial Index

Priorities in Psychiatric Treatment of Veterans. D. Blain. -p. 95.
*Nagasaki Survivors as Seen in 1947. S. Warren.-p. 98.
Research Grants Program of United States Public Health Service. C. J. Van Slyke. -p. 102.
Orthodontic Properties of Certain Prosthetic Restorations. N. A. Harper. -p. 112.
Selection and Placement of Naval Recruit. F. L. McDaniel. -p 114.
Problem of Chronic Arthritis. E. R. Eaton. -p. 117.
Practical Considerations in Treatment of Burns. J. M. Deaver and E. P. Cronkite. -p. 120.
Malaria and Its Control in Persian Corridor During 1943. L. A. Stearns and F. R. Ostrander. -p.125.

The Nagasaki Survivors in 1947.—Warren says that by presidential directive, under the National Research Council, an Atomic Casualty Commission is actively cooperating with the Japanese in a long range study of the surviving population of Hiroshima and Nagasaki. Since the explosions at Hiroshima and at Nagasaki were air bursts, relatively little of the fission products remained at the site. Instead, they were widely disseminated through the stratosphere. Consequently, every bit of bombed area is safe for habitation and for cultivation. The scars of flash burns are relatively frequent among the survivors. Special attention is being given to keloid formation in these scars. The incidence of the keloids appears to be somewhat greater among Japanese than whites, but there is no evidence that there is any specific relationship between the occurrence of keloid in scar tissue and exposure to the explosion of an atomic bomb. In 1945 a considerable number of the survivors manifested disturbances of the hemopoietic tissue, as evidenced both by peripheral blood counts and by sternal marrow biopsies. In 1947 most of the survivors had returned approximately to normal. Three cases of leukemia, 1 probable case of leukemia and 1 of multiple myeloma have been reported as occurring among the group of survivors up to the present time. In examining sternal marrow aspirations in a few of the survivors, an abnormal prevalence of monocytes and reticular cells suggests in some that the marrow may not be entirely normal. No tumors of gonads have been reported among the survivors. Only slight changes in dominant genes can be expected, so it will probably be at least twenty-five years before reliable data on this vital point are obtained.

New England Journal of Medicine, Boston

238:171-204 (Feb. 5) 1948

Medulloblastoma Cerebelli: Diagnosis, Treatment and Survivals, with Report of 56 Cases. F. D. Ingrahm, O. T. Bailey and W. F. Barker. -p. 171.
Practical Importance of Modern Concepts of Psychosomatic Relations. A. O. Ludwig. -p. 175.
•Cytologic Method in Diagnosis of Cancer. M. Fremont-Smith, Ruth M. Grahm and J. V. Meigs. -p. 179.
Recent Therapuetic Trends in Allergy. W. S. Burrage. -p. 181.
•Septicemia Due to Proteus Vulgaris: Review of Literature and Report of Case Cured by Streptomycin. H. L. Abrams. -p. 185.
Epidemiology of Tularemia in Massachusetts with Review of Literature. J. C. Ayres and R. F. Feemster. -p. 187.
Twisted Cyst of Serosa of Cecum. -p. 194.
Lymphatic Leukemia. Leukemic Infiltration of Bone Marrow, Spleen, Lymph Nodes, Liver, Kidneys, Lungs, Testicles, Pericardium, Pleura and Voluntary Muscle. -p. 196.

Cytologic Method in Diagnosis of Cancer.—Fremont-Smith and associates point out that for many years pleural and ascitic fluids have been examined for malignant cells, their presence depending on the same property of desquamation. The method was first made applicable to other than metastatic tumors by Papanicolaou, who in 1928 recognized cancer cells in the vaginal secretion of women with cancer of the uterus. The value of the method for the diagnosis of uterine carcinoma has been established. In the detection of early cervical neoplasms it is apparently more accurate than routine biopsy. Studies are in progress to determine the efficacy of cytologic examination in the diagnosis of cancer of the stomach, lung and urinary tract. In the early diagnosis of gastric carcinoma the new method may prove to be of great value.

Septicemia Due to Proteus Vulgaris.—Reviewing the data on 52 cases of septicemia due to Proteus vulgaris that have been reported in the literature, Abrams says that these cases fell into two main groups: those associated with disease of the genitourinary tract, and those associated with infection of the ear, nose and throat. Until the advent of streptomycin the prognosis in these cases was poor. The author reports a patient who was cured by streptomycin and suggests that a striking reduction in mortality may be expected.

Oklahoma State Medical Assn. Jour., Oklahoma City

41:1-40 (Jan.) 1948

Surgical Treatment of Peptic Ulcer with Preliminary Report on Vagotomy. L. J. Starry and E. B. Neff.-p. 4.
Danger of Lubricating Jellies in Surgical Procedures. C. E. White. -p. 7.
Radiologic Diagnosis of Acute Surgical Abdomen. S. Pollack. -p. 8.
Endometriosis. H. G. Bennett Jr. -p. 11.
Some Modern Concepts of Intestinal Function. W. T. Bynum. -p. 14.

41:41-78 (Feb.) 1948

Where Does This Road Lead? R. H. Lindsey. -p. 43.
Quantitative Serologic Tests in Evaluation of Syphilotherapy. F. R. Hassler and Catherine Harris. -p. 45.
Common Errors in Diagnosis of Syphilis. H. A. Foerster. -p. 49.
Cholecystitis and Cholelithiasis. B. Halpert. -p. 50.
Review of Management of Syphilis. C. P. Bondurant. -p. 52.

Radiology, Syracuse, N. Y.

50:1-146 (Jan.) 1948

Introduction to Symposium on Treatment and Care of Advanced Cancer Patients. H.H. Murphy.—p. 1.
Care of Patients with Advanced Pelvic Cancer. W.E. Costolow.—p. 3.
Management of Advanced Cancer of Breast. A.W. Erskine.—p. 7.
Palliative Procedures in Advanced Cancer of Mouth. G. Beckstrand.—p. 10.
•Pulmonary Disease in Workers Exposed to Beryllium Compounds: Its Roentgen Characteristics. L.M. Pascucci.—p. 23.
The Adult Silent Chest. G.M. Landau and Hildegarde A. Schorsch.—p. 37.
•Radiologic Differentiation Between Pericardial Effusion and Cardiac Dilatation. J. Arendt.—p. 44.
Roentgen Treatment of Subacute Sinusitis in Children. D.R. Laing.—p. 52.
Hilar Densities Simulating Neoplasms. C. Gottlieb and H.S. Sharlin.—p. 57.
Roentgenologic Aspect of Certain Lesions of Bone: Neurotrophic or Infectious? J.R. Hodgson, D.G. Pugh and H.H. Young.—p. 65.
Calcium, Phosphorus and Phosphatase as Aids in Diagnosis of Bone Lesions. E.B. Flink.—p. 72.
Experiences with Nasopharyngeal Carcinoma. V.P. Graham and R.R. Meyer.—p. 83.
Diverticulitis with Abscess Formation and Vaginal Fistula. R.H. Marshak.—p. 92.

Pulmonary Disease in Workers Exposed to Beryllium Compounds.—Pascucci presents a brief summary of the clinical data accompanying the chest films of 32 patients who were exposed to dust of beryllium compounds and in whom delayed pulmonary changes developed. Pathologic changes observed at necropsy in several cases are briefly described. Histories of 4 patients are presented. Roentgenograms of the lungs are characterized by a bilateral, uniformly widespread, diffusely granular and/or nodular infiltration. No other disease entity is known to produce this fine disseminated granular type of infiltration. In both types, but more so in the granular, there may develop coalescent or confluent shadows. The period of observation is not yet adequate to warrant a valid correlation between the clinical course and the pulmonary changes, nor is the final result known in those patients with clinical remission but persistent pulmonary lesions. Prognosis should be guarded in patients with the granular type of nodulation, especially when confluent shadows are superimposed. Roentgenographic pulmonary changes may exist without significant symptomatology. Many of the patients were at first suspected of having Boeck's sarcoid. A diagnosis of silicosis was almost as frequently entertained.

Differentiation Between Pericardial Effusion and Cardiac Dilatation.—Arendt shows that differentiation between cardiac dilatation and pericardial effusion is not easy, especially as the two conditions may occur simultaneously and sometimes from the same cause. Valsalva and Mueller tests are used in the roentgen differentiation. The dilated heart shows greater changes in size and shape than the heart enclosed in pericardial effusion or even the normal heart. At the change over from the Valsalva to the Mueller test the weak pulsations of the dilated heart increase and become visible. In the presence of pericardial effusion such pulsatory changes do not occur in equal measure. Observation of the angle of the bronchial bifurcation is also suggested as a diagnostic aid. Its visibility is frequently obscured in pericardial effusion. Visibility and widening to 100 to 130 degrees favor a diagnosis of auricular enlargement or hilus tumor. Absence of lateral and posterior displacement of the esophagus or a rather shallow, wide-curved pressure zone along the whole length of the lower esophagus is in favor of pericardial effusion. Lateral and posterior displacement and localized auricular impression are in favor of cardiac enlargement. Diminution or absence of cardiac pulsation is an important diagnostic sign of pericardial effusion, demonstrable by kymographic examination. Rapid change of the heart size at repeat examination is in favor of pericardial effusion but is not a reliable sign. There is no configuration of the heart entirely pathognomonic of the pericardial accumulation of fluid.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1:1-34 (Jan. 3) 1948

*Penicillin in Subacute Bacterial Endocarditis: Report to Medical Research Council on 269 Patients Treated in 14 Centres Appointed by Penicillin Clinical Trials Committee. R. V. Christie. -p. 1.
Intravenous Alimentation. H. E. Magee. -p. 4.
*Rarer Manifestations of Herpes Zoster: Report on 3 Cases. T. Parkinson. -p. 8.
Treatment of Chronic Ulceration After Irradiation of Plantar Wart. M. H. Shaw. -p. 11.
Exertion Hemoglobinuria: Report of Case. E. J. L. Lowbury and A. P. L. Blakely. -p. 12.
*"Tridione" in Treatment of Petit Mal. A. J. M. Butter. -p. 13.

Penicillin in Subacute Bacterial Endocarditis.—Christie reviews observations on 269 patients with subacute bacterial endocarditis who were treated with penicillin at 14 different centers appointed by the Medical Research Council in Great Britain. When the investigation was first begun, penicillin was still scarce and the dosage was inadequate. Subsequently treatment was continued for longer periods and larger daily doses were given. Administration of 500,000 units of penicillin a day for twenty-eight days can be expected to control the infection in about 90 per cent of patients with subacute bacterial endocarditis, but about 35 per cent of these die of heart failure and other complications. Larger doses should be given for a longer period of time to patients who relapse and to patients in whom the infecting organism is more than eight times as resistant as the Oxford staphylococcus. Of the relapses, 90 per cent occurred within a month of treatment, but danger of relapse persists after a year or more of good health. Evidence of heart failure or of poor nutrition is of great importance in prognosis. The duration of infection and the nature of the primary cardiac lesion are also of some significance. What appear to be viable organisms are occasionally found in the cardiac valves of those who have died after the infection has apparently been controled.

Rare Forms of Herpes Zoster.—Parkinson reports 3 cases of herpes zoster with unusual motor and cutaneous manifestations. In the first patient the zoster was accompanied by paralysis in the distribution of the fifth cervical segment. The second patient had ophthalmic zoster with generalized eruption, followed by weakness of the levator palpebrae. In the third patient the zoster was of trigeminal and cervical distribution accompanied by generalized eruption and followed by facial palsy. It is suggested that zoster virus produces a pleomorphic group of diseases with varying degrees of cutaneous and nervous symptoms. In the classic form the brunt of the infection is borne by the sensory ganglions, the resulting symptoms being pain and a cutaneous eruption in the peripheral distribution of the fibers proceeding from the affected ganglions. Study of the rarer manifestations of the disease shows that in some cases in which motor symptoms occur there is clinical and pathologic evidence that the anterior horn cells of the spinal cord are affected in a manner similar to that in poliomyelitis. In others the infection produces an exanthem clinically identical with that of varicella. From the available evidence it seems no more reasonable to deduce that varicella and zoster are caused by the same virus than it would be to make a similar deduction regarding zoster and poliomyelitis. It seems much more probable that the virus is capable of producing a range of clinical manifestations varying from simple motor lesions to generalized cutaneous lesions, and that the classic form of the disease lies midway between these extremes.

"Tridione" for Petit Mal.—Butter points out that the synthetic anticonvulsant drug "tridione," 3,5,5-trimethyloxazolidine-2,4-dione, has been extensively used in the treatment of petit mal in America since 1944. When supplies of this drug became available in Britain, a preliminary investigation was made at a hospital for epilepsy. The treatment with "tridione" in 23 cases of petit mal is analyzed. Approximately four fifths of the patients improved, but various toxic symptoms and signs were manifested in almost every case. Nineteen patients mentioned that they found the outdoor light too bright. This phenomenon was variously described as "dazzle" or "glare," or "a whiteness like mist over everything." In most instances the sensation ceased after a short interval. Five men were aware of slight drowsiness, apparently due to the drug; 1 complained of lack of concentration and 1 of restlessness; in 2 slight ataxia developed; 2 complained of hiccup and 2 of slight epigastric discomfort. In 1 there developed a slight rash, and 1 had a severe rash of the face, neck and hands. Most of the patients were anxious to continue taking the drug, as in their opinion the relief obtained from the reduction in their attacks more than outweighed the slight nuisance of the "dazzle phenomenon" or the other symptoms. The author believes that "tridione" has a pronounced inhibitory effect on petit mal.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

54:729-904 (Dec.) 1947. Partial Index

Diagnostic and Therapeutic Aspects of Kymographic Uterotubal Insufflation with Comparative Observations on Hysterosalpingography. I.C. Rubin. -p. 733.
*Biology of Cervix and its Relation to Puerperal Infections. M.B. McIlrath and A.L. Hellestrand. -p. 746.
Range of Blood Pressure Among Women who had Normal Pregnancy and Confinement. W.J. Martin. -p. 778.
Value of Guterman Test in Threatened Abortion. S. Bender. -p. 783.
Investigation of Causes of Sterility and Lowered Fertility in West African Negroes. C. R. Morison. -p. 793.
Calcium and Phosphorus Metabolism in Pregnancy. E. Obermer. -p. 817.
Vestibular Anus. J.L. Wright. -p. 824.
Cramps in Pregnancy. Margaret Robinson. -p. 826.
Some Aspects of Fetal Pathology. G.G. Lennon. -p. 830.
Inevitable, Incomplete and Septic Abortion. G. Fitz-Gibbon. -p. 838.
Incubation Period of Ophthalmia Neonatorum. A. Sorsby. -p. 842.
*Basal Temperature in Sterile Women. I. Halbrecht. -p. 848.
Case of Spontaneous Extra- and Intra-Peritoneal Rupture of Hydronephrosis in Pregnancy. I.C. Campbell. -p. 853.
Use of Hodge Pessary for Correcting Backward Displacement of Uterus. T. N. A. Jeffcoate. -p. 855.
Pyrexia as Sign of Endometriosis. T.N.A. Jeffcoate. -p. 858.
Plastic Surgical Treatment of Congenital Transverse Diaphragms of Vagina. M. Tritoftides. -p. 861.

Biology of Cervix and Puerperal Infections.—McIlrath and Hellestrand review the history and the present knowledge of puerperal infection. Their own investigation was undertaken in an endeavor to discover if cervical lesions present during pregnancy were caused by or harbored organisms which could spread into the tissues during labor and the puerperium and be responsible for the low grade infections so frequently seen in women who have borne children. Seventy-seven women were studied throughout pregnancy, in the puerperium and post partum. Of these, 12 were normal, 7 were referred as normal but classified as "for observation," 37 were primigravidas and 21 multiparas with leukorrhea. The pH data, cells seen in smears from cervix, vagina and urethra and cultures taken from these areas were studied. Biopsies were taken at intervals throughout pregnancy, the puerperium and post partum. From a study of these, normal changes in the cervix were recognized and four deviations from normal were classified. They are hyperplastic, proliferative, secretory and mixed types. In only 2 patients in the normal group did inflammatory lesions develop, and both these patients had suffered traumatic lesions. In the hyperplastic group 2 patients who entered labor with active erosions later had inflammatory lesions, although they suffered no trauma. In nearly half of the abnormal primigravidas (15) inflammatory lesions developed, though traumatic lesions had been suffered by only 2 of these patients. In about two thirds (14) of the abnormal multiparous group inflammatory lesions developed, and 8 of these patients had suffered trauma. Of the 23 patients who had no pelvic abnormality at their final visit, all had clinically healthy cervices or minor deviations from normal at the last prenatal visit. The authors conclude that the cervical lesions constitute a definite danger to the mother and increase chances of the development of a low grade pelvic infection after confinement. Every patient should have her cervix inspected at each antenatal visit just as faithfully as her blood pressure is taken. The treatment which proved most satisfactory was the application of penicillin-sulfanilamide powder and vitamin B therapy. Every patient should be followed up for at least eight weeks post partum, as spreading lesions may not appear before that period. If a woman with a cervical erosion is seen before marriage, everything possible should be done to cure the condition in view of the risk that a low grade pelvic inflammation may develop after a pregnancy.

Basal Temperature in Sterile Women.—Halbrecht says that investigators are of the opinion that the two most important causes of female sterility are tubal occlusion and failure of ovulation in women who menstruate normally. Although the diagnosis of tubal occlusion is now easy, the investigation of ovarian activity still offers difficulties. Among methods used for this purpose, endometrial biopsy has been considered the most reliable, but variations of the basal temperature curve also seem significant. The author reviews studies on 425 sterile women, who measured their temperatures in 1,184 cycles. In 80 per cent the the oral basal temperatures varied between 36.4 and 36.8 C. (97.5 and 98.2 F.) in the postmenstrual phase and between 36.9 and 37.2 C. (98.4 and 99 F.) in the premenstrual phase of the cycle. In 90 cases it was possible to compare the basal temperatures with endometrial biopsies taken during the same cycle. In all but 3 cases the results were identical. It seems that the basal temperature is more reliable than the edometrial biopsy, at least for the purpose of determining the time of ovulation. The temperature curves in normally menstruating sterile women were biphasic. The two hundred and twenty two cycles in which the temperature curve was monophasic must be considered as anovulatory. In many women ovulation seems to effect no more than a drop of 0.1 to 0.3 degree Centigrade (0.18 to 0.54 Fahrenheit) during one to three days of the intermenstrual midcycle. Thyroid extract, progestin and estrogens do not change the temperature level. The rise in temperature in the second half of the cycle is caused by a complex mechanism, lutein being probably only one of the many factors. Amenorrheic women have monophasic curves. In many cases, however, the temperature rises fourteen days before spontaneous menstruation, indicating that ovulation has occurred.

Medical Journal of Australia, Sydney

2:737-764 (Dec. 20) 1947

Concerning Pathology and Treatment of Tennis Elbow. J.R.S. Lahz. -p. 737.
•Treatment of Congenital Club Foot. G.K. Smith. -p. 742.
Anterior and Posterior Marginal Fractures of Tibia. H.M. Hill. -p. 744.
Taussig-Blalock Operation for Pulmonary Atresia. K. Maddox. -p. 746.
Paraldehyde and Barbiturate Analgesia in Labor. R. Mackey. -p. 748.

2:765-792 (Dec. 27) 1947. Partial Index

Modern Trends in British Psychiatry. A. Stoller. -p. 765.
Psychosomatic Medicine. A.T. Edwards. -p. 772.
Vitamin C in Prevention of Colds. N.W. Markwell. -p. 777.
Modified Drinker Respirator for Newborn Infants: Preliminary Report. F.E. Hytten. -p. 779.

Club Foot.—Reviewing the various treatments for club foot, Smith is of the opinion that the Denis Browne splint, either in its original form or in its modifications, remains the most satisfactory appliance in the treatment of club foot. The author's preference is for the modification of Bell and Grice, which for him has solved the problem of keeping the heel in contact with the sole plate. There is no need to use great force in manipulating the infant's foot, the majority of club feet in the newborn being amenable to overcorrection by gentle stretching in four to six weeks at the outside. It is at this stage that the Denis Browne splint can be introduced with such telling effect and the overcorrection continuously maintained until walking commences. Inversion of an undeveloped heel is the main element in relapsed or neglected club feet. When the child is 5 or 6 years of age this deformity cannot be corrected by manipulation. In these tarsectomy is usually planned about five years later, the accepted age for stabilizing operations. The author has operated on 30 patients of this age. He has removed a wedge from the neck of the talus and taken a cut from the calcaneocuboid joint. In 25 of these cases the purpose of the operation was achieved, that is, a plantigrade foot. This is only a makeshift operation, as it does not effect the most important element in the deformity or help the equinus position. However, it does produce a foot much improved in appearance, with a more normal weight distribution. For the treatment of older patients the author prefers an osseous reconstruction in the form of a wedge tarsectomy.

Proceedings of Royal Society of Medicine, London

40:849-932 (Dec.) 1947. Partial Index

Certain Anatomic and Physiologic Considerations in Paralysis of Larynx. V. E. Negus. -p. 849.
Treatment of Subacute Maxillary Sinusitis Especially in Children. G. E. Archer. -p. 854.
Normal Temporal Horn and Its Deformities by Tumors in in Middle Cerebral Fossa. E. Lindgren. -p. 859.
Importance of Statistics in Psychiatry. L. S. Penrose. -p. 863.
Associated Carcinoma of Colon and Rectum: Report of 2 Cases. F. Forty. -p. 872.

Cardiologia, Basel

12:133-194 (No. 3) 1947

- *Atypical, Verrucous Endocarditis of Libman-Sacks Type and Its Relationship to Acute Lupus Erythematosus. A. von Albertini and O. Alb. -p. 133.
- *Libman-Sacks Disease. E. Coelho and A. Gonçalves. -p. 170.
- *Allergic Myocarditis Following Use of Antirabic Vaccine. E. Lyon. -p. 183.

Atypical Verrucous Endocarditis.—Von Albertini and Alb report 1 case of atypical verrucous endocarditis of the Libman-Sacks type with acute disseminated lupus erythematosus in a woman aged 24. Two sisters of the patient had a chronic form of the disease. The patient presented the clinical picture of a generalized infectious condition with acute exacerbations initiated by chorea minor and associated with high fever, disturbance of circulation, polyarthritic and nephritic manifestations and panmyelopathy. The dissemination extended to the mucous membranes of the oral cavity, the urinary bladder and the vulva. Death occurred from bronchopneumonia, and the anatomicopathologic picture revealed a characteristic form of atypical verrucous endocarditis complicated by bland embolism of an intermediate form between rheumatic endocarditis and endocarditis lenta. In addition there were inflammatory changes in the arteries in the sense of periarteritis nodosa which suggested an acquired allergic reaction. From the pathogenic point of view the clinical and bacteriologic peculiarities of the Libman-Sack syndrome may be explained best on the basis of a focal infection (suppurative bronchiectasis in the author's case). The acute form of lupus erythematosus is probably a modification of a preexistent chronic lupus erythematosus, and the diffusion of the cutaneous disease may occur under the influence of the Libman-Sacks disease. Spread of this type also occurs as a sequela of other severe diseases such as tuberculosis or cancer.

Libman-Sacks Disease.—Coelho and Goncalves report 2 cases of Libman-Sacks disease in 2 women aged 22 and 18, respectively, who died. The first patient had an acute disseminated lupus erythematosus and presented a mitral systolic murmur on auscultation; necropsy was not performed. The second patient also had an acute disseminated lupus erythematosus without any symptom of endocarditis on auscultation. Necropsy in this case confirmed the observations of atypical verrucous endocarditis by Libman, Sacks, Gross and other American authors. There were no vascular changes of the renal glomeruli. Because of the presence of mural endocardiac lesions, clinical symptoms of the verrucous endocarditis may be absent. On the basis of the morphologic changes and the clinical symptomatology it is considered that acute lupus erythematosus and Libman-Sacks disease constitute the same disease, which may or may not involve the skin but which always affects the viscera (with or without mural or valvular endocarditis).

Allergic Myocarditis.—Lyon reports 1 case of allergic myocarditis in a man aged 58 who had been bitten by a dog and had been given fourteen antirabic vaccine injections. The vaccine used was a 2 per cent emulsion of fixed virus brain destroyed by the combined action over twenty-four hours of heat and 1 per cent phenol. After each injection, redness, swelling and itching was noted at the site, increasing in intensity with each injection. A few weeks after this treatment had been terminated he began to suffer from frequent attacks of palpitation during working hours. During subsequent months palpitations increased, particularly after mounting stairs and after some walking. The patient then had dyspnea and was susceptible to quick fatigue. Electrocardiograms showed that both the atrioventricular and intraventricular conduction time were at the upper limit of normal or had slightly surpassed this limit, to become normal again in the course of time. Both atrioventricular and ventricular extrasystoles occurred occasionally. There were T wave changes in CF2, a high T in the first and a flatly negative T in the second record, while T was again normal in the fifth record. In elderly persons with an allergic history the employment of skin tests is indicated to determine the hypersensitivity to antirabic vaccine before initiation of the treatment. The occurrence of allergic myocarditis in the author's case suggests that myocarditis often may not be the result of infection and that the way in which the organism and the heart muscle react may play a decisive part in the pathologic mechanism.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

91:3665-3740 (Dec. 20) 1947

- *Auricular Fibrillation During Pregnancy and Puerperium. G. A. Lindeboom. -p. 3686.
- *Open Dislocation of Four Fingers in Metacarpal Joints. B. A. G. Veraart. -p. 3695.

Auricular Fibrillation in Pregnancy.—Lindeboom presents histories of 7 women with mitral stenosis, in whom auricular fibrillation developed during pregnancy or puerperium. Review of the literature suggests that fibrillation develops infrequently in young pregnant women with mitral stenosis. In the group of 7 all but 1 were over 30 years of age. All the patients had signs of decompensation. If the patient survived, the decompensation subsided under suitable treatment. The mortality rate is considerable; one statistical report indicates that 33 of 99 cases terminated in death. Little is known about the later fate of women who were discharged from the hospital. Efforts should be made to prevent decompensation. Hospitalization is advisable in order to enforce rest in bed; digitalization should be employed, and after the signs of decompensation have subsided efforts can be made to restore the normal rhythm by quinidine. The author does not regard cesarian section advisable for these women.

Dislocation of Fingers in Phalangometacarpal Joints.—Veraart reports the case of a coal miner in whom 4 fingers of the left hand were dislocated dorsally, with the result that the heads of the metacarpal bones were denuded and exposed through the wounds. The flexor tendon sheaths were all ruptured. After the wound was cleansed with hydrogen peroxide and diluted alcohol, it was disinfected with 5 per cent tincture of iodine. Healing took place by primary intention after reposition and suture. After six weeks the patient was able to resume light work. Flexing of the fingers was so slightly impaired that at the end of six months the patient received compensation on the basis of a 20 per cent disability.

Progrès Médical, Paris

76:1-32 (Jan. 10) 1948

- *Painful Syndrome of Upper Extremity: Shoulder Pain and Brachialgia. R. Leriche. -p. 9.

Shoulder Pain and Brachialgia.—According to Leriche, cold, epidemic neuraxitis, subdeltoid calcification, a glomus or a cervical rib may be the causes of brachialgia which will be identified easily. In the absence of one of these causes two others may be considered, namely, herniation of intervertebral disk or abnormality of the thoracic outlet. Frequently the symptoms of herniated disk, such as stabbing pain or pinprick pain, heaviness, dead fingers, tingling and dysesthesia may be manifested only approximatively in the area of the affected root. There may be radiating pain in the nape of the neck, in both shoulders and in the breast. The motor phenomena, hypotonia, fibrillary contractions and disturbances of reflectibility may be more closely localized. There seem to be few vasomotor disturbances associated with herniation of the disk. Attacks resembling Reynaud's syndrome may be absent, although they are common in the scalenic syndrome and in cases of cervical rib or abnormal first rib. In herniation of the disk the contact is purely radicular. In the syndromes of the subclavian cavity and of the outlet of the thorax there is contact with the subclavian, as demonstrated by the high incidence of arterial dilatation or of distant thromboses. In the latter syndromes there may be occasional cramps. In any type of brachialgia the symptoms may be bilateral. Nocturnal predominance of the pain is characteristic of the syndrome which originates in the subclavicular cavity. Compression of the vein in the costoclavicular interval may be one of the causes. Symptomatology frequently may thus be an aid to the clinical diagnosis of brachialgia, while roentgenography will establish the diagnosis: when the transverse process of the seventh cervical vertebra appears like the beak of a toucan or thinned, one should consider a stellate syndrome; on the contrary, when an obliterated intervertebral space may be seen in the upright column, and the closure of an intertransverse aperture in the oblique, one should consider herniation of the disk. Repeated infiltrations of the stellate ganglion or section of the scalenus should be carried out in the first case and laminectomy in the second. Section of the scalenus should not be done without additional exploration of the superior aperture of the thorax, and in certain cases it should be combined with excision of part or all of the first rib.

Revista Medica Brasileira, Rio de Janeiro

23:401-450 (Nov.) 1947 Partial Index

*Penicillin in Therapy of Hepatobiliary Infection: New Method for Duodenal Application. W. Martini. -p. 433.

Penicillin in Hepatobiliary Infection.—Treatment of hepatobiliary infection consists in emptying the stomach of gastric secretion; biliary drainage with isotonic sodium chloride solution, repeated several times at intervals of thirty minutes; washing the duodenum by instillation of 15 cc. of isotonic sodium chloride solution through an Einhorn sound; and, immediately after washing, intraduodenal administration of a solution of 30,000 Oxford units of penicillin in 15 cc. isotonic sodium chloride solution. The patient remains in right lateral posture for from five to ten minutes, after which the sound is removed and intramuscular injections of 20,000 Oxford units of penicillin are given at intervals of three hours to a total dose which varies between 800,000 and 1,000,000 units. Treatments are repeated at intervals of one month. The number of treatments varies between two and six, depending on the seriousness of the infection and the clinical reaction to treatment. Permanent clinical cure is reported in 35 cases.

Schweizerische medizinische Wochenschrift, Basel

78:1-24 (Jan. 10) 1948. Partial Index

*Q Fever (Queensland Fever) in Switzerland: Endemic Pneumonias Caused by Rickettsia Burneti. O. Gsell. -p. 1.

Recent Contributions to Physiology of Secretion of Epinephrine. H. Hermann. -p. 10.

*Roentgen Therapy of Localized Hyperhidrosis: Follow-Up of 192 Patients. G. Miescher and C. Böhm. -p. 14.

*Nicotinamide in Pregnancy Toxicoses, Particularly Hyperemesis. W. Widmer. -p. 20.

Q Fever in Switzerland.—Gsell says that of the cases of atypical pneumonia observed at the Medical Clinic of St. Gallen in Switzerland in the spring of 1947, 7 gave positive complement fixation tests with the antigen of Q fever. Further investigations revealed that at least four groups of infections due to Q fever occurred in Switzerland during 1947. The first group was a familial one, in which 4 persons became ill within three days. The second group involved a village epidemic, in which about 50 cases of pneumonia, chiefly in men, occurred in four weeks. The rickettsial character of the disease was serologically demonstrated in 1 case at once and in 6 others in the course of the next six months. The third group comprised sporadic cases that occurred in the spring of 1947 in St. Gallen and in the autumn in eastern Switzerland. The fourth group was an epidemic of 30 cases occurring in a boarding school in Geneva. Sudden high fever, lack of appetite and malaise, occasionally with vomiting and sweating, severe headache and sometimes stupor were the usual symptoms. Roentgenograms of the chest usually revealed extensive infiltrations in the form of soft multiple shadows. In the severe cases physical signs of pneumonia became evident later on. The process usually had a favorable outcome with subsidence of the fever between the fifth and twelfth days. Complications took the form of serious pleurisy, orchitis or thrombophlebitis. Serums showed positive complement fixation titers for Rickettsia burneti, and injection of blood into guinea pigs resulted in the appearance of specific antibodies of Rickettsia burneti.

Roentgen Therapy of Hyperhidrosis.—In order to obtain information about indications for roentgen treatment of localized hyperhidrosis Miescher and Böhm investigated cases involving such treatment from as far back as 1925, when the iontometric system of measurement came into use. Treatments were given after four, six and eight weeks. At the first and second irradiations 400 r were usually given and at the later ones 300 r. Only patients with the localized form of hyperhidrosis of hands, feet or axillas were treated with roentgen rays. A total of 192 patients were studied, and it was found that there is a considerable difference in the efficacy of roentgen therapy, depending on whether the hyperhidrosis is continuous or intermittent. Whereas the results of roentgen therapy were favorable in more than four fifths of those with the continuous form, less than one third of those with the intermittent form responded favorably. Although considerable dryness of the hands resulted in some cases, no roentgenologic injuries of the skin resulted.

Nicotinamide in Toxicoses of Pregnancy.--Widmer says that he obtained excellent results with nicotinamide in patients with various gestational disturbances such as those of the appetite, and in nausea, emesis and hyperemesis. At the first injection 1 ampule of 100 mg. of nicotinamide is usually administered. If this injection has no effect, the author usually suggests to the patient that she try from four to six injections over a number of days. If the first injection effects some improvement, a total of three or four injections is usually adequate. Of 68 women with various forms of gestoses, particularly hyperemesis, 38 were cured, 18 more were improved and the remaining 12 remained uninfluenced.

Book Notices

Directory of Convalescent Homes in the United States. Prepared under the Auspices of the Committee on Public Health Relations of the New York Academy of Medicine. *Sixth edition Paper.* Price, 50 cents. Pp. 112. The Burke Foundation. White Plains, New York, 1947.

The Committee on Public Health Relations of the New York Academy of Medicine presents in this booklet a list of one hundred and sixty-four institutions in thirty states devoted to convalescent care, tuberculosis preventorium service and the hospitalization and treatment of cardiac disease, particularly in children. The majority of the homes are philanthropic institutions offering free care or service below cost. Proprietory institutions are also represented, but only when charges are low enough to enable patients to obtain accommodations for ward or semiprivate care. Homes offering service primarily for the aged are not included.

The committee recognizes that without inspection facilities it is not possible to evaluate the quality of service rendered, and therefore the directory listing does not in any way constitute an endorsement or approval of individual institutions. Though the list is not a complete record of the convalescent homes in all states, it nevertheless becomes a useful source of reference for physicians, hospital administrators, social service workers, welfare agencies and individual patients and their families. In relation to each institution the directory gives information about location, buildings, bed capacity, ownership or control, administrative personnel, medical staff, nursing service, types of patients admitted, requirements for admission, therapeutic facilities available and rates. Of the institutions listed, seventy-three are for adults only, seventy-six limit their admissions to children and fifteen offer facilities for both adults and children.

Medicine Today: The March of Medicine 1946. No. XI of the New York Academy of Medicine Lectures to the Laity. Cloth. Price, $2. Pp. 177. Columbia University Press, 2960 Broadway, New York 27, 1947.

The lectures in this volume were designed for the public. There are seven lectures in this series. They offer a realistic appraisal of the relation of present day medicine to the larger society in which we all live. The moral standards of the community require that the ill be cared for regardless of ability to pay. Medicine is emerging as a social science as well as a natural science. The form of medical practice must not be allowed to interfere with the quality of medical care received. More particularly, compensations and incentives must not be allowed to become other than spurs to better work. The series as a whole comprises a healthy introspective glance into the medical profession.

Best's Safety Directory of Safety, Hygiene, First Aid and Fire Protective Products. *Edited by Harry Armand and others. Second annual edition, 1948.* Fabrikoid. Price, $5. Pp. 494, with illustrations. *Safety Engineering Magazine, a Division* of Alfred M. Best Co., Inc., 75 Fulton St., New York 7, 1947.

This Directory, as recently announced by the Alfred M. Best Company's Safety Engineering Division, is unique in that it combines all the best practical features of a safety manual, directory, index, encyclopedia and catalogue into one comprehensive, profusely illustrated volume. It is the "what, how and where book of safety;" it shows what safety products or devices to use for specific hazards, how to use them and where to get them. Best's was the first safety directory published and is still the only one in the field. One outstanding feature of this book is its indexing and subject-grouping system. These devices—plus countless illustrations—make it easy to locate safety products even when the user is not certain of the type or name of the product he needs. The logical arrangement of subjects also serves as a checklist of hazards—many of which are frequently overlooked. This second annual edition will be appreciated by industrial physicians and surgeons, industrial hygienists, public health and safety officials.

Los Angeles County Hospital House Staff Manual. *Robert F. Nielsen, M. D., Editor in Chief.* John A. Wilson Jr., M. D.; Gordon E. Goodhart, M. D. and Herman Weiner, M. D., Assistant Editors. Fifth edition. Loose-Leaf. Paper. Price, $4. Pp. 525, with illustrations. Los Angeles County Hospital, 1200 N. State St., Los Angeles 33, 1947.

This manual is a comprehensive loose-leaf record of the therapeutic procedures that have been outlined by the Los Angeles County Hospital for the guidance of the interns and residents on the staff. There are detailed sections on respiratory and circulatory diseases; hematology; renal, digestive, hepatic and biliary diseases; endocrine and metabolic disorders; nutritional and deficiency changes; allergy; arthritis, and contagious diseases. Procedures commonly employed in dermatology, syphilology, pediatrics, psychiatry, neurology and obstetrics-gynecology are also described as well as those pertaining to general surgery, orthopedics, urology, ophthalmology and otolaryngology. Descriptive material is likewise included, with reference to minor therapeutic procedures, sulfonamide drugs, penicillin and streptomycin therapy, physical medicine, roentgen ray and laboratory procedures, dietary management, prescriptions and special drugs. Conversion tables for equivalent weights and measures are provided to facilitate the use of the metric system which has been instituted in the present edition in accordance with modern trends.

The manual is a valuable guide to interns and residents in their introduction to individual hospital services. It can also serve as a useful reference for other institutions planning to formulate new procedures or modify existing regulations.

A Synopsis of Anaesthesia. *By J. Alfred Lee,* M.R.C.S. L.R.C.P., M.M.S.A., Consultant Anaesthetist to Southend General Hospital, Rochford, England. Cloth. Price, $4. Pp. 254, with 42 illustrations, Williams & Wilkins Co., Mt. Royal and Guilford Aves., Baltimore 2, 1947.

This little book is well written and contains more information in fewer words than any other book on anesthesia. It covers material on the following subjects: history of anesthesia, respiration, preanesthetic care and preparation, premedication, inhalation anesthesia, agents for inhalation anesthesia, the closed circut, cyclopropane, controlled respiration, nitrous oxide anesthesia, accidents of inhalation anesthesia and how to treat them, gases used in association with anesthesia, endotracheal anesthesia, rectal anesthesia, basal narcosis, intravenous anesthesia, analeptics, spinal analgesia, regional anesthesia, refrigeration analgesia, choice of anesthetic as influenced by type of operation, choice of anesthetic and methods as influenced by general condition of the patient, the use of curare in anesthesia, shock, anesthesia in thoracic surgery, the complications and sequelae of anesthesia, explosion risks in anesthesia, management of the unconscious patient, anesthetic records and anesthesia and analgesia in labor.

Semiologia Cardiovascular. Por el Dr. Rafael Carral y de Teresa, medico del Instituto nacional de cardiologia de México, México, D.F. Cloth. Pp. 409, with 93 illustrations. Instituto nacional de cardiologia, México, D.F., 1947.

This book presents a summary of cardiovascular disease. It emanates from the National Institute of Cardiology of Mexico City. It is a good up-to-date survey of the field in which the author shows his familiarity with the literature. The book is divided into six parts. The first deals with the functional disturbances caused by cardiovascular disease, including dyspnea, cyanosis, pain and palpitation. The second part deals with abnormal hemodynamics such as are encountered in valvular disturbances and with an insufficient myocardium. A discussion is presented on elevation of venous pressure, edema, ascitis, circulation time, blood volume and arterial hypertension. The third part deals with the clinical examination of the heart. The fourth part deals with laboratory tests, such as determination of sedimentation time, serology tests and the examination of the blood. The fifth part deals with the roentgen examination of the heart. The sixth part deals with electrocardiography. This book should prove useful to the physician and medical student who can read Spanish.

Lehrbuch der Pharmakognosie für Hochschulen. Begründet Von George Karsten. Sixth edition, edited by Dr. Ulrich Weber, Apl. Professor, zur Zeit an der Universität Marburg Lahn. Boards. Pp. 428, with 585 illustrations. Gustav Fischer, Jena, Germany, 1946.

Although no effort is made to describe pharmacognosy in an introductory chapter, it immediately becomes obvious according to this textbook that pharmacognosy is the study of all vegetable drugs. Most of the emphasis has been placed on the botanical characterization of the drugs, especially their morphology and histology. The student using this textbook must be familiar with the fundamentals of descriptive botany. Though less attention is devoted to the constituents and uses of these drugs, nevertheless these data are brief and complete.

The drugs to be treated are arranged on a taxonomic and also on a morphologic basis. In the beginning the drugs are grouped under the thallophytes and pteridophytes. The spermatophytes are divided into a number of morphologic groupings such as rhizome and roots, tubers, woods, barks, herbs, leaves, flowers, fruits and seeds. Each of these groups is subdivided into monocotyledons and dicotyledons, and, finally, the drugs are listed and described under these respective classes. Other drugs without a definite morphology are grouped according to their method of preparation or the nature of their constituents. Information concerning each drug includes, with few exceptions, the origin, description of the whole drug, its histology, a detailed microscopic description, constituents, uses and history. The comments pertaining to the preparation of each drug are somewhat limited. Occasionally a paragraph is devoted to the cultivation of the drug plant. All of the numerous illustrations are exceptionally good line drawings exhibiting unusual care as to details, accuracy and labeling. Many of the figures are drawn in color to differentiate the various tissues and cells. Such impressive illustrations should serve as a valuable visual teaching aid.

The book contains an appendix which includes a list of drugs frequently used in homoeopathy in the foreign countries and a key which may be followed in the identification of powdered plant drugs. It also includes a list of the drugs under the various plant families which are arranged according to the Engler system, and a list of the drugs classified on the basis of their most important chemical constituent.

Apparently the scope of pharmacognosy in Germany is somewhat narrowed to the botanical study of drugs. It would be well if the next edition of this textbook included subjects closely related to the interest of pharmacognosy, such as the insecticides, herbicides and allergens. Since Germany is the source of many vegetable drugs for export, it would have been interesting to learn something about the factors which influence the commerce of drugs and more about the cultivation of drug plants.

If one were to make a thorough study of the botanical drugs in the laboratory with the aid of this textbook, he would become, without question, an expert in the identification of such drugs. The reviewer highly recommends to any technician in drug plant work and to all laboratories interested in the authenticity and identification of their drugs the use of this textbook as a valuable reference. The American teacher of pharmacognosy will do well to supplement his information by frequent reference to this book.

Studies in Biochemistry Dedicated to Professor Dr. Carl Neuberg, on the Occasion of His 70th Birthday, by Pupils, Friends, and Colleagues. Editor: Bruno Kisch, M.D. [Experimental Medicine and Surgery, Volume V, No. 2-3, 1947.] Cloth. Price, $10. Pp. 306, with portrait. Brooklyn Medical Press, Inc., P.O. Box 99, Station H., New York 25, 1947. 1947.

This book consists of a collection of nineteen papers prepared by former students of Carl Neuberg in honor of the 70th birthday of this noted biochemist. Dr. Bruno Kisch has edited the volume and prepared the introduction summarizing Dr. Neuberg's life and achievements.

The papers cover a wide range of subjects, among which might be mentioned a discussion on the immunity to Brucella abortus by Alberto Ascoli, loss of alkali as a cause of nephritic acidosis by A.P. Briggs, the toxicity of histidine by Gustav J. Martin and the determination of aspartic and glutamic acids by Irene S. Roberts.

It is difficult to see the usefulness of this volume other than as a gracious memento to an eminent scientist. In general, the quality of the papers is not high, and the subjects are of little general interest. The book is suitable only for workers in biochemistry and allied fields.

Causes of Blindness Among Recipients of Aid to the Blind. By Ralph G. Hurlin, Sadie Saffian and Carl E. Rice, M.D. Federal Security Agency, Social Security Administration, Bureau of Public Assistance. Paper. Price, 40 cents. Pp. 131. Supt. of Doc., Government Printing Office, Washington 25, D.C., 1947.

This report analyzes the causes of blindness of nearly 21,000 recipients of aid to the blind as taken from medical records in twenty states during 1940 and 1941. As a result of uniform procedures required as a condition of federal welfare grants, the Bureau of Public Assistance was able to collect comprehensive and comparable data on the causes of blindness of recipients in relation to their age, sex, race and age at onset of blindness. Standard definitions and classifications were followed by the states included in the study. The chief source of information was the physician's report of eye examinations required for each applicant for aid to the blind and containing a diagnosis of the eye condition, cause and nature of the defect, a report of remaining vision, prognosis and recommendation of treatment. Causes of blindness were classified according to site and type of pathologic condition and etiology of defect. When these tables are related, they yield statistics on the percentage distribution of recipients by cause for each site and type of affection and, conversely, by site and type of affection for each cause. Separate tables analyze etiologic data by states, age, sex, race and age at onset of blindness.

Despite the volume of information collected by the study, conclusions drawn from the data cannot be extended to the blind population as a whole. The sample group is unrepresentative, including only the needy, and underweighting blind children and blind persons 65 years of age and over, who receive aid under other public assistance programs. Taking this latter factor into account, the Bureau has adjusted its data by comparing the age distribution of recipients with persons found blind by the National Health Survey. The cause data suggest that more medical care could conserve or improve the vision of many recipients of aid to the blind.

Jaundice: Its Pathogenesis and Differential Diagnosis. By Eli Rodin Movitt, M.D., Acting Chief of Medicine, Veterans Administration Hospital, Oakland, Calif. Cloth. Price, $6.50. Pp. 261, with 25 illustrations. Oxford University Press, 114 Fifth Ave., New York 11, 1947.

This book presents clearly the problems met in the diagnosis of diseases associated with jaundice. In the first part the anatomic and functional changes found in the presence of jaundice are discussed. It includes a broad discussion of the normal and pathologic physiology of the liver, with a description of the basis and technic of the function tests in used Although indications and contraindications of the individual tests are not clearly defined, a successful attempt is made to combine them with clinical methods into an unified diagnostic approach. This part also contains an analysis of what little we know of the pathogenesis of jaundice. The shortcomings of this first section are caused by our still erratic knowledge of the physiologic basis of the function tests and of their application to the differential diagnosis of jaundice. Moreover, since, as yet, the correlation between anatomic and clinical findings in the liver is rather vague, the pathogenesis of jaundice is a thankless problem. The second section presents a review of the different diseases in which jaundice occurs. It reveals thorough knowledge of the literature as well as careful clinical observation and acumen. As cannot be avoided, some chapters are dealt with more sketchily than others; for instance, little reference is made to jaundice in childhood. The main emphasis is placed on diagnosis, and therapeutic considerations are kept in the background. As a whole, the book is written in a fluent and pleasant style and the well arranged tables help for quick orientation. The illustrations are well chosen. It should be of great value to the general practitioner, internist and surgeon who treat patients with jaundice. The value as a reference book for the student of the problem of jaundice is greatly reduced by the relatively small number of literature references, the simplification in the presentation of the newer advances and the omission of arguments where the facts are as yet unestablished. However, the latter two disadvantages may make for easier reading

Manual of Medical Parasitology with Techniques for Laboratory Diagnosis and Notes on Related Animal Parasites. By C. Courson Zeliff, M.S., Ph.D., Assistant Professor of Human Parasitology and Zoology, The Pennsylvania State College, State College, Pa. Paper. Pp. 159, with illustrations. Price, $3.75. The Author, State College. Pa. 1947.

This text has been prepared as a laboratory and reference guide for use by medical and nonmedical students taking an intensive course in parasitology. Numerous references are cited. and many well selected tables and illustrations have been reproduced from other publications. The latter in many instances have suffered from the photo-offset technic and lithographic reproduction which together with reduction in size render them difficult to interpret.

The biologic and morphologic material is well presented and the notes on parasites of animals are useful. Similarly the section on laboratory technics is a useful compilation. Unfortunately, the text is not free from misinformation; for example, the statements that Schistosoma mansoni is found in Central America and Loa loa in the West Indies. The brief reference to DDT (4,4'-dichlorodiphenyltrichloroethane) is inaccurate and inadequate. The volume is weakened by lack of competent medical editing.

The Industrial Environment and Its Control. By J. M. Dallavalle. Cloth. Price, $4.50. Pp. 225, with illustrations. Pitman Pub. Co., 2 W. 45th St., New York 19, 1948.

Facts regarding the industrial environment and control are presented in this book with an unusual clarity and logical development. Simplicity and precision characterize the discussion of critical details regarding exposures to excessive concentrations of dusts, fumes, mists, gases and vapors. There is an extensive discussion of exhaust ventilation as a means of control. In the words of the author: "As to the special emphasis on exhaust ventilation, I need only point out that practically all problems relating to atmospheric contaminants, and hence to industrial hygiene, are solved by ventilation methods." The book is divided into twelve chapters with an introduction by J. J. Bloomfield, senior sanitary engineer, U. S. Public Health Service, in which the scope of industrial hygiene is treated in a masterful way. The names of the chapter headings are as follows: Problems and Trends. Psychrometry. The Atmospheric Environment. Illumination and Radiant Energy. Noise, Vibration, and Fatigue. The Thermal Environment. Industrial Ventilation. Design of Local Exhaust Hoods. Design of Exhaust Systems. Measurement of Air Flow. Air Sanitation. Industrial Dust Collection.

In addition the book contains a well written preface, an appendix and index. Industrial hygiene engineers will welcome this volume and assign it a deserved niche in their libraries.

Die Diagnostik und Therapie des Nebennierenausfalls und das Krankheitsbild der relativen Nebennierenrindeninsuffizienz (Hypadrenie). Von A. Kappert [Erschienen in den Helvetica medica acta als Supplementum 20, Beilage zu Vol. 14, 1947, Fasc. 4/5.] Paper. Price, 8 Swiss francs. Pp. 192, with illustrations. Grune & Stratton Inc., 381 4th Ave., New York 16; Benno Schwabe & Co. Klosterberg 27, Basel 10, 1947.

This small monograph is a competent review of the diagnosis and treatment of adrenal cortical insufficiency. Without going into great detail as to basic physiology, sufficient applied physiology is included to illuminate the clinical discussion. The clinical concepts are similar to those which are current in this country, with the possible exception of the acceptance by the author of certain borderline syndromes as forms of adrenal cortical insufficiency. The references to the literature are ample and international in character. This volume should be of value to internists who have a special interest in disorders of the endocrine glands.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

RHEUMATOID ARTHRITIS

To the Editor:—Please give data on the latest treatment of rheumatoid arthritis following rheumatic fever of young adults

W. C. Terry, M.D., Hamlet, N.C.

ANSWER.—Although there is no reason why rheumatoid arthritis should not follow rheumatic fever in the same person, proved cases of this combination are difficult to find. In most instances when rheumatic fever is believed to precede the development of a progressive joint disease consistent with rheumatoid arthritis, the patient has actually had an atypical acute or subacute first attack of rheumatoid arthritis. Another less likely possibility is that the patient is suffering from an adult type of rheumatic fever, without evidence of carditis and with unusually prolonged articular manifestations. Treatment, of course, depends on the final diagnosis. While this is still uncertain, the patient should be confined to bed, receive a well balanced diet and be given salicylates in as large doses as can be tolerated. The joints should be watched for the development of persistent changes, in which case the diagnosis is presumably rheumatoid arthritis. A review of the current status of therapy in both rheumatic fever and rheumatoid arthritis has recently appeared (Hench, P.S., and others: *Ann. Int. Med.* 28:66-168, 1948.)

BIRTH CONTROL

To the Editor:—I have literature on a so-called "rhythmeter," which is supposed to be accurate in predicting rhythm control of pregnancy and also useful in more accurately predicting births. The American Medical Association is quoted in this material. Are these statements correct? Has this system been tried and how successful has it proved? I have always been skeptical of it and have only advised it for families who are not allowed to use other methods. This article claims that it is better than the conventional methods. Please give information in this matter.

Alvin H. Seibert, M.D., Grosse Pointe Park, Mich.

ANSWER.—The greatest exponents of the rhythm, or Ogino-Knaus, theory in this country are Latz and Reiner (J.A.M.A. 105:1241 [Oct. 19] 1935). They set forth following rules:

1. A written record is made of the dates of the beginnings of menstrual periods covering a period of at least eight months to one year before applying the method. This is necessary to determine the variation between the shortest and the longest cycle. Patients should also be instructed to record disturbing factors that may upset the regularity of menstruation, such as sickness (even colds), mental shock or upset, physical strains and even great changes in climate or altitude. This will enable the physician to make an intelligent interpretation of the data given. Data furnished by memory are of no value.
2. Sexual intercourse during the time of possible conception is prohibited.
3. Regularity in menstruation must prevail. The menstrual cycle may be either long or short, but the variation should not be more than ten days; a longer variation would make the use of the method impracticable. However, according to Latz and Reiner, 90 per cent of women have variations of from two to eight days regardless of whether their cycles are short or long, and therefore they maintain that most women menstruate regularly enough to make use of this method of natural conception control.
4. After these three rules have been satisfied, the woman is told that her fertile period extends from the twelfth to the nineteenth day before her expected menstruation (the expected first day of menstruation being calculated from the longest cycle in the last eight months) plus the days of variation between the longest and the shortest cycle in the last eight months added to the beginning of the fertile period. For example: Suppose a woman has varied between a twenty-six and a thirty day cycle in the last eight months. Then her first seven days, counting from the first day of menstruation, are sterile. The next twelve days (eight days of regular fertility plus the four days of variation) are fertile. The patient is then asked to record conscientiously on a calendar the day of each intercourse as well as the first day of each menstrual period.

This method of birth control should not be used: (1) after labor, miscarriage or abortion until the regularity of the cycle is reestablished (usually in three to six months); about 50 per cent of women menstruate irregularly after childbirth; (2) after febrile or debilitating diseases or severe physical injuries. (3) after severe psychic or emotional upsets, or (4) after any drastic alteration in the ordinary routine of life, such as prolonged travel in a different climate and strenuous exercises. During and after these unusual occurrences, the method should not be used until regular menses have been definitely established.

J. P. Greenhill (*Office Gynecology*, ed. 4, Chicago, Year Book Publishers, 1946, p. 223) says: Unfortunately, the safe period of conception control cannot be applied as universally as its proponents believe. In the first place, only 80 per cent of women, at most, menstruate with any degree of regularity which will permit calculation of a fertile period. Certainly not more than 60 per cent of all women menstruate approximately every twenty-eight days. Second, a large proportion of women at more or less periodic intervals encounter the contraindications enumerated by Latz and Reiner. Thus, most women at various times have full term pregnancies or miscarriages, minor or major illnesses, psychic or emotional upsets or they take trips to other climates. Third, certainly not all, or even the majority of women ovulate on the fifteenth day before every menstrual period. Many women ovulate a few days before or after this date....An objection to the Ogino-Knaus method raised by many couples, particularly recently married ones, is that there is an excessively large number of days each month when coitus cannot be indulged in. In some cases less than half of each month is safe or convenient for coitus.

Latz and Reiner present a useful chart which shows the fertile days each month for women who menstruate from twenty-one to thirty-eight days apart. A number of mechanical devices, of which the "rhythmeter" is one, have been designed to help physicians and patients determine the fertile days in each month, but these devices are not necessary.

MENOPAUSAL ARTHRALGIA

To the Editor:—I have seen 3 women recently, all of whom complain of being awakened at night with severe pain in both hands. The pain is so severe that they are obliged to get up and walk around shaking their hands until they obtain some relief. Sometimes the hands are swollen but the color does not change. Bathing the hands in warm water gives little or no relief. Physical observations are noncontributory. The women are all between the ages of 38 and 45. Is this a manifestation of so-called menopausal arthritis? I would appreciate suggestions as to treatment.

H. V. Temple, M.D., Oak Creek, Colo.

ANSWER.—Exquisite pain in the fingers, occurring especially at night, has been described by Hall (*New England J. Med.* 219:1015-1026, 1938) in patients with articular symptoms following the menopause. The suggestion was made by this author that the pain was due to vascular spasm. Similar pain, however, is not uncommon in the early stages of rheumatoid arthritis. The presence of other symptoms and signs commonly associated with the menopause would add weight to the opinion that menopausal arthralgia was present. A trial of oral or parenteral estrogenic therapy in adequate dosage is indicated, but the final diagnosis will probably depend on further observation.

DIETHYLSTILBESTROL

To the Editor:—A man aged 72 had an enlarged prostate. He took diethylstilbestrol, 5 mg. a day for about twenty days. Then it began to nauseate him a little and he stopped. As a result of the medication the prostatic difficulty improved considerably, but about ten days later he noticed that he had a slight enlargement of both breasts with some soreness and slight pain on palpation. This hyperplasia of the breasts was fibrotic in character—a disk about the size and thickness of a quarter developed underneath each nipple—rather hard, like cartilage, to the touch and sensitive, the nipple especially, with a moderate degree of soreness of the disk underlying the nipple. This condition of the breasts has continued for three months. Will this abnormality clear up, since the diethylstilbestrol therapy has been discontinued? Might it be cancer initiated by the treatment, possibly due to the rather large doses taken? The literature on this drug suggests that it has been given in much larger doses over extended periods without serious after-effects.

C. C. Townsend, M.D., Walnut Ridge, Ark.

ANSWER.—Diethylstilbestrol is indicated only in the presence of carcinoma of the prostate gland. The patient should be observed at intervals while on stilbestrol therapy, because of the many and varied reactions to this medication. Besides the decrease in size of the carcinoma and its metastases, one also notes enlargement of the breasts, salt and fluid retention, dyspepsia, atrophy of the testicles and hypertrophy of the pubic fat pad.

Cancer of the male breasts is not a well established sequela of diethylstilbestrol therapy. However, such a case was reported this year. Refer to the *Journal of Urology* (59: 76 [Jan.] 1948) for the explanation of this situation and an excellent bibliography of diethylstilbestrol therapy for carcinoma of the prostate.

CANCER OF THE BREAST

To the Editor:—In THE JOURNAL, Jan. 31, 1948, page 305, Cornelius P. Rhoads, M.D., makes brief reference to the use of testosterone and diethylstilbestrol for metastatic cancer of the breast. A woman patient, 67, had a carcinoma of the breast removed eighteen months ago. The tumor had invaded the anterior wall of the chest, so that the pectoralis major was adherent to the ribs and intercostal tissues, due to the carcinomatous infiltration. The pathologic diagnosis was carcinoma of the simplex or medullary type with regional metastases. The patient is still apparently well, and no growth of the remaining malignant growth was palpable until recently, when a hard nodule became palpable high in the axilla, which seems to be adherent to a rib. On the anterior chest where widespread pieces of malignant tissue were left signs of recurrence are absent. Should this patient be treated with either testosterone or diethylstiobestrol? She has not had roentgen therapy, and roentgenograms do not indicate metastasis.

ANSWER.—The choice of the sex hormone to be tested therapeutically in inoperable mammary cancer in female patients is dependent on two principal factors: the age of the patient and the site of the metastatic cancer. Female sex hormone is used exclusively in patients several years past the menopause, whereas male sex hormone is used without reference to the age. Female sex hormone is the empiric choice in the presence of nonosseous metastases (lymph node, skin, breast), while male sex hormone is preferred in the presence of osseous metastases.

In the case of the patient in question further clinical studies are indicated. Roentgenograms of the lungs, ribs and other bones should be made to establish the extent of the metastatic involvement. Pelvic examination should be made in order to rule out concomitant pelvic disease which might preclude the use of estrogen.

If the decision is made to try sex hormone, rather than conventional roentgen therapy, then the choice, whether estrogen or androgen, will depend on the relative clinical importance of the metastases in the various sites.

GOLD THERAPY

To the Editor:—A patient has been taking the gold treatment for chronic arthritis for some months and apparently was much helped thereby. But recently he has had a sudden hemorrhage from the throat, repeated twice after he reached the hospital. Is there any record of gold having caused such hemorrhages?

George A. Skinner, M.D., Berkeley, Calif.

ANSWER.—"Sudden hemorrhage from the throat" is not a reported complication of chrysotherapy, although toxic effects on the hemopoietic system resulting from the use of gold salts have produced hemorrhages in the intestines, brain and skin. D. E. McKenna (discussion, *New York State J. Med.* 36: 1530-1531, 1936) has reported febrile epistaxis of severe degree in 2 cases and of mild degree in 6 cases of a total of 26 cases in which toxic reactions to chrysotherapy were manifest. Before assuming that the hemorrhages from the throat in this case were actually related to the chrysotherapy, one must exclude the presence of certain other conditions, such as esophageal varices, varices at the base of the tongue, small localized nasopharyngeal ulcers, hemangiomas and superficially placed arterioles. The results of a thorough examination along these lines, the type of gold preparation, the dosage schedule and the total amount received by the patient must be known before an opinion can be given concerning the cause of the hemorrhage from the throat in this case. Also, estimation of the hemoglobin and bleeding time and counts of the erythrocytes and platelets should be made.

Hemorrhage related to toxic effects of chrysotherapy on the hemopoietic system may result from thrombocytopenic purpura, agranulocytosis or aplastic anemia. The toxic reactions may be mild, serious or fatal. Most commonly encountered is thrombocytopenic purpura, which, when promptly recognized, is usually not a serious complication; however, grave reactions and death have occurred. Other reported deaths have resulted from multiple cerebral hemorrhages, agranulocytosis and aplastic anemia. When toxicity is suspected or confirmed, it is imperative that chrysotherapy be promptly discontinued (either temporarily or permanently), as most reactions are controlled thereby. Although no specific antidote for the toxic reactions from chrysotherapy is known, penicillin is effective in preventing serious secondary infectious processes that might otherwise unfavorably complicate the course of agranulocytosis (Boland, E. W.; Headley, N. E., and Hench, P. S.: The Treatment of Agranulocytosis with Penicillin, *J.A.M.A.* 130: 556-559 [Mar. 2] 1946) or aplastic anemia. Recently 2, 3-dimercaptopropanol (BAL, British anti-lewisite) has been used for treatment of toxic reactions from various heavy metals, including gold (Cohen, A.; Goldman, J., and Dubbs, A. W.: The Treatment of Acute Gold and Arsenic Poisoning; Use of BAL [2, 3-Dimercaptopropanol, British Anti-Lewisite], *J.A.M.A.* 133:749-752 [Mar. 15] 1947. Ragan, C., and Boots, R. H.: The Treatment of Gold Dermatitides; Use of BAL [2, 3-Dimercaptopropanol], ibid. 133:752-754 [Mar. 15] 1947. Lockie, L. M.: Norcross, B.M., and George, C.W.: Treatment of Two Reactions Due to Gold; Response of Thrombopenic Purpura and Granulocytopenia to BAL therapy, ibid. 133:754-755 [Mar. 15] 1947).

Although much information regarding chrysotherapy has been accumulated in recent years, this treatment still involves acceptance of risks which are potentially serious. These risks are justified when rheumatoid arthritis is progressive and unrelieved by adequate trial of safer methods of treatment, when the patient understands and accepts the risk and when the physician has fully acquainted himself with chrysotherapy before accepting responsibility for its use.

COLA AND ASPIRIN

To the Editor:—Several of my patients have informed me that they have experienced a "jag," or sort of intoxication, from drinking "coca-cola" fortified by the addition of acetylsalicylic acid. My first reaction was to doubt the existence of such a physiologic reaction to the combination of these two relatively harmless ingredients, but I was assured that it was a true intoxication. I would like to know if there is such a reaction, and if so, to what is it due and is it harmful? Frank E. Nagel, M.D., Chicago.

ANSWER.—The only active ingredients in "coca-cola are caffeine (approx. 60 mg., 1 grain, in the Northern states and 120 mg., 2 grains, in the Southern states) and phosphoric acid. The combination of acetylsalicylic acid or other coal tar analgesics with caffeine is common in proprietary remedies for the relief of mild types of pain ("empirin," "bromo-seltzer," "stanback" and "B.C."). A portion of the analgesia produced by this combination results because headaches are often due to an irregularity in caffeine intake, which will result in caffeine-withdrawal headache (Dreisbach, R. H., and Pfeiffer, C.: *J. Lab. & Clin. Med.* 28: 1212, 1943). This is typified by the patient who has a headache if he does not obtain his morning cup of coffee. Caffeine alone is specifically analgesic in this type of headache but does not raise the normal pain threshold in the normal subject (Hardy, J. D.; Wolff, H. G., and Goodell, H.: *J. Clin. Investigation* 20:63, 1941).

Changes in mood as a result of acetylsalicylic acid and caffeine are extremely difficult to evaluate. Since experimenters in this field have given relatively enormous doses of these two drugs to normal subjects and have not observed such changes, the reports of the patients in this instance may be due to an unusual sensitivity to the drugs or to the initial presence of an abnormally dull mood precipitated by lack of caffeine in the habituated subject. A third possibility may be that this combination has taken the place of the older "ammonia coke," which consisted of a drop or two of dilute solution of ammonia in a "coca-cola" and was at one time falsely regarded by the laity as highly stimulant. This would place the observation in the category of an overrated fad of the laity.

TRAUMA AND CIRRHOSIS

To the Editor:—An Italian man, aged 56, has unequivocal clinical and laboratory evidence of cirrhosis, his chief complaint being ascites. Shortly preceding the onset of his illness he had a fair degree of trauma over his hepatic area. The patient has led an exemplary life, is not an alcoholic addict, has followed a good diet and has never had any evidence of hepatic disease (e.g., jaundice) previously. Is there any possible relationship between the cirrhosis and the trauma?

Franklin K. Paddock, M.D., Pittsfield, Mass.

ANSWER.—In any large series of patients with cirrhosis, the physician frequently encounters some who have had no exposure to alcohol, hepatotoxic agents or dietary errors and who do not give a history of infectious jaundice. In such patients the basic cause of the process remains obscure. External trauma to the abdomen in the vicinity of the liver is not believed to be of any etiologic importance in the production of cirrhosis, there being no reported instances in which the disease followed injury alone. Lacerations of the liver, subcapsular hematomas and the like have been reported to follow trauma, but they usually leave no important residues. An exception must be made in the rare cases in which deep lacerations seriously interfere with the blood supply and produce massive areas of necrosis. In such cases the termination usually is fatal within a matter of a few days.

THUMB SUCKING

To the Editor:—A girl aged 8 years has been sucking her thumb since infancy. Her dentist stated that it was responsible for malocclusion. In order to correct this he desires that measures be taken to stop the habit. What trauma to the personality may result from forceful or psychiatric measures to arrest this habit? Is there any dental, medical or psychiatric contraindication to allowing this habit to reach a natural termination?

M.D., Georgia.

ANSWER.—Many dentists and physicians believe that in persistent thumb sucking there may occur malocclusion characterized by a bending down of the anterior mandible, the lower incisors being bent backward and the upper incisors pushed forward. Of course, it is well known that many children have malocclusion without ever having practiced thumb sucking and, conversely, that in not a few persistent thumb suckers malocclusion never develops. One cannot, on the basis of present knowledge, flatly contradict the assumption that malocclusion is caused by this habit, though, on the other hand, the proof that it causes deformities of jaws and teeth is not altogether convincing.

The thumb-sucking habit is acquired during the early months of life and most often disappears in preschool age. If the habit persists after the twelfth month, it is, to say the least, undesirable. If it continues after the sixth or seventh year, psychiatrists say that it is a manifestation of a general emotional immaturity. An attempt should certainly be made to help this child of 8 years to correct this habit. Harsh methods should not be employed; intelligent kindly treatment should be tried. While most infantile thumb suckers desist from the habit early in life, it may be said confidently that the older the child, the more fixed the habit and the more difficult it is to cure. In the case of a patient 8 years of age it is late to expect a natural or spontaneous termination; as has already been stated, the child needs help.

PREVENTATIVE

To the Editor:—We have had a discussion on the use of the word "preventative." We are familiar with the word "preventive," but is there such a word as "preventative?"

ANSWER.—We prefer the word "preventive" as applied in the term "preventive medicine" and for all other purposes. The Oxford Dictionary indicates under the word "preventative" that it is an alternate word which came into use about 1654, whereas preventive came into use in 1639. According to Fowler's "Modern English Usage," which is considered to be the greatest authority, the short term "preventive" is preferred for all purposes. According to Opdycke, whose book "Don't Say It" is a well recognized authority, preventive "is both adjective and noun, meaning precautionary or stopping or tending to prevent." the word preventative, he says, is "a corrupt but still widely used term."

ANTIGENIC POLISHES

To the Editor:—Is there a nonantigenic furniture polish? Which brands are recommended?

Clifford H. Kalb, M.D., Milwaukee.

ANSWER.—Polishes designed for use on wooden furniture contain soap or other alkalies, oils and waxes. Polishes for metals contain abrasives and solvents also. All these materials are capable of producing dermatitis in susceptible persons and, unfortunately, there is still no satisfactory substitute for these potential cutaneous irritants.

USE OF STAINLESS STEEL IN COOKING

To the Editor:—Kindly state the advantages and disadvantages of cooking with stainless steel pans, waterless.

Louis F. Waldmann, M.D., Waukegan, Ill.

ANSWER.—Stainless steel represents no fixed alloy composition and may represent 18 per cent chromium and 8 per cent nickel, the remainder being steel. However, there may be a minor constituency of silicon, columbium, manganese and/or beryllium. In any event, these metals provide no exposure for the user. Food acids attack stainless steel little and mineral acid scarcely more. Phosphoric acid is more active in attacking such utensils. Stainless steel is more durable than aluminum but, in truth, is not permanently stainless. Its bright surfaces reflect heat, which suggests that the bottom should be allowed to become blackened or should be deliberately blackened. Stainless steel is a poor conductor of heat, so that localized points of heat might interfere with cooking. To overcome this some manufacturers introduce a second bottom of copper as a heat conductor, but obviously this adds to the cost. Cast iron utensils are more easily attacked by chemicals within foods and may provide enough dissolved metal to impart unwanted taste. Notwithstanding, many old-timers continually regard the the passing of the cast iron cooking pot as a major gustatory defeat.

"Waterless" cooking is a catch phrase to emphasize "a little water." Some vegetables contain enough water to require none in addition; the majority require a fraction of an inch of water. Obviously, an egg boiled in a gallon of water requires more fuel than the same egg boiled in an ounce of water Equally obvious, the loss of vitamins and minerals increases in copious quantities of cooking water. For example, cabbage cooked in much water retained 54 per cent of its ascorbic acid. The same cabbage cooked in a minimum of water retained 84 per cent of its ascorbic acid. However, for snap beans and potatoes no differences are measurable from the two methods of cooking. Ordinarily cooks prefer little water in order to conserve the shape of certain vegetables, such as cauliflower. Further, it is obvious that more time in addition to more fuel is required to heat up a large amount of cooking water. All considered, the waterless cooking appears to have substantial merit as a vitamin-mineral saver, a fuel saver, a time saver and an appearance saver.

HYPOTHYROIDISM

To the Editor:—Please let me know the present status of use of a thyroid in a mildly overweight man aged 41 (10 to 15 pounds, 4.5 to 6.8 Kg.) with a basal metabolic rate of minus 25 per cent but no true hypothyroid symptoms. There is also a moderately elevated blood cholesterol level. Should a low cholesterol diet be prescribed in the hope of minimizing early arteriosclerosis? (The patient's father died at 54 years of age of coronary thrombosis.) If a low cholesterol diet is recommended, what foods should be eliminated?

M.D., Connecticut.

ANSWER.—The use of thyroid extract cannot be recommended for the treatment of obesity in which hypothyroidism is not the etiologic agent. However, the low basal metabolic rate and the elevated blood cholesterol level suggest that, as sometimes happens, this patient is suffering from hypothyroidism without obvious clinical symptoms. Determination of the bound protein iodine of the blood might be helpful as an additional objective criterion. If the last mentioned is not available, thyroid extract may be administered as a therapeutic test. If the basal metabolic rate reacts sensitively to the administered thyroid and if the blood cholesterol level decreases to the normal range, it may be concluded that the patient has hypothyroidism and that the thyroid extract should be continued on a treatment basis. But if the basal metabolic rate shows little or only temporary rise with small or moderate doses of thyroid extract (1 to 2 grains [0.06 to 0.13 Gm.] per day) and if the cholesterol level doses not fall, the thyroid should be discontinued.

In the absence of a specific endocrine disturbance, the only sound treatment for obesity is the restriction of the total caloric intake. This must be continued until the proper caloric intake becomes a well established habit with the patient. As regards the relationship of the blood cholesterol level and the development of arteriosclerosis, evidence to date does not reveal any clear connection. Hence, despite some suggestions that such a connection exists, it is hardly warranted to impose the inconveniences of a low cholesterol diet on patients until more definitive evidence of a casual relationship is available.

SESAME OIL

To the Editor:—Please give information on the fate of the sesame oil in sesame oil preparations when injected intramuscularly and subcutaneously. Is there any hazard in the long-continued use of such preparations, especially penicillin in sesame oil which would be given once daily over a period of from one to three or four months?

ANSWER—Sesame oil preparations injected intramuscularly cause minor local reaction and are broken down readily into minute oil cysts by the action of the muscle. When they are given subcutaneously, diffusion occurs through the subcutaneous tissues, and because of this localization considerable inflammatory reaction with local pain occurs. When administration is intramuscular, the minute oil cysts which are formed usually disappear in from ten days to several weeks. The action of the muscle tends to collapse these minute cysts, so that biopsy material, when obtained at approximately a two- to three-week interval after injection, rarely shows any residue. Injections of sesame oil could be given daily for protracted periods of time if given intramuscularly and at different sites. The minor hazards which might occur are sensitivity to the penicillin and rarely to the oil. It is advisable to question patients as to penicillin or sesame oil sensitivity prior to injection.

BIRTHMARKS

To the Editor:—A patient has a port wine birthmark occupying a large part of the left side of his face and neck. I believe that at the annual meeting in Atlantic City, N. J., last year a paper was read which suggested use of a tattoo procedure. Could you give me any information regarding this problem.

J. C. Lee, M.D., Indiana, Pa.

ANSWER.—Usually port wine marks are not treated because the results are less than satisfactory and and they can be hidden successfully by covering with a cosmetic preparation such as "covermark." The lesions are often irregular in shape and color, so that treatment with the usual destructive measures, such as radiation or solid carbon dioxide, leaves a mottled appearance which still constitutes a cosmetic problem. Grenz rays are said to produce some improvement, particularly when used in infancy, but experience with Grenz rays has not been extensive.

Recently H. Conway and J. P. Doktor (*Surg., Gynec. & Obstet.* 84:866 [April 15] 1947) reported on a method of treatment by tattoo wherein permanent pigments were tattooed into the nevus. This article described the technic and illustrated the results of the treatment with photographs.

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THE VAGINAL SMEAR

Its Value to the Internist, with Report of Diagnosis of Unsuspected Uterine Cancer in Four Cases

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and
RUTH M. GRAHAM, B.S.
Boston

The vaginal smear has been established as a valuable aid in the diagnosis of uterine cancer.[1] While neither biopsy nor vaginal smear will disclose all cases of malignant uterine growth, the two methods used in conjunction have been shown to make diagnosis possible in 98 per cent of 181 cases.[2] In our hands the vaginal smear has proved of unique value in the detection of carcinoma of the cervix in the early (noninvasive) stage.[3] Gates and Warren,[4] in a recent critical evaluation, stated, "Even taking into account differences in criteria, these figures suggest a distinct advantage in favor of the smear method" in the detection of carcinoma in situ of the cervix. In 1943, our associates and we[1d] emphasized the value of the vaginal smear as a screening procedure for the discovery of early uterine cancer and advised "incorporation of this method of diagnosis as a part of every routine physical examination in office, outpatient department, and hospital."

During the early investigation of the method (1943 to 1946), smears were made by an internist (M. F.-S.) for 23 office patients in whom, because of symptoms or abnormal pelvic findings, uterine cancer was suspected. In this group, positive vaginal smears were obtained on 7 women, 6 of whom were later proved to have cancer.[5] For the seventh patient, whose smear was reported to be positive in 1943, repeated biopsies since that time have not revealed malignant tissue, and all subsequent smears have been negative for carcinoma. This case represents a mistaken positive diagnosis made when we were as yet unable to distinguish, in a few instances, between atrophic basal cells and cancer cells.

Beginning Jan. 1, 1946, a single routine smear was taken in the office for almost every female patient, irrespective of the presenting symptom. To date, 200 women have been screened by this method. Of the 200 patients, 21 presented gynecologic symptoms; only 14 complained of abnormal bleeding or discharge. The age span of the group was 18 to 81 years, with an average of 42 years.

Of the 200 smears 183 were negative for cancer, 7 were doubtful; 5 were unsatisfactory, and 5 were positive for cancer. Of the 5 women whose smears were positive, cancer was present in 4 (carcinoma in situ of the cervix in 3; adenocarcinoma of the endometrium in 1). Histologic sections from the cervix of the fifth woman whose smear was positive were examined by two pathologists. Although both examiners agreed that the tissue showed suspicious evidence of carcinoma, neither would make a positive diagnosis of cancer from the material available. Of the 7 women whose smears were doubtful, 1 was found to have carcinoma of the bladder, for 2 repeated smears were negative, and on 4 no follow-up observation was possible. Two of the 4 proved cases have been included in previous reports.[7] Brief summaries of the 2 unreported cases follow:

M. P., a single woman aged 62, came for examination because of fatigue and exhaustion. There had been no vaginal bleeding or discharge. A paternal aunt had died of uterine cancer.

The cervix was soft and normal on inspection. The fundus was anterior and normal in size; the vaults were clear. The normal condition of the pelvis was confirmed by Dr. J. V. Meigs.

The vaginal smear was positive for epidermoid carcinoma.

With the patient under anesthesia, Dr. Meigs completely excised the os with a knife (to obtain a biopsy specimen) and performed a total hysterectomy. The pathologic diagnosis made by Dr. Tracy B. Mallory was carcinoma in situ of the cervix.

A. McC., a married woman aged 65, whose menopause had occurred twenty years before, came to the office complaining of pain in the back of the head and radiating to the elbows. For several years she had been given weekly injections of estrone U.S.P.("theelin") On direct questioning, she stated that there had been spotting on one occasion two weeks previously.

Examination showed a cervical polyp, and the cervix was described as suggestive of carcinoma. One vaginal smear was doubtful; a second was positive for cancer. From material obtained at curettement a diagnosis of adenocarcinoma of the endometrium was made. The diagnosis was confirmed on pathologic examination following hysterectomy.

Of the 3 women found to have cervical cancer, 2 had had no bleeding or discharge; the third had bled for a single day after estrogen therapy given for arthritis, which had been her presenting symptom. In all pelvic

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From the Vincent Memorial Hospital (the gynecologic service of the Massachusetts General Hospital).

[1] (a) Papanicolaou, G. N., and Traut, H. F.: The Diagnostic Value of Vaginal Smears in Carcinoma of the Uterus, Am. J. Obst. & Gynec. **42**: 193-206, 1941. (b) Papanicolaou, G. N., and Traut, H. F.: Diagnosis of Uterine Cancer by Vaginal Smear, New York, The Commonwealth Fund, 1943. (c) Jones, C. A.; Neustaedter, T., and Mackenzie, L. L.: The Value of Vaginal Smears in the Diagnosis of Early Malignancy, Am. J. Obst. & Gynec. **59**: 159-168, 1945. (d) Meigs, J. V.; Graham, R. M.; Fremont-Smith, M.; Kapnick, I., and Rawson, R. W.: The Value of the Vaginal Smear in the Diagnosis of Uterine Cancer, Surg., Gynec. & Obst. **77**: 449-461 (Nov.) 1943. (e) Meigs, J. V.; Graham, R. M.; Fremont-Smith, M.; Janzen, L. T., and Nelson, C. B.: Value of Vaginal Smear in Diagnosis of Uterine Cancer: Report of 1,015 Cases, Surg., Gynec. & Obst. **81**: 337-345 (Oct.) 1945. (f) Fremont-Smith, M., and Graham, R. M.: Early Diagnosis of Carcinoma of the Cervix, S. Clin. North America **27**: 1215-1217 (Oct.) 1947.

[2] Graham, R. M.; Sturgis, S. H. and Mcgraw, J.: A Comparison of the Accuracy in Diagnosis of the Vaginal Smear and Biopsy in Carcinoma of the Cervix: One Hundred and Eighty-One Cases, to be published.

[3] Fremont-Smith, M.; Graham, R. M., and Meigs, J. V.: Vaginal Smears as an Aid in the Diagnosis of Early Carcinoma of the Cervix, New England J. Med. **237**: 302-304 (Aug. 28) 1947.

[4] Gates, O., and Warren, S.: A Handbook for the Diagnosis of Cancer of the Uterus by the Use of Vaginal Smears, Cambridge, Mass., Harvard University Press, 1947.

[5] Five of the 6 patients with proved cancer were reported on previously.[6]

[6] (a) Meigs and others.[1d] (b) Fremont-Smith and others.[3] (c) Meigs, J. V.: Vaginal Smear: Practical Application in Diagnosis of Cancer of the Uterus, J. A. M. A. **133**: 75-78 (Jan. 11) 1947.

[7] Fremont-Smith and others.[3] Meigs.[6c]

examination revealed nothing abnormal. The patient harboring adenocarcinoma of the endometrium came to the physician with the sole complaint of pain in the head. She had received estrogen therapy for several years and admitted having had vaginal bleeding for one day two weeks before. This case is the second of endometrial cancer occurring during prolonged estrogen therapy to be reported by us.[8]

It is well known that in the majority of cases carcinoma of the cervix is discovered too late for effective treatment surgically or with radiation. Maliphant,[9] reporting on 837 women with cervical cancer treated with radium, stated that 60 per cent of patients seen six months after the onset of vaginal bleeding showed advanced cervical cancer. Only 1 patient in 10 received treatment within three months of the onset of symptoms. Of this group of women, more than 50 per cent had advanced carcinoma of the cervix.

We have previously discussed the evidence indicating that cervical carcinoma exists for months or years before any symptom or sign is apparent.[3] If this concept is valid, early cases will not often be discovered by the gynecologist, as women do not usually consult a specialist until symptoms are present. Thus it may be the responsibility of the internist to detect the early cases of cervical cancer before symptoms appear and at the stage of the disease when cure is most certain. Screening by means of vaginal smear is at present the only practical way of discovering carcinoma of the cervix in the very early stage. All patients with a positive smear deserve immediate and multiple biopsies. Although we believe that a final diagnosis of cancer can be accepted only after study of fixed tissue sections, there are, nevertheless, occasions when, with the full understanding of the patient, hysterectomy may be justified on the basis of repeated characteristic positive vaginal smears, even when biopsy shows no evidence of malignancy. Early carcinoma of the cervix is not infrequently discovered in tissue sections made after hysterectomy when even multiple preoperative biopsies have failed to demonstrate its presence.[3] The converse, a negative vaginal smear and positive biopsy evidence, has also been observed.[2]

SUMMARY

Two hundred unselected office patients were screened for uterine cancer by examination of the vaginal smear.

Smears positive for cancer were obtained for 5 patients. For 3 of them the diagnosis of carcinoma in situ of the cervix, and, for 1 that of adenocarcinoma of the endometrium, was made by the pathologist. For the fifth woman with a positive smear, the presence of cancer was not proved.

Two of the 3 women with proved early cancer of the cervix gave no history of abnormal bleeding or discharge. In all 3 patients pelvic examination had shown nothing abnormal.

Unsuspected cancer of the uterus was diagnosed in 2 per cent of 200 unselected office patients with the use of the vaginal smear as a screening procedure.

Note.—Since this paper was written, a further 108 women have been screened by vaginal smear. One positive smear was obtained from a woman without symptoms and with normal pelvic findings. Microscopic examination following hysterectomy confirmed the diagnosis of carcinoma in situ of the cervix.

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[9] Maliphant, R. G.: Cancer of the Cervix Uteri: The Results of Treatment with Radium, J. Obst. & Gynaec. Brit. Emp. **54**: 155-163 (April) 1947

CLINICAL COURSE OF CHRONIC NONSPECIFIC ULCERATIVE COLITIS

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and
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The literature pertaining to nonspecific ulcerative colitis continues to emphasize the widely varying concepts of its pathogenesis and treatment.[1] Although considerable attention has been directed in the past decade to the effects of antibiotics[2] and to the results of surgical therapy,[3] observations on the natural history of this disease have been comparatively infrequent.[4] It seemed of interest, therefore, to review the clinical features and course of nonspecific ulcerative colitis in an illustrative series of 100 patients. The cases were chosen from a group of approximately 250 by the following criteria: completeness of data, length of the period of observation and accurate information as to their present status. There were 14 deaths. Sixty-five of the 86 surviving patients have been reexamined since Jan. 1, 1947; the remainder were restudied in 1946. Because of the method of selection of material to be used in this report, the number of patients requiring surgical treatment and the mortality rate in the series are probably higher than would have been the case if we had been able to report on the course of the entire group.

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[2] Kirsner, J. B.; Rodaniche, E. C., and Palmer, W. L.: The Use of Sulfaguanidine in Non-Specific Ulcerative Colitis and Other Infections of the Bowel, Am. J. Digest, Dis. 9:229, 1942. Streicher, M. H.: Chronic Ulcerative Colitis: Clinical Summary of Management in 912 Cases, J.A.M.A. 118: 431 (Feb. 7) 1942. Bargen, J. A.: The Sulfonamide Compounds in the Treatment of Diseases of the Intestine, M. Clin. North America 28:811, 1944; The Medical Management of Ulcerative Colitis, J.A.M.A. 126:1009 (Dec. 16) 1944. Pollard, H. M.: The Clinical Use of Succinyl Sulfathiazole in Chronic Ulcerative Colitis, Gastroenterology, 4:4, 1945. Collins, E. N., and Hewlett, J. S.: Succinyl Sulfathiazole in Treatment of Chronic Ulcerative Colitis, ibid. 7:549, 1946. Major, R. H.: The Nisulfazole Treatment of Chronic Ulcerative Colitis, Am. J. Med. 1:485, 1946. Korastoff, B. B. and King H. E.: Penicillin Therapy in Ulcerative Colitis: Preliminary Report, Am. J. M. Sc. 211:213, 1946.

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[4] Hardy, T. L., and Bulmer, E.: Ulcerative Colitis, Brit. M. J. 2:812, 1933. Kiefer, E. D.: Clinical Results in the Medical Treawment of Chronic Ulcerative Colitis, Am. J. Digest. Dis. 3:56, 1936. Crohn, B. B., and Rosenak, B. D.: Follow-up of Ulcerative Colitis (Non-Specific), ibid. 2:343, 1936. Cullinan, E. R.: Ulcerative Colitis: Clinical Aspects, Brit. M. J. 2:1351, 1938. Buzzard, E. M.; Richardson, J. S., and Turner, R. W. D.: Ulcerative Colitis: The Outlook for the Patient, St. Thomas Hosp. Rep. 3:55, 1938. Bargen, J. A.: Jackman, R. J., and Kerr, J. G.: Studies on the Life Histories of Patients with Chronic Ulcerative Colitis with Some Suggestions for Treatment, Ann. Int. Med. 12:339, 1938.

AGE AND SEX

The distribution of patients by sex and by age at the onset of symptoms is shown in table 1.

TABLE 1 - *Age and Sex*

Decade	Male	Female	Total
1-9	3	-	3
10-19	7	17	24
20-29	17	21	38
30-39	12	9	21
40-49	7	4	11
50-+	2	1	3
Total	48	52	100

In common with other reports, the incidence in this series is almost equal for the two sexes. Persons between the ages of 10 and 40 were most often affected. It is to be noted, however, that in 3 patients the disease developed before the age of 10 and in 3 patients after the age of 50.

DURATION OF DISEASE

The duration of symptoms at the time of initial admission to this hospital was less than twelve months in 33 patients and more than ten years in 14. The period of continuous observation was less than one year in 28 patients, including 10 of the patients who died; it ranged from one to four years in 31, including 4 who died; it exceeded five years in 41 patients.

Table 2 again emphasizes the high mortality during the initial one or two years of illness, and the extremely low death rate among persons with prolonged symptoms.[5] The duration of illness was less than twelve months in 3, and between twelve and twenty-eight months in 6 of the 14 patients who died.

ONSET

The onset of symptoms was insidious in 59 patients and sudden in 41, including 3 with fulminant, rapidly fatal illnesses.

POSSIBLE CONTRIBUTORY FACTORS

The circumstances preceding the onset of the disease were recalled by 39 patients. Twenty-six apparently had been subjected to various emotional stresses, often involving the death or separation of parents, marital problems and disruption of the home. Six of this group had experienced recurrent bouts of diarrhea precipitated by nervous tension. In 1 male patient, diarrhea appeared at the age of 2 years and 6 months, when his bowel habits were being regulated. Among the remaining 13 patients, 4 related the abrupt onset of diarrhea to infections of the upper respiratory tract. Three ascribed their illness to "food poisoning." The onset was abrupt in 2 patients after the use of cathartics, and in 2 persons after appendectomy and hemorrhoidectomy, respectively. In 2 patients, the symptoms first appeared during pregnancy.

TABLE 2 - *Duration of Symptoms (At Most Recent Visit)*

Duration, Years	Cases	Deaths
Less than 1	5	3
1-4	25	8
5-9	33	2
10-14	20	-
15-20+	17	1

The close chronologic association between emotional stress and the onset of symptoms in 26 of 39 patients supports the observations of Murray,[6] Sullivan[7] and Daniels[8] and suggests that the relationship may be more than casual.

SYMPTOMS AND PHYSICAL FINDINGS

The symptoms usually consisted of bloody diarrhea, cramping abdominal distress, rectal tenesmus, fever, anorexia and weakness. Profuse rectal bleeding occurred in 12 patients. The loss of weight exceeded 25 pounds (11.3 Kg.) in 47 cases. The physical findings, except in the more seriously ill patients, were not conspicuous. Pronounced tenderness over the colon was demonstrated in only one fourth of the series. Evidence of loss of weight was noted in 44 patients, being pronounced in 31 of these.

PROCTOSCOPY

The appearance of the rectal mucosa was interpreted as typical of nonspecific ulcerative colitis in 95 cases. The mucosa was normal in 3 of the 4 patients with segmental colitis, and it was mildly inflamed in the fourth case. In the 1 patient not examined, the diagnosis of nonspecific ulcerative colitis was confirmed at autopsy. The proctoscopic findings did not parellel the clinical course directly, for a severely inflamed mucosa not infrequently was observed in patients with comparatively mild symptoms.

DIFFERENTIAL DIAGNOSIS

The diagnosis of nonspecific ulcerative colitis was further established by the exclusion of specific etiologic agents known to produce a similar clinical picture. The absence of dysentery organisms from cultures of the stools and the negative results of agglutination tests presumably eliminated the possibility of bacillary dysentery. Amebiasis was excluded by the absence of Endamoeba histolytica from the stools. The reaction to the Frei test for venereal lymphogranuloma was negative in the 50 patients tested. Roentgenograms of the chest were negative for active pulmonary tuberculosis; the inoculation of rectal discharges from a small group of patients into guinea pigs yielded negative results. The gross and histologic changes at autopsy in the 14 fatal cases were interpreted by the pathologist as characteristic of nonspecific ulcerative colitis.

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[5] Willard, J.H.; Pessel, J.F.; Hundley, J.W., and Bockus, H.L.: The Prognosis of Ulcerative Colitis, J.A.M.A. 111:2078 (Dec. 3) 1938. Paulson, M.: Non-Specific or Indeterminate Ulcerative Colitis, in Portis, S.A.: Diseases of Digestive System, Philadelphia, Lea & Febiger, 1944, p. 844.

6. Murray, C.D.: Psychogenic Factors in Etiology of Ulcerative Colitis and Bloody Diarrhea, Am. J. M. Sc. 180:239, 1930.

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ROENTGEN OBSERVATIONS

The colon and terminal part of the ileum were examined roentgenologically in 89 cases. The colon appeared normal in 24 patients, 19 of whom had experienced mild symptoms. The colon was totally involved at the initial examination in 30, and, at a later study, in 5 additional patients; the terminal part of the ileum was demonstrably diseased in 9 of the 35. The roentgen extent of the disease did not correspond uniformly with the duration of symptoms (table 3). Complete involvement was observed in 10 patients with an illness of less than one year's duration, whereas a normal colon was demonstrated in 2 persons more than ten years after the initial appearance of symptoms. In general, the clinical course parelleled the extent of involvement, being more severe with more extensive disease, but there were striking exceptions. The symptoms were extremely mild in 18 patients with roentgen evidence of the disease, including 4 with involvement of the entire colon, on the other hand, the clinical course was moderately severe in 2 patients whose colons appeared normal by roentgen rays.

TABLE 3 - *Initial Roentgen Findings and Duration of Symptoms*

	Duration of Symptoms			
Extent of Involvement	Less Than 1 Yr.	1-9 Yr.	10-20+ Yr.	Total
Normal	10	12	2	24
Rectosigmoid only	3	7	1	11
Rectum to splenic flexure	6	5	1	12
Rectum to hepatic flexure	2	6	-	8
Entire colon	10	16	4	30
Segmental	1	2	1	4
Total	32	48	9	89

Two or more roentgen examinations were obtained in 50 patients (table 4). The period of roentgen observation was slightly less than a year in 4 cases, between one and nine years in 37, and exceeded ten years in 10 patients. The roentgen findings were stationary in 31 patients, including 11 with a normal-appearing colon. Progression was observed in 13, 11 of whom gave roentgen evidence of disease at the initial examination. Improvement was noted in 6 patients, a normal appearance being regained in 3.

These observations coincide with those of Hern and with the results of a similar study made by us previously.[9] The evidence suggests that nonspecific ulcerative colitis in many cases attacks the colon with greatest intensity relatively early in the disease and that the initial roentgen examination not infrequently discloses the maximum extent of the disease.

TABLE 4 --*Roentgenologic Course (50 Cases)*

Initial Involvement	Stationary	Improved	Progressive
Normal	11		2
Rectosigmoid only	5		3
Rectum to splenic flexure	2	3	3
Rectum to hepatic flexure	1		3
Entire colon	12	3	1*
Segmental	—	—	1
Total	31	6	13

* Polyposis and carcinoma of descending colon.

RELAPSES

The clinical course was characterized by frequent exacerbations of symptoms. These varied in severity and duration and recurred at unpredictable intervals. The possible causes of 140 separate relapses, as listed in table 5, suggest that emotional stress, infections of the upper respiratory tract and physical fatigue were most often associated with the recurrence of symptoms. Twenty patients, though not recalling specific details, nevertheless emphasized nervous tension as an important disturbing influence. Nine exacerbations accompanied pregnancy; however, pregnancy was uneventful in 7 other patients. Three recurrences appeared to coincide with the extraction of teeth. The incision of a peridental abscess was followed by a fatal relapse in 1 case.

TABLE 5 --*Possible Precipitating Factors in 140 Relapses of Nonspecific Ulcerative Colitis*

Type	Relapses
Emotional stress	49
Infections of respiratory tract	40
Physical fatigue	20
Dietary indiscretions	11
Pregnancy	9
Dental extraction	3
Incision of peridental abscess	1
Barium enema	2
Operations (a) appendectomy	2
(b) tonsillectomy	1
Injury	2
Infectious hepatitis	1
Total	140

PSYCHOGENIC FACTORS

Present interest in the role of psychogenic factors in nonspecific ulcerative colitis derives largely from the observations of Murray, Sullivan, Daniels and Wittkower.[10] It seemed of interest to survey briefly the emotional background of 72 patients for whom such data were available. Eighteen patients were interviewed by psychiatrists and 16 by a physician investigating the psychosomatic aspects of ulcerative colitis. Significant emotional problems were detected in 32 of the 34. Among the remaining 38 cases, definite emotional disturbances were encountered in 15 and lesser degrees of nervous tension in 20. Possible psychogenic factors thus were present in 67 of 72 patients, 42 women and 25 men. The patients often were described by the psychiatrists as immature, dependent and overtly passive. Anxiety states, insecurity, hostility, sexual maladjustments and schizoid tendencies were commonly observed. There was a tendency for the symptoms to recur or to become accentuated during the development of situations requiring responsible and decisive action.

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[9] Hern, J.R.B.: Ulcerative Colitis, Guy's Hosp. Rep. 81:322, 1931. Ricketts, W.E.; Kirsner, J.B., and Palmer, W.L.: Chronic Non-Specific Ulcerative Colitis; A Roentgenologic Study of Its Course, to be published.

[10] (a) Murray.[6] Sullivan.[7] Daniels.[8] (b) Wittkower, E.: Ulcerative Colitis: Personality Studies, Brit. M.J. 2:1351, 1948.

TABLE 6.—*Plasma Proteins in Nonspecific Ulcerative Colitis (58 Patients)*

Range; Gm. per 100 cc.	Cases
4.11 - 4.99	11
5.0 - 5.93	17
6.0 - 6.99	22
7.0 - 8.0	8

COMPLICATIONS

The complications of chronic nonspecific ulcerative colitis are numerous, varied and often extremely serious.[11] They may be classified arbitrarily as disturbances of nutrition, "local" complications arising in the bowel and "systemic" complications affecting areas of the body other than the colon.

Nutritional deficiencies[12] result from the inadequate intake and utilization of food, from the loss of nutrient substances, especially protein, via the bowel and, perhaps, also from the depression of metabolic functions, particularly those of the liver, by "toxins." The nutritional complications of major importance in this series may be summarized as follows:

Anemia: Moderate or severe, usually hypochromic, microcytic anemia developed in 60 patients. The erythrocyte count in 24 of these ranged from 1,900,000 to 2,900,000; the hemoglobin values were between 5 and 8 Gm.

Prothrombin Time: The prothrombin time was prolonged in 6 cases; readings 43 and 48 per cent of normal were obtained in 2 patients during the course of a fulminating illness.

Hypoproteinemia: The plasma proteins and albumin-globulin ratio were measured at variable intervals in 58 patients (table 6). Values below the minimum normal level of 6 Gm. per hundred cubic centimeters were obtained in 29 cases, in all of which the ulcerative colitis was severe. The albumin-globulin ratio was reversed in 9 patients, chiefly because of a reduction in the albumin fraction. Electrophoretic studies in a small group of cases have confirmed the presence of hypoalbuminemia.[13] The plasma proteins subsequently returned to normal levels (usually between 6.5 and 7 Gm. per hundred cubic centimeters) in 23 of the 29 patients. The plasma proteins ranged from 4.1 to 5.03 Gm. per hundred cubic centimeters in 5 of the 9 medical fatalities.

TABLE 7.—*Clinical Complications in Chronic Nonspecific Ulcerative Colitis**

Complications	Cases
Stricture	19
Perirectal abscess, fistula	17
Polyps	16
Severe bleeding from bowel	12
Perforation, colon; peritonitis	6
Severe hemorrhoids	4
Intestinal obstructions	1
Carcinoma of the colon	2
"Toxic" psychosis	2
Erythema nodosum	9
Pyoderma	4
Infections, eye and ear	5
Aphthous stomatitis	4
Nonspecific laryngitis—obstruction—tracheotomy	1
Parotitis	2
Arthritis	8
Peripheral neuritis	3
Thrombophlebitis	3
Vascular thromboses	2
Pneumonia	3
Infections, urinary tract	4
Renal calculi	3
Infantilism	1
Miscellaneous	14
No complications	33
One complication	28
Two complications	17
More than two complications	22

*Not including anemia, hypoproteinemia, complications after surgical treatment or those found at autopsy.

Peripheral neuritis and other evidences of vitamin deficiency were noted in the more seriously ill patients. The urinary excretion of thiamine was decidedly reduced in the 2 patients so examined. The level of ascorbic acid in the blood was diminished in the 3 persons tested. Cannon[14] has directed attention to the profound loss of resistance and the high incidence of infections in malnourished hypoproteinemic patients. It seems likely, therefore, that many of the infections observed in this series are attributable, in part at least, to impairment of nutrition. Eleven of the 14 patients who died were emaciated at the time of autopsy; severe fatty changes were found in the liver in all 14. The importance of fatty hepatic degeneration of this disease has been stressed by Cain and Callen.[15] Tumen and his associates[16] recently have described 5 instances of hepatic cirrhosis in patients with ulcerative colitis.

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[11] Wittkower.[10b] Footnote 4. Feder, I.A.: Chronic Ulcerative Colitis: An Analysis of Eighty-Eight Cases, Am. J. Digest. Dis. 5:1351, 1938. Jankelson, I.R.; McClure, C.W., and Sweetsir, F.W.: Chronic Ulcerative Colitis: II. Complications Outside the Digestive Tract, Rev. Gastroenterol. 9:99, 1942. Ricketts, W.E., and Palmer, W.L.: Complications of Chronic Non-Specific Ulcerative Colitis, Gastroenterology 7:55, 1946.

[12] Mackie, T.T.: Factor of Deficiency States in Ulcerative Colitis, J.A.M.A. 104:175 (Jan. 19) 1935. Lerner, H.H., and Davenport, H.G.: Biophotometric Studies in Thirty Cases of Chronic Ulcerative Colitis, Am. J. Digest. Dis. 6:239, 1939. Bercovitz, Z., and Page, R.C.: Metabolic and Vitamin Studies in Chronic Ulcerative Colitis, Ann. Int. Med. 20:239, 1944.

[13] Benditt, E.: Personal communication to the author.

[14] Cannon, P.R.: Protein Metabolism and Resistance to Infection, J. Michigan M. Soc. 43:323, 1943.

[15] Cain, A., and Callen, R.: Le role de l'hepatite degenerative graisseuse dans l'evolution et le prognostic de rectocolites suppurees, Bull. et mem. Soc. med. d. hop. de Paris 53:673, 1937.

[16] Tumen, H.J.; Monaghan, J.F., and Jobb, E.: Hepatic Cirrhosis as a Complication of Chronic Ulcerative Colitis, Ann. Int. Med. 26:542, 1947.

Stricture, polyps, perirectal abscess and fistula, profuse hemorrhage and perforation of the colon with peritonitis were the most frequent " local " complications (table 7). The more common " systemic " complications included cutaneous lesions, pyogenic infections, arthritis, pneumonia, peripheral neuritis, vascular thrombosis and thrombophlebitis. Multiple complications were present in 39 patients. The incidence of secondary disorders is higher in this selected series than in other reported studies, reflecting the severity of the disease in the group chosen for illustrative purposes.

RESULTS OF MEDICAL TREATMENT

Eighty-six of the 100 patients were hospitalized one or more times. The total period of hospitalization for individual cases ranged from one hundred to three hundred days in 37 cases and from four hundred and fifty-eight to six hundred and sixty-two days in 5 cases. Eighty-one patients were treated medically throughout the course of their illness. Therapy included bed rest and the use of sedatives and antispasmodics; emotional problems were evaluated and their solution sought. Emphasis, with respect to nutrition, was placed on the oral intake of a bland attractively served diet, containing 90 to 110 Gm. of protein and 2,500 to 3,500 calories. Vitamins were given routinely, frequently vitamin K. Other measures included transfusions of blood and plasma, the administration of 5 per cent dextrose in isotonic solution of sodium chloride and, occasionally, protein hydrolysates. The majority of patients received various types of sulfonamide compounds; pencillin was administered in a small number of cases. One patient manifested an excellent response to sulfaguanidine, even when given in small doses. In general, however, the results with chemotherapy were not striking. Definite clinical improvement in many cases appeared to coincide with the administration of sulfonamide compounds and/or pencillin, but the effectiveness of the antibiotics appeared to diminish with repeated courses of treatment. On the other hand, chemotherapy proved extremely valuable in the management of complicating infections and, for example, facilitated the recovery of 1 patient who had sustained a perforation of the colon with generalized peritonitis.

Nine patients died during medical treatment. Among the remaining 72 cases slight improvement only occurred in 19 persons, none of whom were significantly incapacitated. Improvement was moderate in 22 and pronounced in 25 patients. Six patients, observed for periods of six to fifteen years, maybe tentatively classified as "cured" or with indefinitely prolonged remission. There have been no symptoms during intervals of three to fourteen years, and results of proctoscopic and roentgen examinations are now normal.

RESULTS OF SURGICAL TREATMENT

Nineteen patients were treated surgically (table 8). Indications for operation were the persistence of severe symptoms during medical treatment, stricture with partial obstruction, diffuse polyposis, extensive perirectal ulceration and severe arthritis or anemia. Approximately 50 such complications occurred in the 19 patients operated on. In 8 of 11 such patients examined roentgenologically, the entire colon was diseased; in the remaining 3, varying degrees of involvement were noted.

One patient with segmental colitis improved decidedly after resection of the diseased segment. Ileostomy was performed in the other 18 patients, with 4 deaths. Of the remaining 14 patients, 3 improved markedly; however, subtotal colectomy became necessary in 1 of these a year later. Moderate improvement occurred in 7 patients, characterized by a gain in weight and by partial or complete resumption of their former occupations. However, complications, notably anemia and arthritis, persisted or recurred frequently. Two patients were unimproved and subsequently underwent resection of the colon. The disease progressed in 2 patients despite ileostomy five and ten weeks after the onset of symptoms; advanced ulcerative colitis of the entire colon was demonstrated in both cases four years later. Sanguinous or sanguinopurulent rectal discharges continued in varying degree in all 14 patients surviving ileostomy. After operation, partial intestinal obstruction occurred in 4, fecal fistula in 4 and abscess formation in 3.

TABLE 8.—*Results of Surgical Treatment (19 Patients)*

	Resection of Segment of Colon (1)	Ileostomy (18)	Further Surgery	
			Partial Colectomy (9)	Resection of Rectosigmoid (2)
" Completely well"			5	
Pronounced improvement	1	3	3	1
Moderate improvement		7		1+
Unimproved, stationary		2		
Unimproved, progressive		2*		
Deaths		4	1	

* Operation was done elsewhere five and ten weeks after initial onset of symptoms.

+ Subsequently there was closure of ileostomy opening; death occurred three months thereafter from perforation of colon and peritonitis.

Eleven of the 14 patients underwent further surgical treatment subsequent to the ileostomy. One patient improved decidedly after abdominoperineal resection of the rectum. Moderate improvement occurred in the second case after resection of the rectosigmoid because of stenosis; the ileostomy opening later was closed, but the patient died three months thereafter from perforation of the colon and peritonitis.

The colon from the cecum to the rectosigmoid was removed in 9 patients with 1 death. Partial proctectomy was necessary later in 1 case because of pronounced stenosis of the rectum. Eight patients are alive from one to ten years after operation. Five consider themselves "well" or "almost normal." Three patients are moderately improved and have regained their normal weight; the majority have been able to work. Their only difficulties at this time consist of the occasional passage of mucoid or bloody material from the rectum and the management of the ileostomy opening.

The relative merits of the medical and surgical treatment of nonspecific ulcerative colitis continue under active discussion.[17] The reported indications for surgical intervention range from that of ileostomy within several weeks after the onset of symptoms to ileostomy and resection of the colon only in patients with persistently severe symptoms during medical management or with severe complications. Our experience is in accord with the latter view. The present results indicate that, although considerable improvement may occur after ileostomy, this procedure does not cure the disease. Nor does ileostomy invariably retard the progress of the colitis, as is illustrated by 2 patients, even when performed soon after the appearance of symptoms. Resection of the colon in selected cases, on the other hand, usually induces a decided improvement, with restoration of the patient to a healthier and more active life.

CAUSES OF DEATH

There were 14 deaths in this series, 9 during medical treatment and 5 after operation; 8 of the patients were men and 6 women. Six of the 9 medical fatalities occurred before 1942 (table 9). The principal causes of death in the medical group were peritonitis in 6, due to perforation of the colon in 5 and of the ileum in 1; inanition and pneumonia in 2 and thrombosis of the left common iliac artery with gangrene of the left lower extremity in 1. The principal causes of death in the surgical group were peritonitis in 3, due to ulcerative enteritis and perforation of the small bowel, cerebral thrombosis in 1 and adenocarcinoma with intestinal obstruction in 1. The chief contributory causes of death in the entire group were malnutrition in 9, pneumonia in 6 and disturbances of the acid-base equilibrium in 3 patients having undergone ileostomy. In the latter group, the postoperative course was characterized by severe diarrhea, hypochloremia, dehydration and episodes of peripheral vascular collapse.

This study directs attention to a number of interesting clinical features of nonspecific ulcerative colitis.

First, with regard to age, while it is generally recognized that the disease occurs most frequently during the second, third and fourth decades, the fact that it may occur at any age has, perhaps, not been emphasized sufficiently. The youngest patient in this series, for example, was 2 years and 6 months at the time of onset; the eldest, 57 years. Secondly, the high mortality rate among young patients with severe symptoms is of considerable importance in evaluating the prognosis. Six of the 9 medical deaths recorded occurred in persons less than 25 years of age; 4 were under 20. The duration of symptoms was less than a year in 3 of the fatal cases, and between one and two years in 3 others. Of the 4 surgical fatalities, 4 patients were less than 29 years of age. The disease had been present for a longer time, however, in the surgical group, as evidenced by the fact that symptoms had existed for periods ranging from twenty-one months to fifteen years.

TABLE 9.—*Causes of Death in Fourteen Patients with Nonspecific Ulcerative Colitis*

Principal Causes	Medical (9)	Surgical (5)
Peritonitis		
(a) Perforation of colon	5	
(b) Ulcerative enteritis with perforation	1	3
Inanition and pneumonia	2	
Vascular thromboses		
Left common iliac artery	1	
Superior longitudinal and left lateral sinuses of brain		1
Adenocarcinoma, intestinal obstruction		1
Contributory Causes		
Malnutrition	4	5
Pneumonia	4	2
Vascular thromboses		
Both femoral veins	1	
Left common iliac vein	1	
Acute cardiac dilatation	1	
Necrosis of liver and spleen		1
Diarrhea, hypochloremia--peripheral vascular collapse		3

The frequency of inflammatory changes in the rectum, as shown by proctoscopy, is significant from the standpoint of the pathogenesis of the disease. In this series, proctoscopic evidence of nonspecific ulcerative colitis was present in 95 per cent of cases. This observation and the roentgen demonstration of disease of the rectosigmoid in 61 of 89 patients examined support the concept that nonspecific ulcerative colitis begins in the rectum. Judging from the evidence provided by statistics giving the incidence of involvement in varying portions of the colon, the disease does progress retrograde from the anus to the ileocecal valve and, indeed, to the terminal ileum. It is to be noted, however, that while extension of the process was demonstrated roentgenologically in 25 per cent of the cases, the disease appeared by roentgen rays to be stationary in 62 per cent. The subsidence of the inflammation occurring during the remissions of the disease was much more evident proctoscopically than it was roentgenologically. The chronicity of the process is further indicated by the fact that definite roentgenologic evidence of regression was observed in only 6 of the 50 patients reexamined after a significant period (one to fifteen years).

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[17] Cattell, R.B.: Colectomy for Intractable Ulcerative Colitis, S. Clin. North America 17:803, 1937. Jones, T.E.: The Surgical Treatment of Ulcerative Colitis, J.A.M.A. 111:2076 (Dec. 3) 1938. Elsom, K.A., and Ferguson, L.K.: An Appraisal of the Medical Versus the Surgical Treatment of Idiopathic Ulcerative Colitis, Am. J. M. Sc. 202:59, 1941. Bargen, J.A.; Lindahl, W.W.; Ashburn, F.S., and Pemberton, J.J.: Ileostomy for Chronic Ulcerative Colitis: End Results and Complications in Eighty-Five Cases, Ann. Int. Med. 18:43, 1943. Footnote 3.

While the clinical severity of ulcerative colitis usually parallels the degree of involvement of the colon, this correlation is by no means exact. There is likewise no uniform relationship between the roentgen extent of the disease and the length of symptoms. In 10 patients with symptoms of less than a year's duration, including 2 with an illness of only four weeks, the entire colon was diseased.

Although the cause of nonspecific ulcerative colitis remains obscure, the symptoms and clinical course strongly suggest that the disease is an inflammatory process. However, no specific organism has been established conclusively as the etiologic agent. Possibly a number of factors are involved. The role of emotional stress is not clear at present. There is no convincing evidence that the disease is psychogenic in origin. Nevertheless, it would appear from the frequent coincidence of emotional disturbances and the recurrences of symptoms that some relationship does exist between psychogenic factors and the exacerbations of the disease.

The tendency toward exacerbations and remissions of symptoms is one of the characteristic features of nonspecific ulcerative colitis. It is possible to attribute the relapses in this series to emotional disturbances in 34 per cent; to infections of the respiratory tract in 29 per cent and to physical fatigue in 14 per cent. However, these represent several of the more common difficulties in life, and, hence, the relationship may be more accidental than causal. Indeed, relapses seem to occur with any form of stress and to be a reflection of a labile intestinal response.

In spite of the emphasis on the severity of the disease, it is an interesting fact that ulcerative colitis may exist for many years without significant disability and with rather minor symptoms. This is illustrated particularly in 5 patients in whom mild symptoms recurred over periods of seventeen to twenty-one years, with surprisingly little impairment of health.

The high incidence of complications in this selected series of patients is striking. Among these, nutritional deficiencies and such local complications as perforation, stricture, polyps, perirectal abscess and neoplastic hyperplasia are of particular importance. Thus, perforation of the bowel and peritonitis, malnutrition and vascular thromboses accounted for the majority of deaths. The therapeutic implications are obvious, but it remains to be seen how satisfactorily these complications can be prevented by modern methods of maintaining nutrition and by chemotherapy.

It is apparent from this study that the number of "cures" is small. In the 100 cases there are only 6 which we were willing so to designate. By "cure" we mean a normal bowel function, a normal colon as determined by roentgen rays and a normal rectal mucosa by proctoscopy. The number of cures was exceeded by the number of deaths, there being a total of 14 fatalities, 9 on medical management and 5 in patients subjected to operation. Of the remaining 80 patients neither cured nor dead, 47 have manifested a definite improvement and 19 a slight improvement on medical management. The occasional exacerbations of the disease usually respond to the program of rest, a bland diet, high in protein content, sedatives, antispasmodics, vitamins, psychotherapy and chemotherapy. Surgical intervention is indicated, in our judgment, chiefly *for patients with severe symptoms persisting* during medical treatment or with severe complications. Operation seems to have saved 14 persons from a life of invalidism and restored them to health; however, it has not cured the disease, except perhaps for the 8 patients surviving resection of the colon.

SUMMARY

This study again emphasizes the fact that nonspecific ulcerative colitis is a chronic disease, the course of which is characterized by frequent exacerbations and remissions. In spite of evidence of a retrograde spread of the process from the anus to the terminal part of the ileum in certain patients, we have been surprised to see how often the initial involvement seems to be the maximum involvement, as determined roentgenologically. Proctoscopic evidence of improvement during remissions is usually obtained; roentgenologic proof of regression is rare, occurring in only 12 per cent of the patients studied. The mortality rate is highest in young patients with severe symptoms during the initial one or two years of illness. The predominant precipitating factors seem to to be emotional stress, acute infections of the respiratory tract and physical fatigue. The most important complications are nutritional (cachexia, anemia, fatty degeneration of the liver) and local (perforation, abscess, fistulas, stricture, neoplastic hyperplasia). Complete and lasting cure following medical management is rare (6 per cent in this series); following ileostomy no cures of the disease process have been observed. On the other hand, after medical management alone, it has been possible to maintain 47 per cent of the patients in a "satisfactory" state of health; 19 per cent, though not markedly improved, are, on the other hand, not significantly incapacitated. Surgical treatment restored 14 of 19 patients to satisfactory health; 5 died. Under medical management, there were 9 deaths (11 per cent of those treated medically). Six of the 9 medical deaths occurred before 1942. The effect of more modern methods of therapy (nutritional, antibiotic, psychiatric) on the course of the *disease remains to be ascertained.*

SURGICAL TREATMENT OF ULCERATIVE COLITIS

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The treatment of ulcerative colitis in both the acute and chronic phases of the disease is rather difficult. There is uniform agreement that these patients should be treated medically as long as they show improvement and continue in a satisfactory condition. It should be admitted, however, that some patients do not respond satisfactorily to any or all of the medical measures that may be employed. It is in this group that surgical treatment has been demonstrated to be effective. There is considerable disagreement relative to the number that should be submitted to surgical treatment. This number will vary considerably in different series of cases depending on the number of cases of acute fulminating disease as well as the number with pronounced late cicatricial changes. The longer that a group of patients is followed the more complications will be encountered in which operation must be considered. Without doubt, a group of patients continuing under the care of a gastroenterologist or internist with few surgical consultations will have few operations performed. On the other hand, if they are followed on a surgical service a larger number may be operated on. Unquestionably, there is a middle ground between these two extremes where a surgical procedure can be employed to great advantage.

Over a period of twenty years at the Lahey Clinic these patients have been treated on the gastroenterologic service with frequent surgical consultations in those cases in which medical management is unsatisfactory. We wish to present our surgical experience of this twenty year period—during which time an appreciable number of patients has been operated on—in an attempt to evaluate the place of surgical treatment in the management of ulcerative colitis.

It must be admitted that the results of the first half of this period, 1927 to 1936 inclusive, were found to be unsatisfactory because of a high operative mortality and complications related to the operative procedures. Furthermore, during this period the care of patients with ileostomy was less satisfactory than it became subsequently. The high operative mortality was largely owing to delay in submitting patients to surgical treatment. With an increasing experience in selection of patients for operation and with knowledge gained in the technical aspects of operation, both complications and mortality have been decidedly lowered. Furthermore, with a better management of ileostomy, these patients are no longer handicapped to the extent that they were previously. It is hoped that the presentation of this experience together with that of others may aid in clarifying the status of surgical treatment in the management of ulcerative colitis.

During the twenty year period 1927 to 1946 inclusive, 630 patients with ulcerative colitis were under medical treatment. From this group, 166 patients, or 26 per cent, were operated on. During the first five years of this period ileostomy, colostomy and occasionally partial colectomy were employed, and these infrequently. Because this early experience was most unsatisfactory, we worked out a plan for surgical management which was predicated on earlier intervention and confined to three procedures: ileostomy, subtotal or partial colectomy and total colectomy. Temporizing operations such as appendicostomy and colostomy were discontinued and were not further utilized.

To illustrate more graphically the employment of surgical procedures in our cases of ulcerative colitis, we found that of every 4 patients, 2 would respond satisfactorily to medical measures even though they might have a mild return of symptoms during a long period of observation. A third would have recurrent symptoms to an extent that the result might be considered unsatisfactory, but under intermittent medical treatment the symptoms were managed reasonably well. The fourth patient, because of one or more complications, was submitted to operation. Kiefer,[1] in reporting 55 cases that were followed after medical treatment, stated that in 45 per cent the results were unsatisfactory because of recurrence of symptoms.

INDICATIONS FOR SURGERY

The number of patients who have been submitted to operation in the series reported in the literature has varied greatly. Bargen[2] and his associates reported that of 3,301 patients who were under treatment 5.5 per cent were submitted to operation. Cave[3] reported an incidence of 20 per cent and Garlock[4] stated that 10 to 20 per cent of patients required operation. As stated earlier in this paper, we have operated on 26 per cent of our patients.

Indications for surgical treatment in ulcerative colitis are rather similar to those for surgical intervention in peptic ulcer. These have previously been presented by one of us[5] and will be briefly discussed in this paper.

Failure of Medical Management.—Unsatisfactory results with medical treatment may occur in both the acute and chronic forms of the disease. The acute fulminating type is the most difficult to treat and it is in this group that the highest medical and surgical mortality occurs. Approximately two thirds of the fatalities following operation in our series occurred in this group. Death from the toxemia of the infection or perforation of the bowel may occur a short time after onset. If operation is delayed in this group, a prohibitive mortality will result. If these patients do not respond satisfactorily to medical treatment within a few days to a week ileostomy should be advised. If perforation and peritonitis have occurred, neither medical nor surgical treatment will be of aid. The only hope for saving these patients is to carry out an ileostomy as early as possible. If this policy is adopted it will result in a higher percentage of patients being submitted to operation but will unquestionably lower both medical and surgical mortality.

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[1] Kiefer, E.D.: Clinical Results in Medical Treatment of Chronic Ulcerative Colitis, Am. J. Digest. Dis. 3:56-59 (March) 1936.

[2] Bargen, J.A.; Lindahl, W.W., Ashburn, F.S.; and Pemberton J. de J. Ileostomy for Chronic Ulcerative Colitis (End Results and Complications in One Hundred Eighty-Five Cases), Ann. Int. Med. 18:43-56 (Jan.) 1943

[3] Cave, H.W. Surgical Experiences with Ulcerative Colitis, S. Clin. North America 25:301-306 (April) 1945.

[4] Garlock, J.H.: Surgical Treatment of Intractable Ulcerative Colitis, Ann. Surg. 113:2-14 (Jan.) 1941

[5] Cattell, R.B.: Indications for Colectomy in Ulcerative Colitis, S. Clin. North America 24:656-660 (June) 1944.

In the chronic type the indications for surgical intervention are less well defined. Whatever time is necessary to evaluate the condition of the patient and the function of the colon can be taken. If the disease causes chronic disability so that the patient is unable to pursue normal activity or gainful occupation, surgical treatment is certainly indicated. In order to clarify our position relative to these cases we would state that any patient who is incapacitated for three months or more out of each year should be operated on. If it is difficult to maintain a satisfactory nutritional state or if there is persisting diarrhea or incontinence of the anal sphincter, the patient's condition can be greatly improved by operation.

Subacute Perforation, Abscess and Fistula.—As stated previously, if there is free perforation into the peritoneal cavity, surgical treatment rarely offers benefit. At times, while patients are under medical treatment signs and symptoms of peritoneal irritation may develop, suggesting impending perforation. If these do not disappear promptly, operation should be advised. Rather frequently, signs will be encountered of previous local perforation as evidenced by localized abscess within the abdominal cavity or more usually in the pelvis or perirectal area. Less frequently we have encountered abdominal fistula, rectovesical fistula or rectovaginal fistula. In 1 patient all three of these were found and, in addition, a duodenocolic and an ileosigmoidal fistula were present. Operative treatment offered the only means of relieving these patients.

Obstruction.—One of the late complications in long-standing ulcerative colitis is contraction of the colon or rectum to a point where obstruction occurs. This may be found when active infection is no longer present. As long as the stools remain liquid a severe degree of obstruction does not occur. Most of the patients with a foreshortened, so-called lead pipe colon may no longer be treated satisfactorily on a medical regimen. We have seen a number of patients in whom rectal examination was impossible because of narrowing and obstruction of this portion of the bowel. In this group the surgical indications seem to be clear.

Hemorrhage.—Fortunately, massive hemorrhage in patients with ulcerative colitis does not occur frequently. A high mortality is likely to result in these cases just as it does in those of the acute fulminating type. If hemorrhage continues in spite of repeated blood transfusion, operation should be advised, but it should be limited to ileostomy, since the results of resection during acute hemorrhage are followed by a prohibitive mortality. Chronic blood loss is seen more frequently, and if medical measures fail to correct the anemia, operation is indicated.

Infectious Arthritis.—Infectious arthritis involving one or more joints is a common complication in ulcerative colitis. We have seen it lead to pronounced structural changes in the joints resulting in complete incapacity from muscle atrophy and flexion contraction. If removal of the colon is carried out before structural change occurs in the joints, dramatic recovery will usually follow. Once this process becomes established only surgical treatment will be effective for its relief.

Polyposis.—When ulcerative colitis has been present for a considerable period, pseudopolypoid degeneration of the mucosa may occur. This can readily be visualized by the sigmoidoscope and by contrast air films of the colon. It may be found in patients in whom hemorrhage is a conspicuous feature as well as in the markedly contracted colon. These patients, in our experience, respond poorly to medical management and should have surgical intervention.

Carcinoma.—We have had 12 patients in whom carcinoma has developed from ulcerative colitis. Early in our experience we were not impressed with this as a frequent complication. Recently these cases were reviewed,[6] and it was found that the average duration of the ulcerative colitis in cases in which malignant degeneration developed was nine years. From this experience we believe that the longer patients are followed the higher the incidence of malignant degeneration will be. Seven per cent of the patients operated on in our series had carcinoma. Any patient with a filling defect or irregularity in the colon as shown by barium enema should be operated on. Furthermore, in any patient who has been in a quiescent state but who begins to pass blood, the development of malignant degeneration should be strongly suspected. Unless earlier operation is advised in this group of patients the results will be poor. Only 3 of the 12 patients operated on are living two years or more after operation.

Segmental Colitis.—In a small percentage of cases ulcerative colitis is limited to one part of the colon or to the rectum. If the proximal bowel is involved segmental resection

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[6] Cattell, R. B., and Boehme, E. J.: The Importance of Malignant Degeneration as a Complication of Chronic Ulcerative Colitis, Gastroenterology, to be published.

h anastomosis may be done. In those cases in which only the distal segment is involved abdominoperineal resection with colostomy may be carried out. These patients must be carefully selected to be certain that both the preoperative and operative findings demonstrate that the process is limited. Our poorest results of surgical treatment have occurred in this group because of the presence of the disease beyond the limits of the resection.

The largest number of our patients were submitted to surgical treatment because of unsatisfactory response to medical treatment. Abscesses, subacute perforations and fistulas were the indications for operation in 10 cases. Thirteen patients had pseudopolyposis, 12 had cancer, 7 had severe infectious arthritis and 5 had a severe degree of obstruction. Fecal incontinence was present in 9 cases.

TYPE OF OPERATION

Three surgical procedures are being employed at the Lahey Clinic in the surgical treatment of ulcerative colitis. These are ileostomy, partial or subtotal colectomy and total colectomy. Except in the segmental form of the disease, ileostomy is the first surgical procedure instituted. Cases in which ileostomy has been performed should be followed for a considerable period before a decision is made as to the necessity for removal of the colon. If observation is continued for at least six months, maximum improvement should be evident, and during this period visualization of the bowel by sigmoidoscopic and barium enema examinations will be possible. Furthermore, this period enables the patient to improve and to be a much better operative risk for whatever further surgical treatment is required.

There are three possibilities for the patient who has had ileostomy. First, the ileostomy may be closed in a few cases; second, the ileostomy may be permanent with a remission of symptoms continued, and third, the ileostomy is permanent but symptoms persist and colectomy must be done for relief.

Closure of an ileostomy is not often possible. In our series of 145 patients with ileostomy, closure was carried out fourteen times, or in 10 per cent of the cases. It was necessary to do a second ileostomy in 6 because of recurrence of the disease, while 8 patients have continued to do well for six months to eight years following closure. The number of patients in whom closure of the ileostomy will work out satisfactorily can increase only if ileostomy is performed before pronounced structural change occurs in the colon. Closure should not be considered unless conditions are rather favorable, as previously outlined by one of us.[7] Complete remission of symptoms for a year or more after ileostomy, negative sigmoidoscopic findings and an adequate lumen as demonstrated by the barium enema must all be present.

We see no indication for colectomy for the patient who has a remission of symptoms by ileostomy, yet cannot have the ileostomy closed. Unfortunately, in our experience this group is small, as we have only 15 patients whose course we are following with ileostomy alone without removal of a portion or all of the colon. The indications for removal of the colon will increase the longer that this group is followed.

The second surgical procedure which we utilize is partial or subtotal colectomy. All patients are included in this group in whom a portion of the colon is removed, but some segment is left, either proximal colon or rectum.

TABLE 1. *Type of Operation*

	Patients	Operations
Ileostomy	145	151*
Partial colectomy	46	78
Total colectomy	75	235

*Six had a second ileostomy.

We include in this group the patients in whom the right, transverse and descending colon have been removed.

The third surgical procedure we term total colectomy. In all of these patients, the terminal ileum, right, transverse and descending colon and rectal segment are removed. This procedure is usually carried out in three stages, consisting of ileostomy, colectomy and abdominoperineal resection.

CLINICAL DATA

The type of operation which we have employed is shown in table 1. Of the 166 patients who have been operated on, 145 have had ileostomy; a total of 151 ileostomies were performed, since 6 patients had a second ileostomy. Partial colectomy, usually in two stages, was carried out in 46 cases, with a total of 78 operations. These procedures were made up of a number of different operations. In a few, hemicolectomy and abdominoperineal resection were done, leaving a permanent colostomy in the transverse colon. A few had ileostomy with removal of the colon but with the rectal segment left. The largest number of this group had removal of the colon, with a Mikulicz form of anastomosis between the ileum and sigmoid colon, or ileostomy and colectomy followed later by implantation of the ileum in the sigmoid. No resections and primary anastomoses were done in this group. Removal of the colon and rectum, which we term total colectomy, was performed in 75 patients, 235 operations being required to carry it out.

The operative mortality is shown in table 2 and is rather high. One hundred and sixty-six patients had a total of 313 operations. There were 37 operative deaths, making a patient mortality of 22.3 per cent and an operative mortality of 11.8 per cent. Twenty patients died after their discharge from the hospital, which figure includes 3 known suicides. It is believed that most of these subsequent deaths were related to the disease of ulcerative colitis or to late complications following operation. This leaves 109 patients of the total group of 166 operated on who have survived for six months to twenty years following surgical treatment. It should be appreciated that patients submitted to operation are those with the disease in the most severe form and associated with serious complications. They represent the patients who cannot be controlled medically.

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[7] Cattell, R.B.: Closure of Ileostomy in Ulcerative Colitis, Ann. Surg. 115:956-968 (June) 1942.

The reasons for the high operative mortality are indicated in table 3. There were 27 deaths following ileostomy, an operative mortality of 18 per cent. Twenty-two of these 27 deaths occurred in patients in whom the ileostomy was done as an emergency. Many of these occurred early in our experience when we were slow to accept ileostomy, and most of the deaths occurred in the acute fulminating type. Seven deaths, or 15.2 per cent, followed partial or subtotal colectomy. From our experience we believe that too many patients were submitted to subtotal colectomy who should have had total colectomy in two or, usually, three stages. Few of these patients had an initial ileostomy, which would have made the procedure much safer, since these cases were not emergencies. Only 3 deaths, or 4 per cent, occurred in patients who had total colectomy. This is not a true figure, since some of the patients who had partial colectomy only were candidates for total colectomy and a considerable proportion of the mortality associated with ileostomy should properly be considered as part of the mortality of total colectomy. It is difficult to arrive at the correct figure for the risk of total colectomy because the procedure is not decided on at the time that ileostomy is done but only after subsequent observation of six to twelve months. It does demonstrate, however, that patients withstand abdominoperineal resection well because they have already had the improvement gained by ileostomy and the first stage of the colectomy.

TABLE 2. - *Mortality*

Total patients	166	Patient mortality	22.3%
Total operations	313	Operative mortality	11.8%
Operative deaths	37		
Subsequent deaths (including 3 suicides)	20		
Surviving 6 months to 20 years	109		

TABLE 3. - *Mortality Correlated with Type of Operation*

		Operative Deaths		Subsequent
	Number	Cases	Percentage	Deaths
Ileostomy	145	27	18	4
Partial colectomy	46	7	15.2	10
Total colectomy	75	3	4	6*

*Including 3 suicides.

The most significant thing relative to deaths that may follow the patient's discharge from the hospital is also illustrated in table 3. It will be noted that there were 10 subsequent deaths in patients having partial colectomy. In other words, of the 46 patients operated on 7 died after operation and 10 died after hospital discharge. Careful scrutiny of patients whose course has been followed after partial colectomy indicates that the segmental form of the disease is not common, since the process continued in spite of resection of all the bowel that appeared to be involved. Three patients who survived total colectomy died from surgical complications after leaving the hospital, and 3 additional patients were known to have committed suicide.

COMMENT

From our experience we believe that when surgical intervention is necessary in ulcerative colitis, ileostomy will be required and in most cases must be followed by removal of the colon. Bargen[2] and his associates reported 185 patients who had ileostomy performed over a twenty-seven year period, with 55 deaths. Of the 130 patients surviving operation, 39.2 per cent had further symptoms. These results are similar to those reported by Cave,[8] who performed 196 operations on 106 patients with a patient mortality of 19.8 per and an operative mortality of 10.7 per cent. In a group of 15 patients who had ileostomies which he considered as emergencies, there were 8 deaths, or 53.3 per cent, in contrast to the mortality of 9.4 per cent following elective ileostomies. He performed 58 subtotal colectomies with 6 deaths, and in 11 of these patients abdominoperineal resection was done without further fatality. Garlock[9] reported 25 patients who had been submitted to operation before 1941 and 68 additional cases in 1945. Following 21 subtotal colectomies there were 4 deaths—19.9 per cent, and after 38 ileostomies, 6 deaths, or 15.7 per cent. Dennis[10] reported 25 surgical cases with a mortality of 8 per cent for the different procedures employed.

A consideration of the mortality figures is important but does not give the real picture of what can be accomplished by surgical treatment. If one considers patients who have been submitted to total colectomy with permanent ileostomy in whom it is known that all of the infected bowel has been removed, we find a high proportion in excellent health. Their nutritional state is entirely normal. With the modern management of ileostomy by means of an apparatus that is cemented to the skin of the abdominal wall,[11] a minimum of inconvenience from the ileostomy is experienced.[12] These patients are able to pursue essentially normal activity which includes sports and all types of work. They are an exceedingly grateful group of patients, since most of them had had a chronic illness of long duration. Several patients have been married after surgical treatment, and an occasional one has gone through a successful pregnancy.

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[8] Cave, H.W., and Thompson, J.E.: Mortality Figures in the Surgical Treatment of Ulcerative Colitis. Ann. Surg. 114:46-55 (July) 1941. Cave, H.W.: Personal Communication to the authors.

[9] Garlock, J.H.: Further Experiences with Surgical Treatment of Intractable Ulcerative Colitis, New York, State J. Med. 45:1309-1312 (June 15) 1945.

[10] *Dennis, C.: Ileostomy and Colectomy in Chronic* Ulcerative Colitis, Surgery 18:435-452 (Oct.) 1945.

[11] A. Rutzen bag.

[12] Cattell, R.B.: Care of Ileostomy, Lahey Clin. Bull. 4:45-52 (Oct.) 1944.

Fortunately, with further experience with the surgical treatment and with earlier operation, mortality has been lowered markedly. This is well illustrated by the more recent experience during 1945 and 1946 (tables 4 and 5). During this period 75 patients were operated on, having a total of 94 operations. Some of these patients had been operated on before 1945 and some were operated on in 1947 or will have further procedures in the future. There were 3 deaths, a patient mortality of 4 per cent or an operative mortality of 3.2 per cent. During this period 39 ileostomies were done with 2 deaths and 30 partial colectomies with 1 death. Twenty-one total colectomies were completed without a fatality. During this period 3 ileostomies were closed. For this two year period the patient mortality of 4 per cent should be considered along with the mortality over a twenty year period of 22.3 per cent. We believe in the light of present knowledge and experience that this low operative mortality can be maintained. This low mortality, combined with the modern management of ileostomy, justifies the surgical treatment of all patients with ulcerative colitis who do not respond satisfactorily to medical treatment.

TABLE 4. - *Surgical Treatment, 1945 - 1946*

Total patients	75
Total operations	94
Patient mortality	4%
Operative mortality	3.2%

TABLE 5. - *Ulcerative Colitis, 1945 - 1946*

	Number	Deaths
Ileostomy	39	2
Partial colectomy	30	1
Total colectomy	21	0
Ileostomy closure	3	0

SUMMARY

Experiences in the surgical management of ulcerative colitis over a twenty-year period have been reviewed. The indications for surgical treatment are discussed. Operation is necessary to handle the complications occurring in the course of the disease.

One hundred sixty-six patients were operated on, representing 26 per cent of the total number of patients treated. Ileostomy, partial colectomy and total colectomy have been the procedures utilized. One hundred and forty-five patients have been submitted to ileostomy and 75 to total colectomy. There were 37 operative deaths, with a patient mortality of 22.3 per cent and an operative mortality of 11.8 per cent. Two thirds of the fatalities occurred in patients who had an emergency ileostomy.

During 1945 and 1946, 75 patients were operated on with 3 deaths, a mortality of 4 per cent.

ABSTRACT OF DISCUSSION

On papers of Drs. Kirsner, Palmer, Maimon and Ricketts and Drs. Cattell and Sachs

DR. J.A. BARGEN, Rochester, Minn.: My associates and I think of chronic ulcerative colitis as a syndrome comprising many or at least several disease entities. Our experiences with a rather large series of patients are in line with the results of Dr. Kirsner's follow-up studies. One should call attention, however, to the importance of some contributory factors which in a larger series seem to be of paramount importance. In the most common form of ulcerative colitis which we have been designating as thromboulcerative, or streptococcic, infections of the upper respiratory tract are of the first importance not only in initiating the disease but in subsequent exacerbations. In the milder form or insidious forms psychosomatic factors may assume importance. Reducing intestinal activity by withholding food and fluid by mouth and feeding the patient parenterally have great value in the extremely sick patient, the one whom we speak of as having the fulminating form of the disease, and this form of treatment has saved many patients from ileostomy. We have been using this form of treatment for many years but have always hesitated to continue it more than a week at a time. We can no more treat the fulminating form like the chronic form than we can treat simple, uncomplicated ulcer like the one with massive hemorrhage. When a case of severely acute colitis has become chronic, a different problem presents itself. Then it approaches the stage of so-called intractability. I have frequently said that intractability is directly proportional to the physician's patience and long-suffering. Intractability is rarely, if ever, an indication for surgical treatment. In the past, we have reported the incidence of surgical intervention as 5.5 per cent of our cases. There was a time when we operated on patients with the fulminating form and those who apparently had the intractable form. The mortality in the first group seemed to us to make surgical intervention prohibitive. Furthermore, in most of them the symptoms come under control by adequate medical care. In the group in which complications occur, surgical treatment frequently becomes mandatory. Dr. Cattell has listed these complications. The diffuse form or the thromboulcerative form of colitis should not be confused with the segmental type when surgical intervention is discussed. It is doubtful that more than 10 per cent of patients with various forms of ulcerative colitis should become surgical problems. However, each one of us must be prepared to keep the patient with chronic ulcerative colitis under observation for a long time once he consults us for advice and treatment. The careful follow-up of these cases over a long time cannot be overemphasized. If this is done good results will be achieved in most cases.

DR. E.N. COLLINS, Cleveland: Ten years ago we started using sulfonamide compounds as an adjunct to the usual therapy at Cleveland Clinic. During this time we have found administration of sulfonamide drugs by retention enema more effective than oral use, particularly in early cases in which the disease is limited to the rectum and/or the left colon. In the November 1946 issue of *Gastroenterology* we reported on 55 cases in which progress stool, proctoscopic and roentgen examinations had been made over a period of two years. Although it is impossible to attribute favorable results to any single item of therapy in this disease, the use of succinylsulfathiazole was considered beneficial. Only 10 patients failed to make a favorable response. In patients whose disease was limited to the rectum and/or the left colon (28 patients) only 1 had not improved, 3 had relapses which were promptly controlled when the use of succinylsulfathiazole was resumed, and 24 had complete remission from the time that the drug was first started by retention enema. Regular remittent courses of therapy were given over an average period of eight months, whether symptoms were relieved promptly or not. Our position on surgical therapy at present apparently corresponds with our geographic position, not quite as conservative as that held in Rochester, Minn., and perhaps more conservative than that held in Boston. However, the trend at the Cleveland Clinic is toward surgical intervention in a larger percentage of patients than was the case five years ago, particularly in patients having toxic symptoms.

DR. JOSEPH FELSEN, New York: Nothing has been said concerning the prevention of this disease. Since 1933 there has been a growing conviction that some, but not all cases of chronic ulcerative colitis are due to bacillary dysentery. What is the etiology of the remaining cases? No one has presented acceptable evidence pointing to any cause other than bacillary dysentery. The disease has been repeatedly traced in the same person from the initial acute specific phase of bacillary dysentery to the chronic, nonspecific phase of ulcerative colitis. The pathology is distinctive. The Shigella organism has been isolated with a frequency which is statistically significant in terms of adequate controls. The disputatious attitude of some clinicians concerning the relationship of the bacillary dysentery to chronic ulcerative colitis and chronic dysentery resembles that concerning puerperal fever. Holmes, in his treatise on "The Contagiousness of Puerperal Fever," stated: "If anyone is disposed, then, to take one hundred instances of lives endangered or sacrificed out of those I have mentioned and make it reasonably clear that within a similar time and compass ten thousand escaped the same exposure, I shall thank him for his industry, but I must be permitted to hold my own practical conclusions, and beg him to adopt and at least to examine them also. Children that walk in calico before open fires are not always burned to death. The instances to the contrary may be worth recording, but by no means if they are to be used as arguments against woolen frocks and high fenders." In only a small percentage of patients with acute bacillary dysentery does chronic ulcerative colitis or ileitis develop. Of these, the Shigella organism can be recovered in only 10 to 15 per cent after the lapse of one year. Our public health record in bacillary dysentery is deplorable, and the disease continues unabated. It is my conviction, after much critical study, that if we can eradicate acute bacillary dysentery, a completely preventable disease, we shall no longer see chronic ulcerative colitis or chronic ileitis.

DR. SIDNEY A. PORTIS, Chicago: I think that we should have a more philosophical approach to this problem. If a psychiatrist can produce a remission in this disease then it might be well to inquire what was happening to the body as a whole as a result of that form of therapy. Apparently, the bowel is put at physiologic rest. If the psychiatrist can presumably normalize the emotional status of a patient and therefore prevent overt stimulation through the parasympathetic nervous system, we ought to be able to simulate this treatment pharmacologically. Therefore, one should use atropine three times a day at meals and at bedtime to paralyze the parasympathetic nerves going to the gastrointestinal tract, particularly the sacropelvic nerves. This normalization of the emotional status may be further aided by the use of phenobarbital three times a day and an additional dose at bedtime. If enzyme digestion is a factor in continuing the ulceration of the mucous membrane then the binding or attenuating of those enzymes by wetting agents, such as sodium, alkyl sulfate, or any other detergent should be of distinct benefit. This may be given in enteric-coated capsules three times a day in doses of 200 mg. It is important that the patient be fed frequently during the day and before he retires at night. A high level of blood sugar coming from the gastrointestinal tract produces a more normal physiologic balance in the brain. In the care of a patient with this disease it is important that psychiatry be combined with medical treatment because a psychiatrist cannot control the emotional factors of a given patient twenty-four hours a day. The medical management outlined will prevent untoward complications and will provide the psychiatrist with the safeguards he should have in his approach and handling of a patient with this disease.

DR. ALBERT F. R. ANDRESEN, Brooklyn: In any case of bloody diarrhea it is of great importance to determine the cause of the diarrhea and the exact origin of the bleeding. Tuberculosis must be excluded and cancer must be suspected until it has been definitely ruled out. In a series of cases of so-called nonspecific ulcerative colitis we were able to prove that over 60 per cent were due to allergy, our figures agreeing almost exactly with those reported by Mackie. About 50 per cent of those caused by allergy have been shown to be due to milk. The success of many of the diets suggested for this disease depends probably on their small or absent milk content. Some of the worst cases I have seen have been due to orange, wheat or egg. It requires extreme care and patience to discover these allergens and to treat these patients, but even the cases of most severe colitis can be definitely cleared up by avoidance of the foods which have been shown to be the cause. In addition to this there must be adequate attention to dietetic needs, especially sufficient proteins, to the care of anemia, by repeated transfusions, and to general hygienic measures Secondary infections may require sulfonamide drugs or antibiotics. Operation is practically never necessary in the cases of acute disease but may be required for secondary obstructions or deformities. As in any other type of allergy, we cannot say that we cure our patients, because if they take the food they are allergic to or any to which they may later become allergic, exacerbations will occur. Sometimes these exacerbations are seasonal, not only because the food happens to be plentiful at the particular time of the year, but because at times a milk-sensitive person is really sensitive to something in the diet of the cow, which varies somewhat with the seasons.

DR. HYMAN I. GOLDSTEIN, Camden, N. J.: In discussing Dr. Portis' remarks on psychosomatic influence in these gastrointentinal disorders—may I recall some early references to this problem: D. Veegens' "De sympathia inter ventriculum et caput, praecipue in statu praeternaturali," Leyden Edinburgh, 1784; C. Wightman's "De consensu ventriculum inter et cerebrum," 1808; "A Lecture on the Connection and Reciprocal Influence Between the Brain and the Stomach," by Usher Parsons, Providence, 1841. I suggest that we read the symposium on the same topic—the influence of psychic factors on gastrointestinal disorders, including colitis, in the *Psychoanalytic Quarterly* (3:501-539, 1934). The late Dr. Jacob Kaufmann in 1918 addressed the American Gastroenterological Association on "The Psychic Element as an Important Factor in the Development and Treatment of Peptic Ulcer" (*Tr. Am. Gastroenter. A.* 1918, pp. 19-23). Hemmeter and Kaufmann knew of the importance of these psychic factors, and discussed them with me many years ago So we are today reviving the so-called new look--psychosomatic medicine, in relation to gastrointestinal disorders! Even Thomas Sydenham (1624-1689) considered colitis ("dysentery") a constitutional disease with (secondary) colonic manifestations. ("variolas anomalas constitutionis dysentericae").

DR. GARNET W. AULT, Washington, D.C.: Our experience with 110 patients having chronic ulcerative colitis indicates that 15 to 20 per cent become candidates for surgical treatment. Among 20 patients who underwent 35 operations, a postoperative mortality of 8.5 per cent was encountered. A mortality of 5.7 per cent, due to the disease but not the operative procedures, was likewise met. I should like to emphasize what Dr. Cattell said, that in a certain percentage of cases of chronic ulcerative colitis surgical intervention is indicated, under the circumstances that he outlined. A properly fitted ileostomy bag can be worn in the summer under a flat front dress. It does not leak. It is glued to the skin with liquid latex. The older apparatuses, sponges, dressings, etc., are not acceptable to the patient and should not be to the surgeon. The use of this bag after surgical treatment has enabled us to rehabilitate about 72 per cent of these patients for previous occupation or avocation. Most are employed on a full time basis without disability. They are not surgical invalids and they are not medical derelicts because they underwent operation.

DR. FRANK H. LAHEY, Boston: A majority of our patients are handled medically. One of the reasons that our incidence of surgical treatment is high is that many of our patients have intractable disease and are sent with the prospect of requiring surgical treatment. On the other hand, we see a large group of patients who come at a time when the patient, physician, gastroenterologist, surgeon and family are willing to accept the undesirable ileostomy, and that was the state of affairs when our first 80 ileostomies gave us a mortality of 22 per cent. On several occasions I made a plea for earlier ileostomy in these cases of acute disease. The reason that we did ileostomies late was that every one agreed that life with an ileostomy was an almost impossible existence. Now that we are able to close ileostomy openings and restore the fecal stream in some cases and have the Koenig-Rutzen bag which makes patients comfortable after ileostomies and is satisfactory, there is no argument against doing them early in serious cases. We now have a mortality in the later series of ileostomies that is favorable, around 4 per cent. I urge that there be more frequent early consultations between the physician in charge of these cases of serious ulcerative colitis and the surgeon, particularly in patients who are becoming toxic and in whom the question of surgical treatment is being even remotely considered. It is important to do this in order that one may be sure that the disease is not permitted to advance to the late stages at which the mortality rates just described result. Surgeons dealing with patients who are to have ileostomies during the acute stage of ulcerative colitis must remember that this is an entirely different operative procedure from the ileostomy done deliberately when the patient is not toxic, does not have a rise in temperature and is not an emergency. The emergency ileostomy is to be done with as little disturbance to the colon and the abdominal contents as possible and, therefore, should never be a divided ileostomy but should be the simplest possible loop colostomy, by means of which a loop of ileum can be picked up, implanted in the wound and divided with the least possible manipulation of the abdominal contents. One must not forget that in the ileostomy done as an emergency during the acute stage of ulcerative colitis any manipulation of the infected colon will result in dissemination of organisms and the production of peritonitis.

LATE RESULTS OF RADIUM THERAPY FOR CARCINOMA OF THE UTERINE CERVIX

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The first recorded case in which cancer of the uterine cervix was treated at the Mayo Clinic with radium occurred in 1915. To date, an experience of thirty-two years has accumulated. One of us (H. H. B.) has had an active share for twenty-eight years in this special work. In no little part the experience of many workers in this field of endeavor is reflected in the study. The material contained in the tables used in this paper was furnished by the Division of Biometry and Medical Statistics of the clinic, and the inferences and statements made are based on our experience with cancer of the uterine cervix.

The first division of this study concerns the method or methods of management in these cases and indicates the source of the cases for the statistical data. The second division concerns important data about the disease and the third division concerns important data for the estimation of prognosis.

DIVISION 1

The time allotted will not permit a historical review of the diagnosis and the surgical and radiosurgical treatment of cancer of the uterine cervix. The literature contains many worth while attempts to crystallize thought based on the experience of many workers in this special field.[1] Surgical procedure has always maintained

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From the Section on Radium Therapy, Mayo Clinic.

[1] Bowing, H. H.: Fricke, R. E., and McClellan, J. T.: Radium Therapy of f the Uterine Cervix, Am. J. Roentgenol. 5. Kaplan, I. I.: Cancer of the Cervix: Belle Treatment Over a Period of Twenty-One Years, ibid. **57:** 659-664 (June) 1947. Bouslog, J. S: Intravenous Radiation Therapy, ibid. **57:** 665-670 (June) 1947. Waterman, G. W.; DiLeone, R., and Tracy, E.: The Use of Long Interstitial Radium Needles in the Treatment of Cancer of the Cervix, ibid. **57:** 671-678 (June) 1947. Meigs, J. V.: The Radical Operation for Cancer of the Cervix, ibid. **57:** 679-684 (June) 1947. Morton, D. G.: The Surgical Treatment of Cervical Cancer: Wertheim Operation; Pelvic Lymphadenectomy, ibid. **57:** 685-696 (June) 1947. Campbell, L. A.: Carcinoma of the Cervix: An Applicator for Greater Parametrial Dosage, ibid. **57:** 697-702 (June) 1947. Skinner, E. H.: An Introduction to the History of Carcinoma of the Cervix Uteri, Radiology **40:** 433-435 (May) 1943. Scheffey, L. C.: Experiences in the Treatment of Carcinoma of the Cervix Uteri, ibid. **40:** 436-446 (May) 1943. Sante, L. R.: Further Experience with Pneumoperitoneum as an Aid in Pelvic Irradiation, ibid. **40:** 447-453 (May) 1943. Wasson, W. W.: Intravaginal Roentgen Irradiation of Cancer of the Cervix, ibid. **40:** 454-457 (May) 1943. Schmitz, H. E.: Further Study of Supervoltage X-Ray Therapy in Carcinoma of the Cervix, ibid. **40:** 458-462 (May) 1943. Garcia, M.: Tissue Dosage in the Control of Carcinoma of the Cervix, ibid. **40:** 463-470 (May) 1943. Buschke, F., and Cantril, S. T.: Irradiation Failures in Early Cervical Cancer: Improved Irradiation or Return to Surgery, Am. J. Roentgenol. **54:** 60-71 (July) 1945. O'Brien, F. W.: The Radium Treatment of Cancer of the Cervix: A Historical Review; Janeway Memorial Lecture, ibid. **57:** 281-297 (March) 1947.

a definite position in the management of these patients; for example, the group of patients with clearly localized lesions. Irradiation therapy has proved to be an excellent surgical adjunct; otherwise, its chief position is in the fields of treatment for patients in the inoperable, further advanced and "recurring" groups. These two distinct methods of treatment have furnished a wide range of personal therapy to meet the ever-changing demands of the individual case. With careful selection of patients for the proper method of treatment, whether for a single procedure or a combination of procedures, a good initial and enduring result will be obtained. In some cases the amount of palliation will be entirely unexpected and it may last for years.

Our first data for analysis concern the arrangement of the entire number of patients treated during the study period into groups according to the procedures or combination of procedures employed at the time of their acceptance for treatment. It must be appreciated that some of the patients were treated during the early period of our radiosurgical experience.

Table 1.—*Malignant Lesions of the Cervix, 1915-1944 Inclusive: Type of Treatment*

Treatment	Cases	
	Number	Percentage
Radium therapy alone	510	13.4
Roentgen therapy alone	127	3.3
Radium and roentgen therapy	2,246	59.2
Operation alone[*]	445	11.7
Operation and radium therapy	124	3.3
Operation and roentgen therapy	87	2.3
Operation, radium therapy and roentgen therapy	259	6.8
Total	3,798†	100

[*] Exploratory operations are excluded.

† Includes only cases in which patients were treated.

Table 1 concerns the method or methods of management of a grand total of 3,798 treated patients whose condition was diagnosed as cancer of the uterine cervix at the clinic from 1915 to 1944 inclusive. The greatest number of patients were referred to the Section on Radium Therapy, and the combined method of radium therapy and supplemental roentgen therapy was employed. This group will be considered further in other tables.

The next largest group of patients were treated with radium therapy alone. There are several reasons for this selection of our method of treatment; for example, (1) poor general condition of the patient, permitting only limited radium therapy; (2) marked obesity; (3) abandonment of radium therapy for various reasons; (4) patient elected to have the supplemental roentgen therapy given at or near her home; (5) initial roentgen therapy given elsewhere.

The next largest group of patients were treated by surgical intervention alone. In all likelihood the selection of patients for this single method was made for one of the following reasons: (1) the primary lesion was clearly localized; (2) the lesion was of a low grade of malignancy; (3) further treatment was temporarily omitted for more complete surgical convalescence; (4) patients underwent operation in the years of our early experience with radiosurgical technics. It is of interest that in previous analyses of data on cancer of the uterine cervix the percentage of patients selected for surgical treatment was in the range of 11 to 12 per cent, approximately the same as in the present study. Later on, in this study, reference will be made to this important finding.

The next largest group of patients were treated by operation, radium therapy and roentgen therapy. In the main these were patients seen early enough in the course of development of the lesion to have the benefit of a combined treatment: (1) operable primary lesion with a high grade malignant change; (2) borderline lesion found at operation; (3) preoperative radium therapy (a small number of cases); (4) postradiosurgical complications (persistent uterine discharge); (5) operable lesion with other findings indicating surgical intervention.

The next group in order of numbers received roentgen therapy alone. The selection of this single method of management may have been due to the following causes: (1) extensive involvement of the vaginal wall precluding intracavitary radium therapy; (2) limited roentgen therapy given for relief of pain; (3) unilateral edema of the leg.

The next largest group of patients were treated by operation and radium therapy. The considerations for the selection of these methods of management may be as follows: (1) borderline cases with low grade of malignancy; (2) operable cases with early recurring lesions; (3) operable cases with high grade malignant lesion.

The last group for consideration were treated by operation and roentgen therapy. The indications for this combination of methods may be as follows: (1) early and borderline lesions with a high grade malignant lesion; (2) postoperative vaginal stump with a slow or delayed healing.

No doubt there are many more indications for the selection of the method or methods employed than those listed. However, the ones suggested are in line with good radiosurgical judgment. Considering the limitations of each procedure when used alone as well as the various local and systemic conditions presented by each patient the selection indicates another attempt at personalized management. The majority of patients referred to the Section on Radium Therapy were in the inoperable or advanced stage of the disease when first seen, and the only method available for cure or palliation was radium and roentgen therapy.

DIVISION 2

The age distribution in cases of cancer of the uterine cervix varies greatly. However, the majority of patients are in the menopausal years of their lives. The age distribution is recorded in table 2. About two thirds of the entire group were from 40 through 59 years of age.

Table 2.—*Malignant Lesions of the Cervix, 1915-1944 Inclusive: Age of Patients*

[illegible]	Patients	
	[illegible]	[illegible]
40-49	731	32.6
50-59	687	30.6
60-69	302	13.4
70-79	45	2.0
80+	3	0.1
Total	2,246	100
Mean	49.1 years	
Youngest	21 years	
Oldest	82 years	

The next factor for consideration is the extent of the primary lesion at the time of the employment of the first method of management. The extent of the cancer is the most noteworthy single feature of the disease and the guiding principle in classifying cases. The terminology employed by the surgeons is as follows: (1) operable, (2) borderline, (3) inoperable and (4) terminal. The skill of the surgeon and the facilities and equipment of the hospital entered into the selection of cases for surgical intervention, and these were later considered undesirable features of a classification.

Schmitz[2] reported on a group of patients treated between April 1914 and Dec. 31, 1919. His classification was based only on the extent of the primary lesion. The terminology and definitions are as follows: (1) operable, clearly localized after a physical examination; (2) borderline, doubtfully localized after a physical examination; (3) inoperable, demonstrable invasion of contiguous tissues, organs and regional lymph nodes, after a physical examination; (4) terminal, hopeless cases. For the first group, abdominal panhysterectomy was recommended. For the second group, as well as operable cases with complicating constitutional diseases, irradiation therapy was recommended. For the third group, intensive irradiation therapy was recommended. For the fourth group, only symptomatic treatment was recommended. Schmitz mentioned passive immunity as an important factor of irradiation therapy.

The surgical terminology is the oldest, conveys definite ideas and the need for separable classes of cases and probably is the wording best understood by a large number of physicians. The College of Surgeons proposed, many years ago, a large card for the recording of data and conditions for classification of cases; however, it was not generally accepted.

The League of Nations recommended a terminology and classification[3]: stages I, II, III and IV, depending strictly on the extent of disease. The word "stage" has proved rather acceptable; however, the description of each stage, although clear, is too tedious to follow. Briefly stated the terminology used in our classification is that of the League of Nations, and the extent of the primary lesion is that rational to the clinican, surgeon and therapeutic radiologist. In stage I the lesions are confined to the cervix; in stage II there is a moderate local invasion; in stage III there is extensive local invasion or unilateral fixation, and in stage IV there is a massive local invasion or metastasis elsewhere.

To determine the extent of the primary lesion is essential for the selection of the method or methods of treatment to be employed. In some cases, this determination can be readily made by a bimanual pelvic examination and a careful inspection of the vaginal cavity and cervix. In other cases, more special examinations may be necessary to determine the extent of the local malignant involvement. For example, a lesion of the cervix may be considered to be localized and yet when a sound is passed into the cervical canal the greater portion of the uterus may be found to be involved. In another case, with only partial cervical involvement, the lesions may extend into the anterior vaginal wall sufficiently to cause a block to the flow of urine on the involved side, the onset of hydronephrosis.

Another difficulty is the attempt to separate other pelvic pathologic conditions from the malignant involvement, such as the residue of an old pelvic inflammatory disease, fibroids and tumors of the ovary. In some cases, it may be necessary to defer determination of the stage of the primary lesion until the time when the initial radium treatment is about completed. Nearly all stage IV and some stage III classifications furnish a real problem in determining the primary lesion immediately.

The study group furnished 2,146 cases classified according to the stages which we proposed in table 3.

TABLE 3.—*Malignant Lesions of the Cervix, 1915-1944 Inclusive: Stage of Involvement*

Stage of Involvement	Cases	
	Number	Percentage
I	27	1.3
II	306	14.3
III	1,419	66.0
IV	394	18.4
Total	2,146*	100

* There were 100 patients in whom the stage of involvement was unknown.

There were 15.6 per cent in a favorable unit (stages I and II), while the majority (66.0 per cent) were in an unfavorable unit, and 18.4 per cent were in an apparently terminal phase of the malignant disease. In the discussion of table 1, it was emphasized that 11.7 per cent of the patients were treated by surgical procedures alone, indicating the proportion of favorable cases occurring in the grand total of 3,798 cases. The patients referred to the Section on Radium Therapy may be considered a selected group of patients, and yet when analyzed according to favorability the percentage figures are relatively comparable. For the purpose of further comparison with other statistical data occurring in the literature, they may be considered as an average unselected group of patients who have cancer of the uterine cervix. There is a possible difference, in that the favorable group in table 3 may contain a large number of older patients, obese patients and those with complicating systemic diseases contraindicating radical surgical intervention.

The patient's age and stage classification are an important combination of factors in that they influence the selection of method or methods of treatment. For example, young patients tolerate radical surgical procedures better than their seniors. A combination of favorable factors for adequate surgical intervention would be (1) a young patient with a stage I lesion, or (2) a selected patient with a stage II lesion, (3) all in perfect health. Considering only the first two factors (age and stage), table 2 lists 21.3 per cent 39 years of age or less, table 3 lists 15.6 per cent in the favorable stages and the mean age of the patients in stage I as recorded in table 4 was 54.5 years. The number of cases for this special consideration is too small for statistical purposes; as a rule, patients with the combination of favorable factors are exceptionally few. The mean ages of patients in stages II and III are similar and approximate the average age of the entire group. The mean age of patients in stage IV is 0.9 year greater than the mean age of those in stage III. This difference may indicate the mean length of time necessary for a stage III lesion to advance to a stage IV involvement.

The modified patients furnish an interesting and important classification for analysis and are always too large a group to be ignored. We have chosen the term "modified" for this group of previously treated patients because it is almost impossible to obtain all the necessary data to establish the stage of the lesion when the patient was first considered or treated (elsewhere). In some of the cases it is obvious that the treatment given was intended for palliation and, of course, residual cancer tissue was found present at the time of our examination. Incomplete information records many types of procedures, for example, dilatation and curettage, chemical and actual cautery, cervical amputation, electrosurgical procedures, and so forth. These procedures proved to be inadequate, and yet some temporary benefit occurred in that a local arrest of the surface phase of the disease resulted in diminished ulceration, infection, loss of blood, and so forth. However, the anatomic landmarks were destroyed and the resulting effect modified the primary lesion to such an extent that only limited radium therapy could be applied. Some of these cases require something special of the therapeutic radiologist; they are more tedious to manage and an extra amount of responsibility must be assumed. The immediate and late results obtained have always been a real pleasure to report and a great surprise to all concerned; however, they always reduce our five year cure rate. The mean age of this group, 46.4 years, was nearly three years less than the average age of the entire group. This feature may be due to the many different methods of treatment selected and applied elsewhere by physicians in various specialties.

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[2] Schmitz, H.: The Treatment of Cancer of the Uterus, J. A. M. A. 77: 608 612 (Aug. 20) 1921.

[3] Report of the Radiological Sub Commission, League of Nations Health Organization, Cancer Commission, Geneva, League of Nations Publications, 1929.

TABLE 4.—*Malignant Lesions of the Cervix, 1915-1944 Inclusive: Mean Age of Patients According to Stage of Involvement*

Stage of Involvement	Patients	Mean Age, Years
I	21	51.5
II	263	49.9
III	1,135	49.5
IV	272	50.4
Modified	491	46.4
Not stated	61	51.1
Total	2,246	49.1

DIVISION 3

Our final consideration concerns the factors necessary for an estimation of the probable prognosis. This determination cannot be definitely stated when a patient who has cancer of the cervix is first seen by the surgeon or radiosurgeon. However, one may attempt to evaluate for the patient's family or responsible party the chance of cure or palliation only. Today, there are many encouraging features that the patient should know and there are many other features that the relatives or responsible party should know. A statistical study, as presented, does not evaluate the kind or degree of palliation that is most certain to occur in all treated patients. The constant obnoxious vaginal discharge, the odor, the pain, the bleeding and hemorrhage are certain to yield for various periods, naturally depending on the serious features of the disease and place of treatment. The immediate result is always uppermost in the minds of the patient and her relatives. The five year salvage and beyond surely enters into their consideration, but their chief concern centers about the relief or "help" that the patient may obtain rather promptly, and from these early responses they derive their encouragement and faith in the method selected. In all likelihood little do they realize that the surgeon and radiosurgeon are equally interested in the initial response to the method selected for their recovery.

The surgeon knows from long experience in this field that a good immediate result is the best assurance of a good lasting result. Only a few postsurgical months are necessary for this evaluation. In the event that the disease recurs locally the chance of recovery from a second surgical procedure is almost nil. This is an important observation and a valuable lesson for the radiosurgeon to learn and to remember. His method of attack has some features similar to that of surgery. The important one is that irradiation in a measure is a local attack on the disease, and his success depends on the skill and judgment used in completely or adequately treating the visual and palpable expressions of the disease. The recognition and treatment of the local gross pathologic changes should be his chief concern. His limitations are also comparable to those of the surgeon in that an immediate good response is the first part of a good and lasting result. If a second application is necessary after a few post-treatment months, the chance of a permanent recovery from a second application of treatment is also almost nil. It seems reasonable to assume that all single methods of management have their limitations and that by a combination of selected methods in proper sequence the most good can be obtained for the patient. Secondly, each patient presents individual problems which demand individual management. So far, there are no mass production procedures that will effectively control the malignant disease.

Our first consideration is the influence of age on the five year survival rates. Our data are contained in table 5. Included in the table are only those patients treated five or more years prior to the time of inquiry; that is, in 1939 or earlier. For simplification the patients are grouped in decades. The age group 20 to 29 years and the age group 70 years or more furnish only a small number of patients. Of the patients traced in the first group 25 per cent lived five or more years after leaving the hospital, while of the later group 36.4 per cent lived for the same period. The results obtained in these two groups compare favorably with the average result (32.8 per cent) obtained for the entire group. It is apparent that these groups will always contain few patients for statistical study. The next unit for comparison is the 30 to 49 year group, of which 29.5 per cent were living five or more years after leaving the hospital. Of the patients traced in the next unit, the 50 to 69 year group, 36.9 per cent were living five or more years after leaving the hospital. The difference of 7.4 per cent is no doubt significant and is in favor of the older patients. The data presented in table 5 adhere to the general idea that youth unfavorably influences the chance of five year survival. However, in this study the unfavorable factor is relatively small, and furthermore the favorable factor is relatively good in influence on the five year survival rate.

TABLE 5.—*Malignant Lesions of the Cervix, 1915-1944 Inclusive: Five Year Survival Rates According to Age of Patients*

Age, Years	Patients* Total Number	Patients* Number Traced	Lived 5 or More Years After Leaving Hospital Number	Lived 5 or More Years After Leaving Hospital Percentage of Traced Patients
20-29	42	36	9	25.0
30-39	338	299	86	28.8
40-49	580	509	152	29.9
50-59	562	486	165	34.0
60-69	243	218	95	43.6
70 +	34	33	12	36.4
Total	1,799	1,581	519	32.8

*Inquiry as of Jan. 1, 1945. Included here are only those patients treated five or more years prior to the time of inquiry; that is 1939 or earlier.

Our second consideration is the influence of grade of malignant change on the five year survival rate. It is based on data contained in table 6. Included in the table are only those patients treated five or more years prior to the time of inquiry; that is, in 1939 or earlier. The work of MacCarty[4] and Broders[5] on the cytologic studies on surgical material has advanced our knowledge regarding the defense mechanism of the body against the destructive character of neoplastic disease. MacCarty grouped differentiation, lymphocytic infiltration, fibrosis and hyalinization all as part of this defense system. He found that when these factors are favorable, the postoperative longevity is 146 per cent greater. Broders' method of grading is a serviceable contribution and of great value to both surgeon and radiosurgeon. In this study and in previous ones the high grade malignant lesions predominate (table 6), and it is this unequal distribution that makes comparison impossible. We do not recall treating a primary grade 1 squamous cell epithelioma of the cervix. A few such lesions have been treated; however, they were secondary to leukoplakic cervicitis. The grade 1 lesions are adenocarcinomas. In this study, there were only 9 patients with grade 1 malignant change. Of the patients traced 57.1 per cent lived five or more years after leaving the hospital. This is an extremely small number of patients. However, linked with grade 1 malignant lesions occuring in other anatomic locations these lesions are not definitely radioresistant. The radiosurgeon prefers to treat these lesions on the same basis as the surgeon does, in that they are slow to spread locally and elsewhere in the host. The grades 2, 3 and 4 occurred in sufficient numbers for comparisons. Of patients with a grade 2 lesion who were traced, 39.8 per cent lived five or more years after leaving the hospital. Of patients with a grade 3 lesion who were traced, 38.2 per cent lived five or more years after leaving the hospital. Of patients with a grade 4 lesion who were traced, 36.4 per cent lived five or more years after leaving the hospital. The differences between successive grades in these percentage figures are 1.6 per cent and 1.8 per cent respectively, small differences indeed. The difference in percentage cure rates when lesions of the various grades are treated surgically is most pronounced, as previously stated. Of patients without a record of the grade of the lesion who were traced, 19 per cent lived five or more years after leaving the hospital. The reason for the rather low comparative five year survival rate for this group is not indicated. In the early years of radiation therapy the grade was not determined. There is a possibility that the influences of age, stage, grade and limited radium therapy are all reflected in this low percentage figure.

TABLE 6.—*Malignant Lesions of the Cervix,*
1915-1944 *Inclusive:*
Five Year Survival Rates According to
Grade of Malignancy (Broders)

Grade of Malignancy	Patients*		Lived 5 or More Years After Leaving Hospital	
	Total Number	Number Traced	Number	Percentage of Traced Patients
1	9	7	4	57.1
2	205	181	72	39.8
3	636	560	214	38.2
4	487	407	148	36.4
Not stated	412	426	81	19.0
Total	1,799	1,581	519	32.8

* Inquiry as of Jan. 1, 1945. Included here are only those patients treated five or more years prior to the time of inquiry; that is, 1939 or earlier.

Naturally, these data are disturbing to both surgeon and radiosurgeon; to the former, because the results in grades 2, 3 and 4 are so near equal, and to the latter, because radiosensitivity is more complex than the microscopic analysis of grading. Grading may be a factor in estimating radiosensitivity and an index of immunity. However, as yet there is no acceptable method of grading radiosensitivity by microscopic cellular studies or any other type of study. It is definitely appreciated that severe secondary anemia, malnutrition and systemic diseases will influence radiosensitivity unfavorably. The importance of a good blood supply to the tumor bed is well established. The judgment, skill and radium therapy technic of the radiosurgeon can favorably influence radiosensitivity.

From our standpoint, we consider that this similarity of result in grades 2, 3 and 4 is due to the method of radium therapy which we apply. The individual response in the early days of the radium treatment is observed and recorded. The response in some patients is prompt, while in other patients the response is slow The patient with a prompt response receives less intensive therapy, or a longer interval between applications is allowed to take place It is equally important that the radium applications be well distributed throughout the involved genital tract. Patients with potentially serious local complications, such as inflammation, ulceration, necrosis and bleeding, are seen and treated almost daily until the condition is under control. The wounds are surgically treated and dressed in a similar manner to wounds occurring on the body surface. The factor of time between the applications of radium is important and yet must not be prolonged. These brief remarks will help to formulate some idea concerning our efforts to individualize the radium therapy to meet the personal requirements of each patient and are offered as an explanation for the similarity of results obtained in the various grades of malignant lesions. The total treatment time for the average patient with stage III classification including both radium therapy and supplemental roentgen therapy is about three weeks. The roentgen treatment is begun during the final days of the radium therapy. The treatments are given daily. Two anterior and two posterior fields are treated, the factors being as follows: 200 kilovolt equipment with a total dosage of 500 to 700 r per field. A second course may be given after an interval of three months.[6]

The post-treatment convalescence is, as a rule, a mildly distressing experience. It endures for a few days and gradually subsides. Abdominal cramps, diarrhea and tenesmus may occur. These reactions may be severe and demanding in the susceptible patient. Patients with serious late sequelae are few.

The importance of a well planned follow-up system cannot be overstressed. We recommend reexamination every three or four months for the first post-treatment year, every six months for the second post-treatment year, and every year thereafter. In the main, the period of palliation can be prolonged.

Our last consideration is the stage of the primary lesion and the late result obtained. The former is the most important single feature of the disease in the estimation of t in table 7 include all those patients treated five or more years prior to the time of inquiry: that is, in 1939 and earlier.

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[4] MacCarty, W. C.: Factors Which Influence Longevity in Cancer: A Study of Two Hundred and Ninety-Three Cases, Ann. Surg. **79**: 9-12 (July) 1922. MacCarty, W. C., and Kehrer, J. K. W.: Possible Defensive Factors in Cancer of the Rectum (A Study of One Hundred and Two Cases), J. Lab. & Clin. Med. **7**: 602-606 (Sept.) 1922.

[5] Broders, A. C.: The Grading of Cancer: Its Relationship to Metastasis and Prognosis, Texas State J. Med. 29: 520-524 (Dec.) 1933.

[6] Popp.

TABLE 7.—*Malignant Lesions of the Cervix, 1915-1944 Inclusive: Five Year Survival Rates According to Stage of Lesion*

Stage of Lesion	Patients*		Lived 5 or More Years After Leaving Hospital	
	Total Number	Number Traced	Number	Percentage of Traced Patients
I	19	17	10	58.8
II	163	118	77	65.3
III	958	869	293	33.7
IV	189	158	26	16.5
Modified	418	374	94	25.1
Not stated	52	45	19	42.2
Total	1,799	1,581	519	32.8

* Inquiry as of Jan. 1, 1945. This group includes only those patients who were treated five or more years prior to the time of inquiry; that is, in 1939 or earlier.

The number of early or favorable cases in which treatment for cure is practicable is always low, an estimated 10 to 15 per cent of the grand total. Of the patients in stage I who were traced 58.8 per cent, and of those in stage II 65.3 per cent, lived five or more years after leaving the hospital. The difference of 6.5 in the percentage between stage I and stage II may be due to the factor of age as shown in table 4, in that the mean age was greater for the patients in stage I than for those in stage II. Of the patients in stage III who were traced 33.7 per cent, and of those in stage IV, 16.5 per cent, lived five or more years after leaving the hospital. Of the patients traced in the modified group, without classification by stage, 25.1 per cent lived five or more years after leaving the hospital. Of the patients traced who lacked a classification by stage 42.2 per cent lived five or more years after leaving the hospital. Evidently the majority of these patients would have been in stage III if the classification had been recorded for them.

Finally, hospitalization is required for radium therapy for cases of cancer of the uterine cervix. The number of admissions varies from 1 to 2 or more a week for the two to three weeks or more, depending on the stage classification. The morbidity rate is low. This feature of the management was not considered in this study.

There were 5 deaths in the hospital (0.2 per cent) for the group of 2,246 patients receiving radium therapy and supplemental roentgen therapy.

COMMENT

The group of patients furnishing the data for this study may be considered a selected group in that they were referred to the Section on Radium Therapy. The proportion of favorable cases was in the range of 12 to 15 per cent, while the proportion of favorable cases selected for surgical intervention in a larger group was in the range of 11 per cent. These comparable figures may indicate the presence of a common denominator in the first-mentioned group. It can be further recorded that the favorable cases in the study group contained more cases with obesity, more older patients and constitutional diseases than the second group used for comparison.

Multiple methods of management, in proper sequence, will furnish a flexible plan of treatment, so that all classifications of the disease may be accepted for cure or palliation with the exclusion of the obviously terminal cases.

The majority of patients treated by the radiosurgeon are in the inoperable and "recurring" stage classifications of the disease, a fact which definitely limits his attempts to determine the site of the primary lesion, as well as his endeavors regarding adequate treatment.

Cancer of the uterine cervix is characterized by the host. Each patient requires individualized treatment. The radiosurgeon must plan and apply a radium therapy technic based on the gross visual and palpable features of the malignant lesion.

The day to day response to the radium therapy technic selected and applied will furnish some estimation of the dosage to apply for a complete treatment intended for cure or a limited treatment intended for palliation.

Palliation is an immediate and dependable result. The tendency to bleed may be favorably influenced in a few days after the first application of radium. Relief of pain may occur in a few days or after the second or third application of radium. The odor and discharge will diminish in seven to ten days, and this result can be accelerated by the employment of supplemental vaginal hygienic treatments by the radiosurgeon. The control of the primary lesion prevents extension to the local urinary system and rectum, thus putting in the background the distressing and embarrassing complications of vesicovaginal and rectovaginal fistula. Unilateral edema of an extremity may not yield to irradiation therapy. However, proper elevation of the involved member will reduce the edema. Palliation is the important consideration during the early days of the radium applications, including supportive therapy to accelerate the reduction of the severity of the malignant disease.

The average age of the patients in this study group was 49 years. Evidently the disease may occur at any age. There is no pronounced influence of the age of the patient on the stage classification of the lesion.

The grade of malignant change was originally based on the cellular study of postoperative material. This determination is of especial value to the surgeon in estimating the probable postoperative longevity and, further, it indicates the degree or index of the patient's resistance to the neoplastic disease. Surely this is a serviceable contribution to our knowledge of cancer.

The grade of malignant change is important information for the radiosurgeon, in that it serves as a guide in the selection of a method or methods of treatment and their sequence for an individual case, to insure the best chance of five year survival after the patient leaves the hospital and the greatest amount of palliation with a minimal chance of distressing sequelae.

All grades of malignant lesions of the uterine cervix are radiosensitive. The response to treatment is governed by the radium therapy technic employed. The radiosurgeon prefers to treat low grade malignant lesions in the favorable classifications on the same bases as the surgeon, in that, if they are adequately treated, the chance of recovery is good because these lesions are less malignant and do not metastasize early.

As yet, there is no acceptable determination of the degree or kind of radiosensitivity. Evidently the response to irradiation therapy obtained is a relative one, depending on the general condition of the patient, the location and extent of the disease, the cellular characteristics of the lesion, the method or methods of treatment and their sequence, the dosage and distribution of the irradiation therapy, the age of the patient, the control of the many simple and serious complications, and so forth.

So far, chemical science has not developed an accepted clinical laboratory test to determine the presence of active immunity to the malignant cellular process in a patient who has cancer. The grade of malignant change may indicate the presence of a resistant factor, in that the grade I lesions are characterized by slow growth and a decidedly reduced tendency to metastasize, while the grade IV lesions are characterized by rapid growth and a decidedly increased tendency to metastasize. These differences are not apparent when the various grades of malignant lesions are treated by irradiation therapy. The grades II, III and IV are in sufficient numbers for comparisons. The results or five year cure rates obtained in these respective grades are approximately equal. The radium therapy technic not only controls the primary lesion but also has some favorable influence in controlling the metastatic features of the disease. This finding has a serviceable application, in that all patients who have high grade cancers in the stage I and II classification should be considered candidates for adequate preoperative radium therapy and there should be an interval, at least in months, for passive immunity to develop, in order to protect the patient effectively before adequate surgical procedures are carried out. There is a possibility that, if the same consideration were applied to the low grade lesions in the same classifications, the ultimate prognosis would show improvement. These implications are contained in the statement concerning method or methods of treatment and their sequences.

The patient 49 years of age or less has a mildly unfavorable factor influencing the five year cure rate, while the patient more than 49 years of age has a definitely favorable factor influencing the five year cure rate.

The stage of the primary lesion is the most important single finding that definitely influences the early and late results to be obtained. Patients in stages I and II have the best chance for five year survival, those in stage III have a fair chance for five year survival, while those in stage IV have a poor chance for five year survival.

The 5 deaths in the hospital recorded for this study group are surely few. The deaths occur in stages III and IV.

CONCLUSIONS

The study period, 1915 through 1944, includes the early years of our experience with radium therapy and roentgen therapy. During this time 2,246 patients who had cancer of the uterine cervix were referred to the Section on Radium Therapy and treated. This group furnished the data and the Division of Biometry and Medical Statistics arranged the material in the tables used in the paper. All inferences and statements concern cases of cancer of the uterine cervix.

The method or methods of treatment employed were intended to meet the individual therapeutic requirements of the patient and thus to reduce the severity of the disease. Some of the treatments were designed for cure and some for palliation only. The broken dose intensive radium therapy supplemented by roentgen therapy was employed. A therapeutic rationale is presented. Recheck examinations in the post-treatment months and years are necessary.

Eighty-five per cent of the patients had advanced cancer when treated. A small percentage were in the favorable stages of the disease. Many cases were modified and the plight of the patients was too perplexed to be disregarded. Their numbers reduce our average five year cure rate.

Patients of 49 years or less did not obtain as good a result as those past 49 years of age. The mean age was 49.1 years.

The various grades of malignant change responded equally well, in that the five year survival rate for each grade was almost similar. The grade 1 lesions were few and the patients in this class obtained the best five year rate. High grade malignant lesions predominated.

Sixty-five per cent of the patients in stage II lived five or more years after leaving the hospital and 33 per cent of the patients in stage III lived five or more years after leaving the hospital. Five year cures occurred in all classifications.

The treatment was well tolerated. There were 5 deaths, or a hospital mortality rate of 0.2 per cent. The serious morbidity rate was equally low.

ABSTRACT OF DISCUSSION

Dr. Leda June Stacy, White Plains, N. Y.: In the days before the valuable work of the physicists, Drs. Viol, Failla and Quimby, and the study of cross firing by roentgen radiation by Dr. Henry Schmitz and others, we felt our way as to dosage and screening, largely by trial and error, and treated only the inoperable cases. In some of these extensive cases there was observed remarkable improvement in the local lesion and in the general condition of the patient. It was due to these unexpected favorable results that the surgeons began to refer the less extensive cases to the radiologic department for treatment with radium and roentgen rays alone or combined with surgery. In 1920 Broders published his classification of cancer cells, giving us valuable information regarding the radiosensitivity of the lesion, thus enabling the surgeon and the radiologist to select more accurately the treatment best suited to the individual case and also to aid in the prognosis in a given case. In the early days at the Mayo Clinic small doses of radium were given at longer intervals, but too often vesicovaginal and rectovaginal fistulas developed as a result of exposing tissue whose blood supply had been interfered with to more radium. Also, occlusion of the cervix or of the vault of the vagina occurred, preventing further application of radium. This technic was soon changed, as it was in most clinics, to that of giving the total amount of radium into the uterus, the cervix and vagina at one sitting or in divided doses over a period of two or three weeks, then cross firing with the roentgen ray. In some clinics as in the White Plains Hospital, in cases of extensive involvement of the cervix with hemorrhage or infection the roentgen treatment is started first, to be interrupted at such a time as examination shows the cervical canal to be opened sufficiently to enable insertion of the radium without trauma, roentgen treatment being resumed after completion of the radium treatment. In the extensive case with involvement of the parametrium, preliminary investigation of the urinary tract may lead one to modify the treatment in such a way as to avoid later occlusion of ureters by postradiation edema or infiltration. The differential diagnosis between extension of the cancer and tissue reaction to radiation is always a difficult problem when examination two or three years after treatment reveals fixation of the uterus and induration in the broad ligament area. Reexamination in two or three months' time usually reveals the nature of the infiltration. Factitial cystitis and proctitis are problems, also. The question arises whether the lesions are new growths, extension from the original lesion, or late reactions to the radiation. Careful observation over a period of two or three months usually settles the question. Dr. Bowing's and Dr. Fricke's statistics are most interesting and bear further study. The age grouping is to be noted, in that 2.2 per cent of their patients were between ages of 20 and 29 years of age, and 19 per cent were between 30 and 39 years of age; of these 25 per cent and 29 per cent respectively lived five or more years, while of the 30 per cent aged between 50 and 59 years, 34 per cent survived five years or more, showing that the younger the patient the poorer the prognosis. The results recorded that of the 188 patients traced who had surgical, radium and roentgen treatment, 60 per cent lived more than five years. These last figures demonstrate the advantage of selection of treatment best suited to each patient, considering the grade of the cancer and the stage of the disease and the age and general condition of the patient. The fact that 21 per cent of the 1,380 patients traced, who had received their treatment ten years or more previously, lived for ten or more years is the reward for the patience and attention to detail exhibited by the essayists and is the result of close cooperation between clinician, pathologist, surgeon and radiologist.

GENERAL PRACTITIONER SESSION

UPHOLDING THE PRESTIGE OF THE GENERAL PRACTITIONER

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When I was asked to discuss this subject, just out of curiosity I consulted Webster's dictionary to see exactly what "prestige" means. I found that the word comes from the Latin *praestigium*, meaning "delusion," "illusion." The first meaning given was "a conjurer's trick; a sorcery; an illusion; a deception." The second meaning was "power to charm, dazzle, or command admiration; hence, eclat, renown." The third, the most common today, was "ascendancy derived from general admiration or esteem; commanding position in men's minds."

These three definitions represent an evolutionary process. Unfortunately the first and second meanings still apply to the exalted position of the specialist. Specialism is allowed to dazzle entirely too much; there is an illusion about it which we should get away from. The prestige of the general practitioner is based on the final meaning of "prestige" "ascendancy gained from general. . .esteem." That is a solid foundation which has endured for centuries.

Concern over specialization is not new. Plato said, more than 2,400 years ago: "If the head and the body are to be well, you must begin by curing the soul. . . This is the reason why the cure of so many diseases is unknown to the physicians of Hellas because they are ignorant of the whole, which ought to be studied also; for the part can never be well unless the whole is well."

Those who have read "The History of the American Medical Association" which was published recently may recall that as far back as 1866 the Committee on Medical Ethics decided that the disadvantages of specialization "could be overcome if the specialist would begin as a general practitioner and gradually grow into his specialty." It is interesting that this idea is being revived today. In 1883, Nathan Smith Davis, the founder of the American Medical Association, deplored the growing interest in specialization. Osler, in 1902, said, "It is amusing to read and hear of the passing of the family physician."

Many of you can remember that after World War I there was a similar trend toward specialization, which was halted by the economic depression beginning in 1929. During this period many doctors were forced to give up their work for more lucrative, but less glamorous positions, such as operating elevators. So far as I know, none of these were family doctors.

Among the factors favoring specialization are the specialty boards; the higher fees paid specialists by the Veterans Administration, workmen's compensation commissions and similar organizations; the fact that medical schools are encouraging their students to specialize and the fact that some hospitals are closing their staffs to general practitioners.

I believe that it is a studied policy of Isadore Falk and his followers, who are attempting to socialize the practice of medicine, to drive a wedge into the medical profession. They advocate group practice by specialists and belittle the individual or "solo" practitioner, and also the doctor-patient relationship. One example of the type of propaganda which they are employing is the booklet "Solo or Symphony?" which leaves the impression that medicine in the future must be practiced altogether by individuals or altogether by groups. It overlooks the fact that, while some cases need concentrated study by a specialist or group of specialists, the vast majority (85 per cent is the usual estimate) can be cared for by the general practitioner.

Access to the hospitals for the family doctor is unquestionably one of the most important and urgent problems before the medical profession today. There are any number of indications that this situation is improving and that we are witnessing the renaissance of the general practitioner. More hospitals in rural areas are to be built under the Hill-Burton Act. The Council on Medical Education and Hospitals has recently said that "....it was never intended that staff appointments in hospitals generally, or even in hospitals approved for residencies, should be limited to board-certified physicians as is now the policy in some hospitals. Such policies... are detrimental to the health of the people, and therefore to American medicine. Hospital staff appointments should depend on the qualifications of physicians to render proper care to hospitalized patients as judged by the professional staff of the hospital and not on certification or special society memberships. In this opinion, the Council has the full concurrence of the Advisory Board for Medical Specialties."

The American Board of Obstetrics and Gynecology, at its last annual meeting in June,

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Read in the Session on General Practice at the interim meeting of the American Medical Association, Cleveland, Jan. 6, 1948.

adopted the policy that "....the Board does not subscribe to any hospital or medical school rule that certification is to be required for medical appointments in ranks lower than Chief or Senior Staff of hospitals, or Associate Professorship in Schools of Medicine, for the obvious reason that such appointments constitute desirable specialist training." It is likely that other specialty boards will follow suit.

As has been stated by the Joint Committee for Coordination of Medical Activities, "there is an immediate need for integration of general practitioners into hospital staffs throughout the country." Graham Davis, president of the American Hospital Association, said, "I think it would be the general policy of the American Hospital Association to say that every reputable physician should have a hospital staff appointment."

There is every reason for the general practitioner's morale to be elevated. Numerous articles by both physicians and laymen have emphasized his position as the central figure of the medical profession. This meeting is dedicated to the general practitioner. The American Medical Association, at this interim session, has awarded a special honor to a general practitioner who has done outstanding work. The public is demanding the general practitioner.

In order to uphold and maintain his prestige, the general practitioner must do five things:

1. He must combat an inferiority complex. There has been a concerted effort to force this on him by the advocates of political medicine. The general practitioner needs to realize that he is just as much a doctor as is the specialist, and he must not allow any feeling of jealousy or envy to creep into the picture. He can take care of 85 per cent of illnesses and leave the remaining 15 per cent for the specialist.

2. The general practitioner must keep up with medical progress by reading, by attending medical meetings and by informal consultations with his colleagues.

3. He should, so far as possible, systematize his work, have regular office hours and allow enough time for every new patient. One sixty minute interview is worth much more than four fifteen minute interviews. He should keep records.

4. The general practitioner should aspire to be a family doctor rather than a general practitioner in the literal sense. He looks after the family. That is his first thought. Most of his work is apt to be medical. If he can do the work, he should do it; and if he cannot, he should turn it over to the specialist.

5. It is important that the general practitioner work in harmony with the specialist. They need each other and have much to learn from each other. All the members of the medical profession must band together against their common enemies.

THE GENERAL PRACTITIONER AND COMMUNITY LEADERSHIP

FRED STERNAGEL, M. D.
West Des Moines, Iowa

There is an incident of the demagogue in the French Revolution who said, "There go the people; let us hurry and overtake them—I am their leader."

The general practitioner of medicine stands in a peculiar relationship to the people of the community in which he serves. At least, that relationship is peculiar if one allows that a community is more or less limited in area, not quite urban and not quite rural. One may define a community somewhat arbitrarily as the smallest unit that will hold itself together and in which individuals live in groups either organized or unorganized, through which they express their needs, desires, purposes and interests. Such a social unit of course embraces more than the mere geographic limits of a town or a city. It reaches out and includes those elements which react on the business, social, educational, religious and cultural life of the group and influence its character.

The general practitioner has, as I have said, a peculiar relationship to all these phases of community activity, a relationship that no other person could ever enjoy. I care not what type of community activity one calls to mind, there is a physician involved somewhere—or else there is a question of medicine or health demanding the attention of someone trained in medicine.

THE TRADITIONAL RULE

This has always been true. In the earliest primitive communities, the physician—or the medicine man, as he was termed—was actually more powerful than the king or potentate. In fact, he was usually the king or potentate because his "medicine" had been proved "stronger" than that of any of his rivals. In such a situation the physician was a community leader in a literal sense. His leadership today is somewhat less apparent, where it exists, but it is nevertheless equally significant.

In a growing society it is not allowable for any one to shirk his share of community responsibility, nor can any waste of power be permitted. Accordingly, in earlier days, the carpenter was expected to direct the building of the stockade and the lawyer was expected to give part of his time to the shaping of the public statutes. Nor was there any doubt as regarded the nature of the physician's community duties. Plainly he was expected to give to the community the benefit of his special knowledge in matters of public hygiene and health, and he was expected to take professional care of those who were dependent on public support.

Read in the Session on General Practice at the interim meeting of the American Medical Association, Cleveland, Jan. 6, 1948.

In that period—and to a considerable extent the same situation prevails today—the physician gave his best advice about the water supply and about the disposal of sewage and garbage; he also gave attention to the health educational interests of the community, not only safeguarding the health of the school children, but seeing that some of them were fitted to be his assistants and successors; and even more plainly it meant that he must lead the fight against all contagion and infection, that he must plan hospitals and devote himself to their management.

As the community, which we are now imagining, grew larger, and as many physicians followed the footsteps of the individual pioneers, they were being facilitated in these special duties of citizenship by civic and public organizations intended for the improvement of health needs in their communities such as public health boards and councils, special committees on health and societies for the control of tuberculosis, cancer and other diseases. The inception of of these groups does not in the least detract from the responsibility that the physicians still owe their communities; in fact, it increases that obligation with respect to assisting these organizations in the medical problems which are primarily in their sphere. Unfortunately, in many areas of our country the physicians have forgotten or are not aware of their traditional role as the guardians of the health of their communities. Many doctors make little or no effort or show no inclination to place themselves in these circles which are dictating policies that increasingly involve problems of medical care. Instead, by his indifference the physician permits these groups to operate on information from questionable sources and make decisions which are born without his counsel. Too often the physician's only contribution is a howl of protest when some of these activities propagated under such circumstances have savored of socialized medicine.

One must not forget that the general practitioners, not the specialist, by reason of their traditional and recognized status in the community have every right to leadership in these councils if they will only signify their intention to participate and show a willingness to be of service in this direction.

PRIMARY FIELDS OF LEADERSHIP

Bearing in mind that the physician's community leadership involves those functions of government for which his education and experience have especially fitted him, and which cannot so well be performed by the laity, one finds these functions dividing naturally into two primary classes; (1) the direction of organization processes, so far as the physical welfare of the public is concerned, in any part of the wide domains of the medical profession; (2) legislation and administration necessary for the preservation of public health and physical well-being; for the exertion of such influence the general practitioners are qualified by training, experience and influence in a community. These are the primary fields of leadership. There are other secondary fields which I shall mention shortly.

The general practitioner should be the community leader of the health objectives and efforts in public education. Health is the undeniable heritage of every man, woman or child. The people are preparing to guard this heritage on a larger and better scale than ever before. The general practitioner is in an excellent position to meet with them and map out programs and procedures directed toward the improvement of community health through the education process.

In the matter of civic administration and legislation the general practitioners in the average community find themselves in an advantageous political situation, since most of the legislators, whether they be local, state or national, have them as family physicians or belong to one of their clubs. Whenever the community has been properly taught the importance of good public health measures, such work has been cheerfully supported by these representatives.

SECONDARY FIELDS OF LEADERSHIP

Such are the primary fields of leadership in which the general practitioner has an important role. I have already referred, in passing, to the secondary fields: business, social, educational, religious and cultural. The unique position which the general practitioner occupies in the community—growing out of public trust and public confidence in his integrity and ability—makes him at once a leader in community activities in which health and medicine have little or no direct bearing.

In most small communities, the general practitioner exerts much influence in business circles. There is hardly a chamber of commerce or other civic society which does not have as one of its prominent members the local family doctor. In many instances his educational background and his vast experience in human relations enable him to maintain a position of counsel in the business affairs and civic affairs of his community. The general practitioner may not be a businessman himself—in fact, most family doctors are anything but good businessmen, if one is to judge purely on the basis of profit and loss. But he is economically dependent on the community and the community is in a sense economically dependent on him. In the community civic circles the general practitioner will usually receive the respect which he deserves.

In purely social affairs, the family doctor also occupies a unique position. He knows intimately so many families in the community, he is so familiar with their problems, their successes, their tragedies, that no community social circle appears complete unless "Doc" is a part of it. Then again, the general practitioner recognizes that his own work is rendered much more effective when there is a close community spirit growing out of wholesome social relationships among the members of his community.

I have already referred to his leadership in matters of education relating to health; that same leadership carries over into the purely academic aspects of public education. The general practitioner in the smaller community—and in large cities as well—is usually urged to serve on the local board of education. The physician's relationship to the school is a close one; here again his broad view of community problems and personalities qualifies him to assume a position of leadership.

In most communities the family doctor is almost as much of a religious leader as the minister. As "father confessor" he finds himself involved in situations in which spiritual considerations are hardly to be distinguished from the purely material aspects. As an intermediary in "life and death" relationships, the general practitioner is required to be a healer of the soul as well as the body. He may be unaware of the psychosomatic aspects of his medical practice, but they exist none the less. He knows that faith may work wonders where spesifics and antitoxins are helpless. The mission of medicine is no less spiritual than material, and the doctor is a minister in a real sense. He does not usurp the position occupied by the priest or pastor, but his work is a vital supplement to the less practical matters of theology.

QUALITIES NEEDED

Some one once said, "Nowadays the ocean seems to be a large body of water entirely surrounded by trouble." Our own troubles--the troubles of the physician--become less important when we view them in the light of a larger world, national and community troubles. The need for leadership was never so great as now. We always need leadership and leadership of superior effectiveness. The qualities which the general practitioner needs as a leader in his community are the same as those of leaders in any field. Knowledge and ability and experience are required, knowledge and ability to judge wisely in all issues, experience of long practical dealing with difficult problems, with a record of using those experiences for self education and self training.

Sincerity, pure devotion to straightforward principles involved, is another requirement. Not common honesty alone but intellectual honesty; the honesty of the Scotch preacher who prayed, "O Lord guide us aright, for we are verra, verra determined."

Enthusiasm is needed, earnest controlled enthusiasm, that will not carry one too far ahead of the van or two far afield from the point at issue. Not the enthusiasm of the young lawyer who, on receiving a promotion into the firm, hurried home, rushed into the arms of his wife, kissed her--then rushed into the kitchen, kissed the cook and upset the soup. A leader must possess a certain restraint.

Shall we prove ourselves worthy of our inheritance? In times of peace and prosperity shall we begrudge giving some small portion of our time to community leadership? Rather, as we perform our routine responsibilities, we must willingly assume our extraprofessional obligations.

SUMMARY

Leadership of the general practitioner is assumed in both primary and secondary fields. The primary fields are those having a direct bearing on medicine and health, health education and health legislation. The secondary fields are business, social, educational and religious.

THE GENERAL PRACTITIONER

How To Create More of Him for the Future Needs of the Country

CHARLES F. WILKINSON, M. D.
Ann Arbor, Mich.

The University of Michigan Medical School has developed a plan which is intended to start about July 1, 1948.

These two-year general residency programs provide two years of training to develop a general practitioner with a possible third optional year

We have affiliated with two hospitals; there will be two interns and one general resident on duty at each hospital at all times. In addition there will be two interns at the University Hospital in Ann Arbor for each of the two affiliated hospitals, making a total of four interns, who will, after six months, rotate with the four interns at the two affiliated hospitals. This will mean that eight interns during the period of one year will have six months' training at the University Hospital and six months' training at one of two affiliated hospitals.

There will be a resident in internal medicine or a resident in surgery who will change every six months, so that over a period of a year there will be two men from the services mentioned at the University Hospital who will rotate through the affiliated hospital.

Read in the Session on General Practice at the interim meeting of the American Medical Association, Cleveland, Jan. 6, 1948.

From the Department of Internal Medicine and the Office of Decentralized Graduate Medical Education, University of Michigan Medical School, Ann Arbor, Mich.

Each hospital affiliated will be expected to conform to all the basic teaching requirements asked for in those hospitals affiliated in our present Decentralized Resident Training Program for training in the specialties. This means that the following will be undertaken by each affiliated hospital: (1) a clinical pathologic conference once a week for nine months of the year which will alternate with medical and surgical cases; (2) a roentgen conference weekly for nine months of the year which will stress diagnosis rather than therapy; (3) a clinical conference once weekly that will stress diagnostic and therapeutic measures; (4) each service will be headed by a specialist certified by that respective board or fellow of that respective college; (5) teaching ward rounds will be conducted by the hospital visiting staff at least one hour per day, five days each week.

During the second year or general resident year there will be one general resident at each hospital at all times or, if it seems feasible, two general residents at each hospital at all times, and there will be one or two at the university who will be continuing work, both clinical and preclinical, as I will point out later. Let us consider one man of the eight who will be trained, starting with his intern year; his service will be essentially as follows: Six months at the University Hospital which will include two months of internal medicine (wards), two months of dermatology (outpatient) and two months of surgery (outpatient). He will spend six months at the affiliated hospital, where the services will be divided into a medical service which will include obstetrics, psychiatry, neurology, dermatology and any other nonoperative specialties, and a surgical service which will include all the operative surgical specialties as well as gynecology. The intern will spend three months on each of these services.

The second year, six months of which will be spent at the University Hospital, will include two months of obstetrics and gynecology (largely outpatient and demonstration of complicated deliveries); two months of neuropsychiatry (outpatient), and two months of pediatrics, during which time well baby care and infectious diseases will be stressed. The second six months of this man's second year will be spent in the affiliated hospital, where he will again spend three months on each of the two services already mentioned. His responsibility, however, will be increased, and it is presumed that he will be directing the intern on the service who is to follow him.

The residents from the university in medicine and surgery that were mentioned before will be, in effect, supervisors, and will arrange conferences and carry a fair load of the teaching and will be available to evaluate the program day by day as it progresses.

In addition the University Medical School will send one visitor a month in both medicine and surgery to the affiliated hospital. This visitor will be one of the senior faculty members of the Medical and Surgical Department, and he will spend a day at the affiliated hospital. Usually there will be a one hour clinic presented on a subject already decided on; this will probably take the place of one of the weekly clinical conferences. The remainder of the day he will be available for teaching rounds and consultation rounds with the resident and visiting staff.

Until the affiliated hospitals have become approved by the American Medical Association, the interns will be given a certificate by the University Hospital, and it is hoped that, within a reasonable length of time, the service will be so well grounded that approval from the American Medical Association will be forthcoming.

HOW PLAN DEVELOPED

How did this rather unusual plan develop and why was it accepted by the faculty of the medical school that has for years prided itself on intense specialization?

For a number of years, members of the faculty have been becoming more and more aware of the fact that many areas in Michigan (which is predominately a rural state) were not being covered by doctors, and in some cases, large numbers of people have no medical care or else have been subjected to the care of an osteopath. In many areas, older physicians are retiring and no younger men are coming to take over the practice of these elder physicians.

It is the opinion of many of us at the University of Michigan that the ideal practice of medicine is group practice, where a group is composed of a number of physicians especially trained in one particular branch of medicine. This, I believe, is ideal; however, there are many areas where the population density and economic level will not support such a clinic, and it has seemed to some of us that it may be years before this will be practical.

This fact was brought home strongly to me during the past year and a half as I have made visits throughout the state in connection with our program for the training of residents in the various specialties. There seem to be a number of hospitals which wish to put on a teaching program of some sort, whose staff is qualified to teach younger doctors but which could not put on a four year program to train a man as an internist or surgeon. These hospitals tended to be located in areas where there seemed to be a need for general practitioners.

After several of these visits and many discussions with staffs and local practitioners (as I have mentioned), during the fall of 1946, I made an informal survey of some of the senior medical students. This was done in an informal manner by talking to senior students that I was teaching at that time on the medical wards. I kept no definite statistics because it was on such an informal basis that they would have meant little. I did, however, obtain certain impressions which were collaborated by impressions that Dean Furstenberg obtained by talking to the same and other members of the senior class.

Few, if any, of our senior students at that time planned to go into general practice. Undoubtedly some would go into general practice if they were not able to continue their residency training program as they had started, but the important fact in my mind was that no one was starting out with the idea that he would end up in general practice.

It appeared to me from statements that the seniors made that the reason that some of them did not intend to go into general practice was that they felt there was no program where the educational level was equal to that of the medical school from which they were graduating or equal to that of the training programs that led to the specialization.

It was my impression at that time that if a program for the training of general practitioners could be set up so that the senior medical student felt that just as much thought had been given to preparing him to be a general practitioner as to be a surgeon, ophthalmologist or internist, there would be a number of good men who would prefer this type of practice to that of specialization.

A program somewhat different from that which I have outlined was presented to the executive faculty of the University Medical School by the dean around the first of the year 1947. After several discussions and some modifications of the program, it has arrived in the form that it is now, and, as such, has the approval of the Council on Education and Hospitals of the American Medical Association. It has also the approval of the Michigan State Board of Registration in Medicine.

We feel that the program is experimental and have no way of knowing how successful it will be. It will, however, offer training to men who might be interested in general practice.

REASONS FOR THE DESIRE TO SPECIALIZE

I feel that the intense desire to specialize that one sees in the medical student at present has been brought about by a combination of factors. One, undoubtedly, is that in the modern medical school students are taught by specialists and only by specialists. I think particularly the younger group, in which I include myself, has tended to imply that specialization is the only answer to the problems of the modern doctor. And it is the younger men of the Medical School who have the most intimate contact with the students during their stay at the Medical School. It would probably be better if the philosophic lessons which have been learned by the heads of departments were more frequently presented to the students, but it is much easier for the junior and senior students to talk informally with the younger staff men than with those who have achieved the dignity and prestige of departmental head and full professorship. Because of this I feel that the attitude of the younger staff man in the Medical School must be altered to the extent that he realizes that in some places there is need for a general practitioner, and if there is a need for general practitioners, then we must train them correctly.

There has been some talk recently of installing a chair of general practice in the various medical schools. I believe there is an experiment now at the University of Minnesota where there will be a professor of general practice. Most of you, I am sure, are familiar with the Wisconsin experiment, where medical students spend a period of four to six weeks with a practitioner during their senior year.

Another factor which, I think, has influenced medical students is the experiences of their friends during the war. It is common knowledge, I believe, that men with special training received better assignments and faster promotion than other men who might have been just as capable, but who did not have the formal recognition of board or various specialty colleges. I do not feel that any condemnation is implied in this statement, for during the war years it was important that the armed forces sort their reservoir of medical personnel rapidly, and the only arbitrary standard that had been set up at that time was board examinations and membership in the various specialty colleges, and both of these qualifications were dependent to a large extent on the amount of formal training that a person had had.

It seems to me that there has been a constant glorification of the specialist in books, articles and newspapers during the past several years. I can remember, as a medical student, that most of the motion pictures I saw concerning doctors tended to glorify the young man who spent years in developing himself into either a brain surgeon or a great scientist. I often wondered at that time who took care of the patients with heart disease and tonsillitis, but from the ideas I obtained from the motion pictures it would seem that these diseases were not necessarily important, and so doctors needed not be trained to recognize or combat them.

I feel, then, that the faculty problem can be answered in part by having the faculty, which probably should be composed of specialists, explain to the students the procedures and special technics which can be carried out without a large laboratory and a magnificently equipped operating room. I feel that one should place more emphasis on the conditions that can be diagnosed and treated by the general practitioner, at the same time not omitting the diagnostic points of unusual conditions that serve to inform the general physician that here is a case which requires special technic either in diagnosis or therapy and because of this should be referred to a physician who has been trained in a particular field of medicine.

This does not, I believe, conflict with my idea of the ideal practice of medicine. In such a group, the specialist in internal medicine is to some extent in the same position as the general physician in that with the exception of certain diagnostic technics with which he is familiar he refers many patients for special therapeutic procedures and acts as the family physician. Members of the family go to him and depend on him to direct them to the proper specialist if there is need for him.

PROBLEM OF DISTRIBUTION

The distribution problem offers a major obstacle. How are we to see that the man who desires to go into general practice and who has been trained for general practice goes to the place where he is needed? It would seem to me that there are many factors that will affect this problem of drawing young men to rural areas. One, undoubtedly, will be physical equipment that is or is not available to the physician. Should a community equip a doctor's office with the diagnostic facilities that he has been trained to use, or should they finance him during the period of time that he is starting so that he can equip his office and laboratory as he wishes? Is there within a reasonable distance of this rural area, that needs a general practitioner, a modern and up-to-date hospital to which he can send his patients? Should the general practitioner be on the staff of this neighboring hospital? If so, what should he be allowed to do in the way of surgery, obstetrics and medicine? Will there be transportation facilities which will make it easy for his patients to go to the neighboring hospital and, incidentally, easy for him to remain in contact with his patients? What cultural opportunities for the doctor and his family are available in this rural community? What facilities for the education of his children are available for the physician in this rural community? It seems to me that the distribution of general practitioners rests on the ability of communities to sell their area to doctors who want to go into general practice.

In other words: Under the present economic conditions, should there come a time when money in the city is less plentiful than it is at present it would appear reasonable to me that there might be a migration of urban doctors to the rural communities. Our program at Michigan is by no means solified. We are willing to change it as the need arises or as a more practical and useful plan is conceived. We realize that we have merely made a start in answering this question, and I for one feel that if the University of Michigan or any other medical school should eventually develop a general practice training program that (1) builds a desire in the medical student to become a general practitioner; (2) trains the young doctor for this most difficult branch of medicine, and (3) distributes him to the place where he is needed most, then "cleanliness will no longer be next to Godliness."

Clinical Notes, Suggestions and New Instruments

OBTURATOR HERNIA

Report of a Successful Operative Case

HERBERT D. ADAMS, M.D.

and

DELBERT C. SMITH, M.D.
Boston

Herniation of intra-abdominal structures through the obturator foramen in the innominate bone has been recognized as a surgical condition since Arnaud de Ronsil[1] reported the first such incidence before the Royal Academy of Sciences in Paris in 1724. Watson,[2] in 1938, collected 420 cases from the literature. We were able to find only 8 additional cases from Jan. 1, 1938, to July 1, 1946, most of which were single case reports from widely separated sources. Only 1 case occurs in the records of the Lahey Clinic since its inception in 1925. Short[3] reported occurrence of a solitary case at the British Royal Infirmary over a period of a quarter of a century. The condition, however, is probably somewhat more common than this would lead one to believe, since some patients no doubt go through life asymptomatic or with their disease undiagnosed, some die without postmortem examination to establish the cause of death and still others are not reported in the literature. The condition seems sufficiently rare and interesting to warrant the report of such a case in which the patient recently came under our care.

REPORT OF CASE

An unmarried white woman, aged 73 years, was admitted to the New England Baptist Hospital at 5 p. m. on Feb. 13, 1947. The chief complaint was pain in the right lower quadrant of the abdomen. She had been in her usual state of fairly good health until 9:30 a. m. on the day of admission, when, while sitting in a chair reading, she experienced a sudden onset of abdominal pain, which was localized from the beginning low in the right side of the abdomen. At first the pain was mild, but it became progressively more severe throughout the day. It was constant and at no time was it cramplike. A history of radiation of the pain was not obtained. Soon after its onset she became nauseated and vomited several times. At the time of admission the nausea had disappeared, and her only complaint was constant pain in the right lower abdominal quadrant. She had had one normal bowel movement earlier in the morning prior to onset of symptoms.

Systemic review revealed a slight chronic cough in addition to mild orthopnea, moderate dyspnea on exertion and occasional palpitation. She had had a known cardiac condition for nine years and had taken digitalis during most of this time. There had been a total weight loss of 17 pounds (7.7 Kg.) during the previous year.

Physical examination revealed that the patient was slightly dyspneic and acutely ill. Her general appearance was compatible with her stated age, although she was rather thin and there seemed to have been some recent loss of weight. The temperature was 98 F., the pulse rate was 76, regular and of good volume, and respirations were 24. The heart was slightly enlarged but rhythm was regular and sounds were of good quality. *The blood pressure was 150 mm. systolic and 90 mm. diastolic.* Fine rales were present at both lung bases but the chest seemed otherwise normal. There was definite localized tenderness low in the right side of the abdomen with overlying muscle guarding. No rebound tenderness was present. No organs or masses could be felt. Peristalsis was present but hypoactive. Because of a virginal introitus, pelvic examination was not done; pelvic organs, however, felt normal through the rectum. No rectal tenderness was elicited.

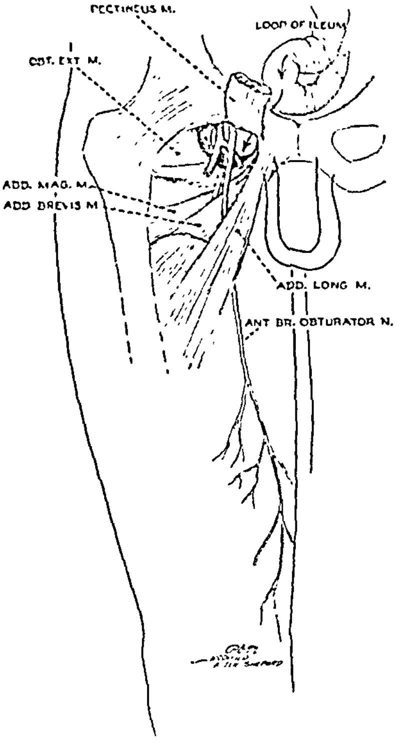
From the Lahey Clinic (Department of Surgery, Dr. Adams, and Fellow in Surgery, Dr. Smith).

1. Cited by de Gargengeot, R.J.C.: Sur plusieurs hernies singulieres, Mem. Acad. de chir. 1:699-716, 1743.
2. Watson, L. F.: Hernia, ed. 2, St. Louis, C. V. Mosby Company, 1938.
3. Short, A. R.: Treatment of Strangulated Obturator Hernia, Brit. M.J. 1:718 (April 28) 1923.

Laboratory studies showed 21,700 leukocytes, and urinalysis revealed no abnormality

A diagnosis was made of acute appendicitis and arteriosclerotic heart disease.

Without further delay, the patient was operated on; a celiotomy was done, pontocaine spinal anesthesia and oxygen being used. A lower abdominal right paramedian incision was used. When the peritoneal cavity was opened a small amount of straw-colored fluid was encountered. The appendix was found to be normal and obviously not the cause of her illness. After both dilated and collapsed loops of small bowel had been visualized, it became apparent that an intestinal obstruction was present. The collapsed portion, beginning at the ileocecal juncture, was traced proximally, and the site of the obstruction found to be in approximately the mid portion of the ileum. This obstruction was caused by a Richter type of herniation of about three fourths of the bowel lumen through a small opening in the right obturator foramen, thus producing partial obstruction at this point. The proximal loop leading into the hernia was at least three times the diameter of the distal loop Gentle traction was applied to both loops, after which the hernia became reduced. Examination of the involved portion of bowel showed it to be decidedly ecchymotic as a result of strangulation. After the application of warm saline sponges, the circulation rapidly improved and viability appeared to be definite. The tip of the small finger could just be inserted through the hernial opening and the sac was no greater than ¾ inch (1.9 cm.) in depth. The hernia was repaired by closing the neck of the sac with a purse string suture of black silk. In view of the extremely small opening, this type of closure seemed adequate. The appendix was removed in the usual manner.



The anatomic relationship in obturator hernia.

Convalescence was uneventful, and the patient was discharged on the twelfth postoperative day.

Further questioning during convalescence revealed that the patient had had several attacks of pain in the right lower quadrant of the abdomen during the preceding seven years. Associated with each attack had been a tendency for the right leg to flex at the hip. She also recalled that she had had a similar episode on the morning prior to admission with a tendency for the leg to flex at the hip, and had been unable to straighten the leg or stand on it. Later in the day, while she was in bed, the leg relaxed, and because of the predominance of the pain in the right lower quadrant she had forgotten about the symptoms referable to the extremity. She did not recall having had actual pain in the leg but stated that it felt like a muscular cramp.

When interviewed on August 2, 1947, she was well and no further attacks had occurred.

COMMENT

In retrospect, this case is typical of those previously reported in the literature, and had we been more astute in obtaining a complete history, the correct diagnosis might have been made preoperatively. The previous symptoms referable to the leg were in all probability associated with episodes of strangulation or incarceration of the hernia which each time, until the day of admission, had reduced itself. Fortunately, her condition was recognized as a surgical emergency and was treated as such before the bowel became gangrenous or her general condition began to fail. Watson stated that of 228 patients treated surgically or on whom an autopsy was performed after death from strangulation, only 53 received a correct diagnosis preoperatively or ante mortem. the obturator canal, which passes downward, medialward and forward in the upper inner aspect of the thigh. The hernia comes to lie just anterior to the external obturator muscle and immediately behind the pectineus and adductor longus muscles. Reference to the figure will show this important relationship. Being tightly enclosed in muscle and fascia deep in the thigh, this type of hernia frequently does not produce a noticeable or palpable mass, which often calls attention to the presence of a hernia elsewhere in the body. This anatomic reason alone makes the diagnosis of an obturator hernia difficult.

Structures normally passing through the obturator canal are the obturator artery, vein and nerve. A fat deposit is usually present and a small lipoma is not infrequently found.[4] When hernia is present in the canal it encroaches on the already limited space occupied by these structures and produces the exciting cause for pain or paresthesias over the distribution of the anterior branch of the obturator nerve. This symptom was first described by Howship in 1840 and five years later by Romberg. It is now known as the Howship-Romberg sign. Watson stated that it is present in over 50 per cent of the cases. Reference again to the figure will show the distribution of the anterior branch of the obturator nerve going as far as the medial aspect of the knee. Symptoms referable to this nerve distribution area are probably the most valuable aid in making the diagnosis of an obturator hernia. The anastomotic plexuses to areas supplied by the obturator artery are so abundant that circulatory disturbances do not occur even if the blood flow is completely obliterated, as it probably is in many cases in which strangulation is present.

Since the most common content of the sac of an obturator hernia is small bowel, the presenting symptom is frequently that of intestinal obstruction. The degree of obstruction will, of course, depend on the percentage of bowel lumen involved. Usually the sac is small, admitting only a portion of the diameter of the bowel, with a resulting Richter type hernia. Such was true in the case reported, only a partial obstruction being present. Because of the extremely small, rigid sac neck, strangulation occurs early. Constant, localized pain resulting from the strangulation may be severe enough to overshadow referred pain resulting from pressure on the obturator nerve. Instances in which the sac contained bladder and fallopian tube,[5] Meckel's diverticulum,[6] infected fallopian tube with abscess formation[7] and omentum[8] have been reported. The cecum and appendix appear to be even rarer contents.

To aid further in the diagnosis, a careful search should be made in the upper inner aspect of the thigh for a palpable mass or localized tenderness. A mass, however, will seldom be demonstrable because of the anatomic relationships already described. Tenderness high in the thigh can be expected in a fairly large number of the cases.

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[4] Bishop, W. E.; Anson, B. J., and Ashley, F. L.: Anatomy of Region of Obturator Hernia, Quart. Bull. Northwestern Univ. M. School 16:203, 1942.

[5] Gladstone, R. J.: Obturator Hernia of the Bladder and of the Fallopian Tube, Ann. Surg. 34:796, 1901.

[6] Wakeley, C. P. G.: Obturator Hernia: Its Aetiology, Incidence, and Treatment, with Two Personal Operative Cases, Brit. J. Surg. 26:515 (Jan.) 1939.

[7] Blaxland, A. J.: Unusual Obturator Hernia, Brit. M J 2:638 (Oct. 9) 1926.

[8] Stirling, R. A.: Strangulated Obturator Hernia, M. J Australia 1:519 (June 25) 1921.

It will be recalled that the adductor longus, obturator externus and pectineus muscles act essentially as adductors, flexors and external rotators of the thigh. Visualizing the strangulated hernia mass caught between the obturator externus posteriorly and the adductor longus and pectineus anteriorly, one can readily understand why these patients will assume the position of flexion of the thigh. Extension, abduction and internal rotation of the thigh will place the muscles on the stretch and thus intensify the pain by increasing pressure on the sac.

Finally, the demonstration of a tender mass on the anterior pelvic wall by vaginal or rectal examination may help to verify the diagnosis.

Many causes have been proposed for obturator hernia. No doubt the passage of the vessels and nerve through the foramen create a potential weakness or defect for the beginning formation of a sac. Chronic pulmonary disease with cough and intermittently increased intra-abdominal pressure may be a contributing cause. Obturator hernias occur more frequently in women than in men (6 to 1 in Watson's series), probably as a result of the relatively larger size of the foramen in the former. Loss of [illegible], pregnancy and shrinkage of tissues with advancing age [illegible] to be important factors. The hernias occur with approxi[illegible] the same frequency on the right and the left side.

The treatment of obturator hernia is surgical. An approach through the thigh has been advocated by some authors in the past, but this method seems unwise, especially since the diagnosis frequently is uncertain and because of the limited exposure afforded by such a route. Gangrenous sac contents, if encountered, cannot be adequately dealt with from below. In order to manage any condition found, an adequate paramedian or rectus incision in the lower part of the abdomen, corresponding to the side of localization of symptoms, is recommended. Placing the patient in Trendelenburg position may be of considerable aid in reducing the hernia as well as in keeping the remaining bowel out of the pelvis when exposure is essential. Pressure applied over the hernial mass in the upper part of the thigh will help when traction alone from above has failed at reduction. The sac contents should be examined carefully and the state of viability determined. If irreversible damage has occurred, an appropriate resection will be necessary. The passage of a Miller-Abbott tube through the pylorus while it can be guided in the open abdomen is strongly urged in those cases in which resection of the intestine is done.

Methods of dealing with the sac and obturator defect are numerous. Simple purse string closure may be adequate for extremely small openings. Suture of the sac to the parietal peritoneum after pulling the apex through the foramen has been suggested.[9] Wakeley[6] has advocated ligation of the sac and suture of a strip of the innermost fibers of the pectineus muscle, which has been raised through an incision in the groin, to the periosteum above the obturator canal. Short[3] reported the use of a piece of rib cartilage to fill the obturator canal. Cartilage needs but little blood supply and readily forms a mass of scar tissue which blocks the passage of a future hernia. Van Zwalenburg[10] reported a case in which death occurred from strangulation and obstruction eight years after repair by inversion of the sac and simple suture. The general condition of the patient, the size of the hernia and extent of resection, if necessary, must be taken into consideration, and good surgical judgment must be exercised in selecting the procedure with which to repair the defect in each instance.

SUMMARY

A successful operative case of obturator hernia is presented. The condition, although rare, must be kept in mind and, in the presence of strangulation and obstruction, recognized early as a surgical emergency if a fatality is to be avoided. The diagnosis is suggested by the history or presence of pain, or both, along the course of the obturator nerve (Howship-Romberg sign), the demonstration of a mass or tenderness or both in the upper inner aspect of the thigh and the possible presence of a mass on the anterior pelvic wall which can be felt by bimanual examination. The treatment is surgical through an adequate abdominal incision. The type of repair will depend on the general condition of the patient, the size of the hernia and the extent of injury to the sac contents.

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9. Horine, C. F.: Obturator Hernia, Ann. Surg. 86:776 (Nov.) 1927.

10. Van [illegible] rt on a Case of Radical Operation for Cure of [illegible] failure, Surg., Gynec. & Obst. 33:429 (Oct.) 1921.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council has authorized publication of the following report.

Austin Smith, M.D., *Secretary.*

"MANOGIN"—ANOTHER "BUST DEVELOPER"

Vanity is responsible for the sale of a variety of products which may momentarily satisfy the purchaser but eventually prove downright harmful. Among the more widely exploited substances have been the so-called "bust developers." Enterprising promoters have duped the public into buying some doubtful preparations. The ingenuity shown in exploiting the desire for sexual attraction reveals considerable imagination. The purchaser, however, is not always simply relieved of money for a useless article; too often harm has resulted from the sale. In some instances the users are so intent on success that repeated failures may mean for them definite psychologic disturbances. If the product possesses harmful possibilities, the result may be disastrous.

During the past few months the Bureau of Investigation and the Council on Pharmacy and Chemistry have received numerous inquiries about an alleged "bust developer" that contains materials with estrogenic activity, the so-called female sex hormones. This product, "manogin," distributed by the Manogin Company, 880 Bergen Avenue, Jersey City 6, N.J., has been promoted in part by the circulation of a booklet entitled "Thank You Doctors," on the title page of which is a list of physicians known for their scientific investigations. On glancing at the booklet the casual reader receives the impression that these scientists were personally interested in the study of "manogin." As might be expected, however, they had no such interest; in fact, inquiry from the Council office found much indignation among these men because their names had been thus used. Typical of the comments offered by the physicians are the following: "I have not, at any time, participated in a study of the topical application of estrogens or made any contribution to the literature on this subject. In fact, I do not believe that this is a rational or safe procedure, and since I disapprove of it, have never prescribed estrogens for this purpose in my entire medical experience." Another writes: "I should like to emphatically state that I have done no investigative work whatever on the topical application of estrogens (particularly to secure enlargement of the female bust)....Finally, the use of my name in their advertisement has never been authorized by me."

And another states: "Early in the days of stilbestrol therapy I believe that I administered an ointment by inunction in 1 case, which, under control, failed to respond....Because of the fact that I do not wish my name associated with an advertising circular, I have transferred the matter to our legal staff."

Another reply was: "I was amazed and not a little surprised to find my name on a plate which looks like a memorial to the dead....Their use of my name has been without my knowledge, as they undoubtedly knew better than to ask my permission to use it....I have had no occasion to use estrogenic creams, even experimentally."

Of interest is the following comment: "It is perfectly obvious from the very introductory paragraph that the Manogin Company has used the name of perfectly honest investigators for a fairly dishonest purpose. I, for instance, have written on the estrogen in dysmenorrhea and in the menopausal syndrome. But I have never proposed its used by inunction for any purpose, certainly not as a stimulant to mammary growth."

This writer further states: "The application of estrogen directly to the breast in the form of inunctions has proved a total failure in the experience of the authors."

Nevertheless, as might be expected, the booklet aroused some interest. One inquirer wrote: "Enclosed you will find an advertisement sent to me through the mail. I don't know how they ever sent it to me or how they found my address. but it so happens that I could probably use or need such a product."

A doctor stated: "The enclosed pamphlet of the Manogin Company speaks for itself, and it is being distributed widely to high school students and women in this area."

A college student wanted to know: "Is this Manogin Company in Jersey City a fraud, or has it put out honest information as a result of hard work of credited scientists and doctors?"

Unfortunate indeed is circulation of the pamphlet among high school and college-aged young women. These people will read, among other things, that "careful observation of the progress in thousands of cases has given definite evidence of rapid breast growth from the use of the natural hormone formula as found in Manogin. It is a safe, harmless and effective method which leaves no ill or toxic effects."

That a product of this type is not without harmful possibilities is emphasized by several reports. In his article, "The Relationship of Hormones to Disease of the Breast,"[2] Dr. Ira T. Nathanson has reported:

> "Quoting the case of Auchincloss and Haagensen,[1] the effect of the estrogens seemed to resemble that seen in the mouse, and was of an unusual histologic type. They have cautioned against indiscriminate use of the hormone over a long period of time or in large doses. when there is a family history of cancer, without initial and repeated examination of both breasts, and in patients with chronic mastitis, cancer or any form of neoplasm either before or after surgical treatment. Such advice is valuable and should be considered by all those who use the hormones."

Estrogen therapy in the treatment of mammary cancer has been found to be definitely contraindicated in any patient who still menstruates or has menstruated within a five year period.[3]

Some endocrinologists have warned that the use of such ointments might affect the normal body functions—for example, the menstrual cycle—if much of the hormone is absorbed through the skin. Likewise, the premature development of adult female secondary sex characteristics may be undesirable in young girls otherwise unprepared for maturity. Self medication with female sex hormones for stimulation of growth of the breast is likely, also, to discourage a search for other evidences of infantilism in young girls who may be in need of medical supervision.

While it is true that growth of the breast might be stimulated by the use of estrogenic materials, such development is temporary only, and a return to normal size occurs immediately on cessation of treatment. The method of application involves a certain amount of risk and, if adopted at all, most definitely should be used only in cases which, on examination, are found to be due to ovarian insufficiency. Obviously undeveloped breasts not due to deficiency of the female sex hormone cannot be caused to develop by the use of such medication. There is seldom a rational therapeutic indication for the use of an ointment containing an estrogenic substance and certainly such ointments should be used with caution and only under the observation of a competent physician.

Firms that play on emotional appeal and encourage wishful thinking in the promiscuous use of drug preparations are not interested in scientific advancement; their interest is solely financial. When they resort to muddling the reader with pseudoscientific verbiage, especially when it is directed to those who are not properly informed concerning the use of the exploited preparations, they cannot be condemned too strongly. Unfortunately long periods may elapse before these promoters can be brought before governmental authority. In the meantime many women will waste their money, disturb their physiologic functions, become mentally distressed or otherwise damaged by believing the false promises of these unprincipled exploiters of feminine credulity.

The offices of the American Medical Association have for years provided inquirers with the facts regarding medical products. Questions concerning exploited preparations are always welcome and will be answered promptly without charge for the service.

DIHYDROXY ALUMINUM AMINOACETATE GENERIC TERM FOR "ALGLYN," "ALMINATE" AND "ASPOGEN"

Under the protective names "alglyn," "alminate" and "aspogen," Brayten Pharmaceutical Company, Bristol Laboratories, Inc. and Eaton Laboratories, Inc., respectively, submitted for the Council's consideration a basic aluminum salt of glycine containing small amounts of aluminum hydroxide and glycine. The agent is designed for use as a gastric antacid. The Council has recognized the name dihydroxy aluminum aminoacetate as a generic designation for this compound.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following article. HOWARD A. CARTER, *Secretary.*

INFELD PROGRESSIVE HEEL-CORD STRETCHER ACCEPTABLE

The Infeld Progressive Heel-Cord Stretcher is designed for use by the orthopedist to give systematic exercise to a patient with shortened tendo calcaneus. In operating the device, the foot is placed on a pedal that is free to move in such a way as to involve flexion and extension of the ankle joint only. Resistance is supplied by coiled springs. Wedges that can be placed under the foot make it possible to determine the initial and final position of the foot during each movement. The exercise will bring into play mainly the tibialis anterior in dorsiflexion and the triceps surae in plantar flexion; by proper use, a stretching force can be applied to the tendo calcaneus.

In using the apparatus the patient stands with his sound foot on a box or platform that is on a level with the pedal. The apparatus stands on a base measuring 56 by 53 cm. (22 by 21 inches). The uprights offer hand grips by which the patient may steady himself; these can be adjusted to heights between 54 and 86 cm. (21½ and 34 inches) above the floor.

The device was sent to an orthopedic surgeon for clinical trial. On the basis of constant use in his office for a period of several weeks he reported that it was well made, easy to use and effective. He recommended that the apparatus be used without a stool, so that the patient stands on the floor. The manufacturer states that this apparatus is to be used only under the direction of an orthopedic physician in charge of each individual case.

The Council on Physical Medicine voted to include the Infeld Progressive Heel-Cord Stretcher in its list of accepted devices.

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[1] Auchincloss, H., and Haagensen, C.D.: Cancer of the Breast Possibly Induced by Estrogenic Substance, J.A.M.A. 114:1517-1523 (April 20) 1940.

[2] Publication 615, Cancer Commission of Harvard University, Cambridge, Mass.; Publication 113, Pondville Hospital State Institute for Cancer, Walpole, Mass.

[3] Estrogens and Androgens in Mammary Cancer, report of Council on Pharmacy and Chemistry, J.A.M.A. 135:987-989 (Dec. 13) 1947.

THE JOURNAL OF THE
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SATURDAY JULY 10, 1948

EDITORIAL ANNOUNCEMENT

The compositors returned to work on Monday, June 28. This issue of The Journal has been prepared in part by the use of Vari-Typer machines.

SURGICAL TREATMENT OF SEVERE ANGINA PECTORIS

Surgical treatment of angina pectoris, say White and Bland,[1] should be reserved for patients who, after adequate observation, cannot be controlled effectively by medical means. In such patients surgical intervention may prolong life by the relief of pain during a particularly dangerous period of coronary insufficiency until collateral circulation of the myocardium improves. Such patients must choose between continued dependence on drugs with limitation of activity and the more dangerous method of relieving pain by surgical intervention with possibly more rewarding effects. The surgical procedures proposed for amelioration of the anginal pain are (1) total thyroidectomy, proposed by Blumgart, Levine and Berlin; (2) grafting of an intercostal muscle to the myocardium as advocated by Beck; (3) O'Shaughnessy's operation of grafting omental graft to the myocardium, and (4) sensory denervation of the heart. The most encouraging results thus far have followed surgical intervention either on the upper thoracic paravertebral ganglions or on the corresponding posterior spinal roots which carry pain-transmitting fibers from the heart.

The sympathetic innervation of the heart was believed until recently to be mediated solely through the superior, middle and inferior sympathetic cardiac nerves, which arise from the superior, middle and inferior cervical sympathetic ganglions, respectively. Kuntz and Morehouse[2] demonstrated in adult cadavers the existence of cardiac accelerator nerves arising from thoracic segments of the sympathetic trunks. Clinical and experimental data suggest that the cardiac nerves that arise from ganglions of the sympathetic trunk below the inferior cervical ganglion convey both sympathetic and visceral afferent fibers.

Anatomic studies by Jonesco and Enachesco[3] demonstrated the existence of thoracic cardiac nerves. They were found to be constant and usually to occur bilaterally. These anatomic studies suggested that all afferent painful impulses are carried to the paravertebral sympathetic chain either over the middle and inferior cardiac nerves or over accessory cardiac rami which run to the upper three thoracic ganglions. As there are no direct connections between the cervical ganglions and the spinal cord in the neck, these pathways are all concentrated in the upper part of the thorax, where they reach the highest three or four thoracic spinal nerves over the sympathetic rami communicantes.

Francois-Franck first suggested, in 1899, the possibility of relieving the coronary pain by interruption of afferent pathways during their course in the sympathetic trunk and ganglions, and Jonesco and Enachesco apparently did the first operation of this type in 1916. Mandl reported 16 cases in which he injected procaine, 0.5 per cent, paravertebrally. The duration of the relief in his patients persisted for a long time and there were no deaths or any severe complications. Swetlow[4] pointed out that even if the entire cervical sympathetic cord and the stellate ganglion are removed, the lowest of these fibers will not be interrupted. The chief communications between the cervicodorsal sympathetic chain and the spinal cord are through the rami communicantes of the upper thoracic nerves. Swetlow treated eight patients suffering from severe precordial pain by paravertebral alcohol injections into the dorsal root ganglions and obtained prompt relief from pain in every instance. Lindgren and Clivecrona[5] treated 71 patients with severe cardiac pain by resection of the stellate and the 4 upper thoracic ganglions with gratifying results. The operation gave complete relief from pain in 44 per cent of patients, and in 41 per cent it converted severe forms of angina pectoris into milder types. The sensation of fear connected with the pain disappeared in many patients. On emotion or exercise all patients postoperatively experienced a choking sensation or slight pain which served as a "warning signal."

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[1] White, J.C., and Bland, E.F.: The Surgical Relief of Severe Angina Pectoris: Methods Employed and End Results in Eighty-Three Patients, Medicine 27: 1-42 (Feb.) 1948.

[2] Kuntz, A., and Morehouse, A.: Thoracic Sympathetic Cardiac Nerves in Man: Their Relation to Cervical Sympathetic Ganglionectomy, Arch. Surg. 20:607-613 (April) 1930.

[3] Enachesco, M., and Jonesco, D.: Nerfs cardiaques naissant de la chaîne thoracique du sympathique, au-dessous du ganglion stellaire: Les nerfs cardiaques thoraciques chez quelques mammiferes, Compt. rend. Soc. de biol. 97:977-980 (Oct. 13) 1927.

[4] Swetlow, G.I.: Paravertebral Alcohol Block in Cardiac Pain, Am. Heart J. 1:393-412 (April) 1926.

[5] Lindgren, I., and Olivecrona, H.: Surgical Treatment of Angina Pectoris, J. Neurosurg. 4:19-39 (Jan.) 1947.

The choice of the proper surgical procedure depends on the relative competency of the heart. White and Bland[1] are of the opinion that patients with a fair cardiac reserve may be subjected to a laminectomy and root section. This operation is indicated when the reference of the pain is bilateral. For the more questionable risks thoracic ganglionectomy is preferred, especially if the anginal pain is unilateral. For the poorest risks, patients who have had repeated attacks of coronary thrombosis with large hearts and great reduction in cardiac reserve, interruption of the nerves by paravertebral alcohol block is advised. White and Bland report on 75 patients treated at Massachusetts General Hospital by paravertebral injection with alcohol. Of these, 56 per cent were completely or nearly completely relieved of their pain on the side of injection; 21.3 per cent had fair results. Eight per cent failed to derive adequate relief and 8 per cent died as a direct result of the procedure. This group included the worst risk cases with severe coronary disease. In 8 cases the upper thoracic ganglionectomy was followed by complete relief of pain in the precordium and arm on the denervated side.

Surgical intervention should probably be considered more often when an adequate medical regimen fails to control severe and prolonged anginal pain.

A CONCEPT OF PATHOGENESIS OF ESSENTIAL HYPERTENSION

Heinbecker[1] presented evidence that a humoral mechanism rather than overfunction of the sympathetic nervous system is the primary cause of essential hypertension. The concept is based on studies of the Cushing syndrome in man and the hypothalamicohypophysial relationships in the dog. The essential characteristics of the circulation in Cushing's syndrome are similar to those observed in essential hypertension. In both states diastolic hypertension and arteriolar sclerosis develop. Cushing in 1932 described a pluriglandular syndrome which, he believed, was always caused by a basophil adenoma. The syndrome, Heinbecker[2] indicated, may be caused by an adrenal cortical tumor, by tumor of the ovary or a tumor of the thymus.

Crooke[3] in 1935 described a histologic alteration in the basophil cells of the hypophysis in Cushing's syndrome which he characterized as degranulation or hyalinization. Heinbecker[4] found a well.defined hyalinization of the basophilic cells of the hypophysis in all of the 5 instances of Cushing's syndrome reported by him in 1944. In 4, definite changes were noticed in the hypothalamic nuclei, particularly in the paraventricular nuclei. In none of these 4 was an adrenal tumor present. In the fifth case, in which a malignant adrenal tumor was found at necropsy, a hypothalamic lesion was not found. Therefore, either an adrenal tumor or hypofunction of the paraventricular hypothalamic nuclei may be the primary cause of the basophil degeneration, which in turn is the immediate cause of many of the typical findings in the Cushing syndrome.

Heinbecker denervated the neural hypophysis in dogs through the oral approach, separating it from the supraoptic and paraventricular nuclei. Within three to five months a loss of the basophilic cells in the glandular hypophysis and a preponderance of eosinophilic cells occurred. Depression of the function of the hypothalamic nuclei apparently results in a diminution in the secretion of the neural hypophysis. One consequence of this is to cause a stimulation of the eosinophilic cells of the glandular hypophysis, which are known to exercise a trophic effect on the heart, the renal tubules and the suprarenal gland. Another effect is to sensitize the blood vessels to the constricting action of epinephrine, of desoxycorticosterone and of renin. Overaction of the desoxycorticosterone fraction of the suprarenal cortical hormone effects a constriction of the efferent glomerular arterioles of the kidney and thereby leads to release of renin. Heinbecker assumed that the combined action of all three substances is responsible principally for generalized arteriolar narrowing and the development of diastolic hypertension in both Cushing's syndrome and the essential hypertension.

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[1] Heinbecker, P.: The Pathogenesis of Diastolic Hypertension, Surgery 23:618 (April) 1948.

[2] Heinbecker, P.: The Pathogenesis of Cushing's Syndrome, Medicine 23:225 (Sept.) 1944.

[3] Crooke, A. C.: Change in Basophil Cells of Pituitary Gland Common to Conditions Which Exhibit Syndrome Attributed to Basophil Adenoma, J. Path. & Bact. 41:339 (Sept.) 1935.

[4] Heinbecker, P.: Cushing's Syndrome, Ann. Surg. 124:252, 1946.

Heinbecker postulated that functional influences in the central nervous system, particularly in the frontal lobes of the cerebral cortex, in those constitutionally susceptible, may be of sufficient degree to depress the hypothalamic nuclei, which control the neural hypophysis, to initiate changes in the glandular hypophysis and thereby to influence other endocrine glands to cause the diastolic hypertension called "essential" with characteristics similar to those observed in Cushing's syndrome, but without the development of all the other stigmas of the syndrome.

The concept of pathogenesis of essential hypertension offered by Heinbecker is in accord with the accepted importance of emotional influences in its development.

The role of the sympathetic nervous system and of epinephrine is regarded as a mechanism for rapid homeostatic adjustments of the renal circulation, rather than of primary importance in pathogenesis of such hypertension..

Current Comment

METABOLIC FATE OF GLYCOGENIC SUBSTANCES

The major dietary constituents and metabolic intermediates were originally classed as glycogenic or as ketogenic, largely on the basis of whether or not they were excreted as glucose when administered to a phlorhizinized animal. When lactic acid was administered to such an animal, it was recovered almost quantitatively as extra urinary glucose. This was interpreted to mean that the carbon atoms in lactic acid were changed to glucose and excreted as such. Recent investigation has shown, however, that although an equivalent amount of glucose is excreted, most of the carbon atoms are not the same carbon atoms administered as lactate.[1] Of the radioactive labeled carbon atoms present in lactate, only about one fourth appeared in urinary glucose and about one half was found present in fat and urinary ketone bodies. The experiments emphasize again the equilibrium nature of the chemical reactions which occur in the body. The carbon atoms of lactic acid or its intermediates appear to be exchanged for the carbon atoms found in other substances, resulting in the formation of an equivalent amount of glucose in which the carbon atoms are not necessarily those present in the administered lactate.

WASHINGTON LETTERS

In a regular column which appears in the *Rocky Mountain Medical Journal*, Delegate William H. Halley calls attention to the various communications offered for sale to the medical profession from Washington which purport to keep the medical profession informed concerning the Washington scene. In addition there are several communications which come as the result of services established through medical organizations. Doctor Halley says, and most critical readers will agree with him: "One authoritative and exhaustive weekly or biweekly report would furnish welcome relief." The reports now available include a letter circulated by Dr. Joseph S. Lawrence, who is the representative of the Council on Medical Service of the American Medical Association, a letter circulated by Dr. Marjorie Shearon, one issued by Gerald Gross called "Washington Report," a letter published weekly in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and occasional items from other organizations which maintain Washington offices. Of the material thus far available the communication by Mr. Gross is the most complete, most accurate and most unbiased. Dr. Lawrence's letter is almost wholly concerned with medical legislation. Dr. Shearon's letter is lively but constantly colored by her personal point of view. The letter thus far published in THE JOURNAL is in process of improvement, and it is hoped that it may serve satisfactorily the needs of the medical profession generally in this regard.

ABOUT THE CAROTID SINUS

In man the carotid sinus is a bulbous enlargement of the first part of the internal carotid artery and of the terminal part of the common carotid. In the wall of the sinus is a dense plexus of nerves and sensory structures which have important regulating functions and react to various stimuli. In abnormally sensitive persons stimulation of the carotid sinus may cause vertigo, syncope and even convulsions, as well as much milder manifestations—the carotid sinus syndrome of Weiss and Baker.[1] Syncopal attacks may be caused by pressure on the region of the sinus.[2] Dangerous sinus reactions may occur during surgical operations, especially on the neck, and no doubt death, attributed often to circulatory failure, may result. In severe and incapacitating cases which resist proper medical treatment denervation of the sinus by section of the carotid sinus nerve and stripping of the carotid arteries have given complete relief.[3] In a case of carotid body tumor associated with carotid sinus syndrome cure followed removal of the tumor with stripping of the carotids.[4] In only 6 of 196 carotid tumors reported in the literature is it mentioned that pressure on the tumor caused syndromal symptoms. There seems to be no other relation between the carotid sinus and carotid tumor than that of contiguity.

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[1] Gurin, S.; Delluva, A. M., and Wilson, W. W.: J. Biol. Chem. 171:101, 1947.

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[1] Weiss, S., and Baker, J. P.: The Carotid Sinus Reflex in Health and Disease: Its Role in the Causation of Fainting and Convulsions, Medicine 12: 297(Sept.)1933.

[2] Ratnoff, O. D.: Carotid Sinus Syndrome in Air Crew Personnel, Bull. U. S. Army M. Dept. 5: 722(June)1946.

[3] Cattell, R. B., and Welch, M. L.: The Carotid Sinus Syndrome: Its Surgical Treatment, Surgery 22: 59(July)1947.

[4] McSwain, B., and Spencer, F. C.: Carotid Body Tumor in Association with Carotid Sinus Syndrome, Surgery 22: 222(Aug.)1947.

ORGANIZATION SECTION

PROCEEDINGS OF THE CHICAGO SESSION

MINUTES OF THE ANNUAL SESSION OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION, HELD IN CHICAGO, JUNE 21-25, 1948

HOUSE OF DELEGATES

Monday Afternoon—Continued

Resolution on Cancellation of Blue Cross

Dr. H. B. Goodrich, Missouri, presented the following resolution, which was referred to the Reference Committee on Medical Service and Prepayment Insurance:

Whereas, The American Medical Association on many occasions has encouraged the formation of nonprofit voluntary prepayment hospitalization and medical service plans by its constituent state and county societies; and

Whereas, These constituent state and county societies have participated in the formation and development of nonprofit voluntary hospitalization programs (nationally known as Blue Cross hospitalization plans) and nonprofit medical surgical service programs (nationally known as Blue Shield plans); and

Whereas, The action of the American Medical Association in cancelling its contract with the Chicago Blue Cross and Blue Shield plans which provided hospitalization and medical surgical coverage for the employees of the American Medical Association and in contracting with a commercial insurance company for the same coverage was not in the best interest of the medical profession as a whole or the voluntary Blue Cross and Blue Shield plans; and

Whereas, This action of the American Medical Association has already by adverse publicity caused serious embarrassment to the Blue Cross and Blue Shield plans; therefore be it

Resolved, That the House of Delegates of the American Medical Association instruct its Board of Trustees immediately to cancel the contract with the commercial insurance company and reinstate the contract with the Blue Cross and Blue Shield plans.

Resolution Approving Cancellation of Blue Cross

Dr. H. A. Lawson, in behalf of the Rhode Island Medical Society, presented the following resolution, which was referred to the Reference Committee on Medical Service and Prepayment Insurance:

Whereas, The General Manager and the Board of Trustees of the American Medical Association, acting in the best interests of the employees of the Association, have provided for them a plan of prepaid hospital and medical care insurance on a group basis, sharing with the employees the cost of such insurance; and

Whereas, This action has been unjustly and unfairly criticized by many nonprofit hospital and medical care organizations, and even by some medical societies, because the insuring company is not organized wholly for nonprofit; and

Whereas, The insurance jointly purchased by the Association and its employees provides more benefits at a lower cost than obtainable through a nonprofit plan; and

Whereas, Competition in free enterprise is one of the bulwarks of American economic freedom; therefore be it

Resolved, That the Rhode Island Medical Society express its approval of the sound action taken by the General Manager and the Board of Trustees of the American Medical Association in this matter, and express its disapproval of the unwarranted resolutions and actions directed against the aforesaid officers in this instance.

Resolution on Discrimination Against Insurance Industry of This Country

Dr. H. A. Lawson, in behalf of the Rhode Island Medical Society, presented the following resolution, which was referred to the Reference Committee on Medical Service and Prepayment Insurance:

Whereas, The Rhode Island Medical Society has sponsored a prepaid, voluntary surgical-obstetrical insurance plan under which all insurance companies licensed in Rhode Island, including the Hospital Service Corporation (Blue Cross) of Rhode Island, may equally participate; and

Whereas, All policies under the Rhode Island Plan are subject to the approval of the Rhode Island Medical Society and can be sold only with such approval; and

Whereas, As of this date, May 5, 1948, thirteen major insurance companies, profit and nonprofit, including the Metropolitan Life Insurance Company, have submitted policies for approval by the Rhode Island Medical Society; and

Whereas, Some of these great insurance companies are already selling policies under the plan, and at premium rates comparable to the so-called nonprofit plans in other parts of the country, and in many instances with wider coverage; and

Whereas, The Rhode Island Medical Society has been informed that *the Council on Medical Service of the American Medical Association* has established a policy to require a one year period of operation for plans underwritten by private insurance carriers before such plans are formally considered for receiving its seal of acceptance; therefore be it

Resolved, That the Rhode Island Medical Society request that the House of Delegates of the American Medical Association discourage such discriminatory regulations as regards plans sponsored and approved by state or county medical societies as being contrary to the purposes for which the Council on Medical Service was established, as being unfair to the insurance industry of this country which the Council on Medical Service itself, at the Cleveland Session this year, reported has insured an estimated 44,000,000 persons under health and accident coverage, and as being a penalty to the state or county medical society that does not endorse the nonprofit program exclusively.

Resolution on Compulsory Cash Sickness Compensation

Dr. H. A. Lawson, on behalf of the Rhode Island Medical Society, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

Whereas, The House of Delegates of the American Medical Association in meeting at San Francisco in July 1946 adopted a resolution presented by the Rhode Island Medical Society which requested that the American Medical Association, through the proper Council or Bureau, make a complete study of the existing and proposed compulsory temporary disability compensation programs, such as the compulsory Rhode Island Cash Sickness Compensation plan, and that a report of the findings of such a study, particularly as regards the medical phases of the programs, be submitted to each of the constituent state medical societies before January 1947; and

Whereas, Such a complete study report has never been made to the state medical societies in accordance with this action of the House of Delegates; and

Whereas, Such a study is now being made under the sponsorship of the National Physicians Committee; therefore be it

Resolved, That the Rhode Island Medical Society, being well aware of the far reaching effects of a program of compulsory cash sickness compensation, express its dissatisfaction that the study it requested of the American Medical Association has not been made, and is now being undertaken by an organization neither authorized nor qualified to speak for the American medical profession.

Resolution on Change in Constitution

A delegate, in behalf of the Medical Society of the State of New York, presented by title a resolution requesting a change in the Constitution, which was referred to the Reference Committee on Executive Session.

Resolutions on Hospital and Medical Care for Veterans

Dr. Harry Aranow, in behalf of the Medical Society of the State of New York, presented the following resolutions, which were referred to the Reference Committee on Legislation and Public Relations:

Whereas, The American Medical Association believes that veterans who have been injured or disabled in the service of their country are entitled to the highest type of medical and hospital care; and

Whereas, Point Seven of The Ten Point National Health Program of the American Medical Association on "Veterans Need for Hospital and Medical Care" reads:

"A program for national health should include the administration of medical care, including hospitalization, to *all* veterans, such medical care to be provided preferably by a physician of the veteran's choice, with payment by the Veterans Administration through a plan mutually agreed upon between the state medical association and the Veterans Administration"; and

WHEREAS, No differentiation is made in the aforementioned program between veterans suffering from illness or disabilities incurred in or aggravated by military services and those veterans suffering from illness or disabilities not incurred in or aggravated by military service; and

WHEREAS, The present policy of the Veterans Administration is to furnish medical care and hospitalization to veterans whose illness and disabilities were not incurred in or aggravated by military services only when such veterans are not able to "pay the necessary expense of hospital care" and ". . . a bed is available in an existing facility"; and

WHEREAS, The Veterans Administration has neither the legal right nor the administrative machinery to investigate affidavits on financial ability of such persons with non-service-connected disabilities ". . . to pay the necessary expense of hospital care"; and

WHEREAS, Nearly two-thirds of the beds in Veterans Administration hospitals are now filled with patients with non-service-connected disabilities; and

WHEREAS, The Veterans Administration now has 126 hospitals at a cost of over one billion dollars; and

WHEREAS, The Veterans Administration currently has over 5,000 beds closed because of inability to obtain personnel without lowering the standards of medical care; and

WHEREAS, The unlimited expansion of Veterans Administration hospitals will lead to an inferior grade of medical and hospital care for veterans and at the same time injure the quality of hospital service that is available for the entire population by draining professional and technical personnel away from hospitals which serve the public as a whole; be it

Resolved, That Point Seven of the Ten Point National Health Program of the American Medical Association on "Veterans' Need for Hospital and Medical Care" be changed to read:

> "A program for national health should include the administration of medical care, including hospitalization, to all veterans currently entitled to such medical care and hospitalization under existing federal statutes, such medical care to be provided preferably by a physician of the veterans' choice with payment by the Veterans Administration through a plan mutually agreed on between the state medical association and the Veterans Administration"; and be it further

Resolved, That this House of Delegates of the American Medical Association is in favor of congressional action to interpret the following requirements of admission of persons with non-service-connected disabilities to Veterans Administration hospitals:

1. The ability ". . . to pay the necessary expense of hospital care"
2. " . . . *if a bed is available in an existing facility*"; and be it further

Resolved, That this House of Delegates of the American Medical Association goes on record as favoring a definite ceiling on the number of beds to be provided in Veterans Administration hospitals, and that such a ceiling be placed at 140,000 beds, the number already authorized by Congress."

Resolutions on Editorials in The Journal of the American Medical Association

Dr. Wyman D. Barrett, Michigan, introduced without reading, Resolutions on Editorials in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, which were referred to the Reference Committee on Executive Session.

Resolutions on Federal Grants-in-Aid to States

Dr. J. Wallace Hurff, on behalf of the Medical Society of New Jersey, presented the following resolutions, which were referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, The American Medical Association has repeatedly expressed its adherence to the principle that federal grants-in-aid for medical and health services should be made available only to those states which can demonstrate a definite need for federal financial assistance; and

WHEREAS, Despite this declaration of principle, the American Medical Association has supported legislation—notably the Hospital Survey and Construction Act and the pending Taft-Smith-Ball-Donnell Bill—in which federal grants-in-aid are or would be made available to all states, regardless of their actual need for federal asistance; and

WHEREAS, The extension of grants-in-aid to the states is inevitably accompanied by federal restrictions and interference in the affairs of the several sovereign states, and accelerates the tendency toward centralized bureaucratic authority over the affairs of local communities and of individual citizens; therefore be it

Resolved, By the House of Delegates of the American Medical Association that it hereby strongly reiterates its opposition to the extension of federal grants-in-aid to any state for any health or medical service except where such state has clearly demonstrated an absolute need for such federal asistance; and be it further

Resolved, That the Board of Trustees of the American Medical Association be directed to withdraw and withhold the consent and approval of the American Medical Association from any legislation, pending or hereafter proposed, unless this principle is embodied in such legislation.

Resolutions on Bacteriologic Warfare

Dr. J. Wallace Hurff, on behalf of the Medical Society of New Jersey, presented the following resolutions, which were referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, The use of biologic and bacteriologic methods of warfare is inhumane, subjecting great numbers of noncombatant people to its jeopardy; therefore be it

Resolved, By the House of Delegates of the American Medical Association that bacteriologic and biologic warfare be condemned as essentially inhuman and inhumane; and be it further

Resolved, That such technics of warfare should be specifically outlawed by international covenant.

Resolution on Endorsement of Blood Banking Agencies and Associations

Dr. James P. Kerby, for the Utah State Medical Association, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

WHEREAS, The American Medical Association is aware of the dangers, technicalities and complexities involved in the procurement and processing and transfusion of blood, including such problems as various transfusion incompatibilities due to the known antigenic complexities of human blood, the danger of transferring virus diseases, particularly homologous serum jaundice and the possible spreading of malaria, syphilis and various other serious infectious diseases, all of which are a part of blood banking; and

WHEREAS, These problems require handling by competent persons under the responsible control of local independent nonprofit institutions, sponsored by organized medicine as represented by state and county medical societies; and

WHEREAS, Blood banking is a highly specialized branch of medicine, requiring that related scientific services follow the blood and that the blood bank maintain a close relationship with both patient and physician; and

WHEREAS, Blood banking is a community function necessary for and maintained by the local medical profession and hospitals of a community; and

WHEREAS, Blood banking cannot exist without medical and related scientific consultations; and

WHEREAS, It has been brought to the attention of this Association that on Nov. 19, 1947 the American Association of Blood Banks was formed; and

WHEREAS, The purposes of the American Association of Blood Banks are: (1) To promote and foster the exchange of ideas and materials and the dissemination of information relating to blood banking and its technical methodology by education, publicity and research; (2) to foster and plan for cooperation in times of disaster; (3) to function as a clearing house on questions relating to the training of personnel common to such institutions; (4) to keep currently aware of and encourage high standards of service; (5) to promote and foster and aid and encourage the extension of similar services throughout the United States and its territories; therefore be it

Resolved, That, first, the American Medical Association endorse in principle the program of the American Association of Blood Banks and the local control of policies and operation of blood banking; and, second, that this Association urge the state and county medical societies to aid and encourage the establishment of adequate transfusion services through the setting up of additional blood centers, blood banks and affiliated substations as required to make available adequate supplies of blood and blood derivatives throughout the state; and, third, that this Association go on record as opposing control by centralized national agencies or interferences with the orderly development of transfusion services and new improved technics and knowledge under local initiative.

Resolutions on American Physicians Art Association

Dr. William M. Cockrum, Indiana, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

WHEREAS, The American Physicians Art Association this year celebrates its tenth anniversary; and

WHEREAS, During these ten years, the American Physicians Art Association has encouraged many hundreds of physicians to engage in painting, sculpturing, etching, photography and other artistic avocations; and

WHEREAS, During this period, the American Physicians Art Association has through its annual art exhibitions added conspicuously to the beauty and cultural atmosphere of the American Medical Association sessions; and

WHEREAS, All these untiring efforts have redounded to the benefit of the entire medical profession and helped to increase public appreciation of the cultural attainments of the medical profession; therefore be it

Resolved, By the House of Delegates of the American Medical Association that the American Medical Association hereby expresses its warm appreciation of all these achievements, and be it further

Resolved, That the Secretary be instructed to present a copy of this resolution to the officers of the American Physicians Art Association.

Resolution on Method of Selecting Each Year the Outstanding General Practitioner by the American Medical Association

Dr. E. S. Hamilton, in behalf of the Illinois State Medical Society, presented, by title, and had copies distributed to all delegates, the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

Whereas, The American Medical Association has adopted the practice of honoring one general practitioner as outstanding in the United States each year at the Interim Session of the House of Delegates; and

Whereas, The first award was given last January at the meeting in Cleveland and was widely acclaimed throughout the country, though the process of selection was marred by confusion and misunderstanding; and

Whereas, It is at the local levels that many lay groups and individuals can best learn the importance of preserving the American way of life, including the continuance of the practice of medicine as a private enterprise, and the designation of such outstanding general practitioners can have great value in calling public attention to that importance; and

Whereas, It is desirable that some definite procedure should be established by which the selection of the said outstanding general practitioner originate at the county society level and proceed through state organizations so that local or state groups and individuals may pay tribute to the family physician of their choice; now, therefore, be it

Resolved, That the House of Delegates of the American Medical Association approve and set in operation a plan whereby:

(1) Each county medical society shall be urged to name the candidate of its choice as the outstanding general practitioner for the year within its jurisdiction, basing its selection on nominations and recommendations from any responsible source, lay or professional.

(2) The name of each candidate so chosen by a county medical society, with all pertinent data, including recommendations of lay groups and individuals, shall be submitted by the county medical society to the state medical society of which it is a component part.

(3) Each state medical society, through whatever agency each may designate, shall select from among the candidates submitted by its component county medical societies one name to be declared the outstanding general practitioner within the state.

(4) The candidate so selected at the state level shall be the sole candidate from that state, and his or her name, with all pertinent supporting data, shall be submitted to the Board of Trustees of the American Medical Association.

(5) The Board of Trustees shall select from the names submitted by state societies the names of three persons, these names to be submitted in turn to this House of Delegates, which shall select one name to be declared the outstanding general practitioner of the United States for the year.

(6) Any state medical society desiring to do so may establish and confer a suitable award with fitting public ceremony on the physician it has named as the outstanding general practitioner of that state for the year.

Resolution on Cancellation of Contract with Commercial Insurance Company

Dr. L. G. Christian, on behalf of the Michigan State Medical Society, presented the following resolution, which was referred to the Reference Committee on Medical Service and Prepayment Insurance:

Whereas, The American Medical Association on many occasions has encouraged the formation of nonprofit voluntary prepayment hospitalization and medical service plans by its constituent state and county societies; and

Whereas, These constituent state and county societies have participated in the formation and development of nonprofit voluntary hospitalization programs (nationally known as Blue Cross hospitalization plans); and nonprofit medical surgical service programs (nationally known as Blue Shield plans); and

Whereas, The action of the American Medical Association in canceling its contract with the Chicago Blue Cross which provided hospitalization for the employees of the American Medical Association and in contracting with a commercial insurance company for the same coverage was not in the best interest of the medical profession as a whole or the voluntary Blue Cross and Blue Shield plans; and

Whereas, This action of the American Medical Association has already by adverse publicity caused serious embarrassment to the Blue Cross and Blue Shield plans; and

Whereas, Both Blue Cross and Blue Shield plans are available in Chicago; therefore be it

Resolved, That the House of Delegates of the American Medical Association instruct its Board of Trustees to cancel the contract with the commercial insurance company at the earliest possible time and obtain contracts with the Blue Cross and Blue Shield plans to cover their employees.

Resolution on Blood Banking Agencies and Associations

Dr. F. J. L. Blasingame, in behalf of the State Medical Association of Texas, presented by title a resolution, which was referred to the Reference Committee on Miscellaneous Business.

Resolution on Blood Programs

Dr. Edward H. McLean, for the Oregon State Medical Society, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

Whereas, The need for organized community programs for the procurement and distribution of blood for ordinary civilian use and in time of disaster and national emergency has been recognized; and

Whereas, Such programs are being sponsored by county medical societies, by local voluntary organizations established for the specific purpose, and by local chapters of the American National Red Cross; and

Whereas, It is essential that the county medical society in each community concerned shall supervise and control the technical operation of such programs; therefore be it

Resolved, That in the case of all blood programs sponsored by lay organizations an agreement in the form of a "Statement of Policy" be entered into between the lay organization and the county medical society in substantially the following language:

STATEMENT OF POLICY REGARDING OPERATION OF A BLOOD PROGRAM AT

....
(Name of City)

This Statement of Policy, dated the ..... day of ....
194... by and between the .... (hereinafter called
(Name of lay organization)
"...................") and .... County Medical Society (hereinafter called "Society"),

WITNESSETH:

Whereas, ... and Society desire to set up a
(Name of lay organization)
blood program at .... with a central laboratory at
(Name of City)
.... and distribute blood to approved agencies in ....
(Name of City) (Area to be served)
all in accordance with the policies stated herein, and

Whereas, Parties hereto recognize that the medical profession is particularly qualified to supervise and control the technical operation of such blood program and its related activities.

Now, Therefore, Parties hereto agree that the operation of such a blood program shall be conducted in accordance with the following policies:

1. The .... of Society shall appoint a Technical
(Name of governing body)
Supervisory Committee (hereinafter called "Committee") of five members of Society, two of whom shall be pathologists, one an internist, one a surgeon and one a general practitioner, each of whom shall serve until his successor shall be appointed by the said ....
(Name of governing body)

2. The duties of said Committee shall be as follows:

(*a*) The direct supervision and control of the blood program, central laboratory or laboratories and blood products, including, but not confined to, the specific duties set forth herein.

(*b*) The selection of a Technical Director, who shall be a physician and surgeon with special qualifications to administer the blood program and related activities. Through the Technical Director, the Committee shall select the other technical personnel of the blood program and related activities. The Technical Director shall be directly responsible to the Committee.

(*c*) The establishment of technical standards for such blood program and related activities, which standards are to conform to those set forth in the National Blood Program Technical Manual of the American National Red Cross and all state and federal governmental requirements, provided that more exacting technical procedures may be prescribed by the Committee, when the Committee deems it advisable.

(*d*) The establishment of technical standards for hospitals which are to be serviced under the program, in relation to such program; also the selection of such hospitals and establishment of quotas for each hospital. Hospitals shall be required to have adequate facilities for storage, typing, cross matching, investigation of reactions, and shall supply the blood without charge except for a nominal charge for the administration of the blood, including additional typing and cross matching, which charge shall be uniform for all hospitals.

(*e*) The direction, through the Technical Director, of all volunteers in such program, when their duties involve the technical aspects of the blood program.

(*f*) The review and approval of all publicity controlled by the .... relating to the program, prior to release, in
(Name of lay organization)
order to insure its conformity to professional standards.

3. The .... shall be the sole donor recruitment
(Name of lay organization)
agency and shall procure volunteer donors to the best of its ability.

4. The .... shall provide and pay for all phy-
(Name of lay organization)
sical facilities, equipment, supplies and other functions necessary to carry on the program.

5. The .... shall pay the salaries of all personnel
(Name of lay organization)
engaged in the program.

6. The .... shall secure and pay for adequate
(Name of lay organization)
malpractice and other insurance to cover the liability of the members of the Committee, Technical Director and other employees arising out of the operation of the program, so far as is obtainable.

7. The program shall be operated in such a manner as not to provide any monetary return to Society or ....
(Name of lay organization)

8. The .... agrees to furnish the Committee
(Name of lay organization)
with copies of all reports and correspondence relating to the technical phases of the blood program.

9. .... will be permitted to draw upon the
(Name of lay organization)
reserves of blood and blood derivatives in this program as occasion may require for use in connection with disasters and other emergencies.

10. As soon as practical a written administrative procedure shall be prepared, to be approved by the Committe and ....
(Name of lay organization)

11. Either party hereto may terminate participation in the above program upon giving to the other party thirty days' notice in writing.

In Witness Whereof, The parties hereto have caused this statement of policy to be executed in ....
(duplicate, triplicate, or other designation of
.... by their duly authorized officers the day and year
number of copies)
first above written.

....
(Name of lay organization)
by ....
President, Chairman, or other Chief Officer
.... COUNTY MEDICAL SOCIETY
by ....
President

*Approved:

....
Medical Director, Pacific Area
American National Red Cross
*Approved:
Administrator, National Blood Program
....
American National Red Cross

* For use only when Red Cross is involved.

Resolution on Bureau of Health Education

Dr. Joseph F. Londrigan, for the Medical Society of New Jersey, presented by title a resolution, which was referred to the Reference Committee on Medical Education.

Resolutions on Blue Cross Coverage

Dr. J. D. Hamer, for the Arizona State Medical Association, presented the following resolutions, which were referred to the Reference Committee on Medical Service and Prepayment Insurance:

Whereas, The extension of prepaid health and hospital coverage to the American people is a matter of primary concern to the American Hospital Association and the American Medical Association; and

Whereas, It appears that the widest possible coverage for prepaid hospital and medical benefits can be attained only through the continued support and cooperation of both national organizations; and

Whereas, It has been brought to our attention time and time again that the salvation of the members of the American Hospital Association and American Medical Association from the encroachment on our freedom by compulsory sickness insurance rests in the continued extension of voluntary hospital and prepayment sickness insurance plans; and

Whereas, It appears that recent action taken by the employees of the American Medical Association in forfeiting their Blue Cross coverage and adopting a plan of coverage from a commercial insurance firm has created much unfavorable comment and criticism; now therefore be it

Resolved, That the House of Delegates of the Arizona State Medical Association recommends to the House of Delegates of the American Medical Association that this matter be referred to the Board of Trustees for the purpose of their study, and that the Board of Trustees be empowered to recommend to the General Manager of the American Medical Association that employees of the American Medical Association be brought under existing Blue Cross-Blue Shield prepayment coverage at the earliest possible date; and be it further

Resolved, That a copy of this resolution be sent to the Secretary of the American Hospital Association and to the Secretary of the Blue Cross Commission and to the A. M. C. P. Commission.

Resolutions on Hospital Insurance

Dr. Homer L. Pearson, Jr., Florida, presented by title, since they were included in the Handbook, Resolutions on Hospital Insurance, which were referred to the Reference Committee on Medical Service and Prepayment Insurance.

Resolution on Funds to Defray Expenses of Woman's Auxiliaries of States

Dr. Raymond M. McKeown, Oregon, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

Whereas, Our local, state and national woman's auxiliaries have become an indispensable adjunct of organized medicine; and

Whereas, The local, state and national auxiliaries are especially effective as agencies for furthering the education of the public concerning the aims and accomplishments of scientific medicine; and

Whereas, Their maximum effectiveness requires participation by the wife of every member and sufficient funds to enable them to carry on their essential activities; therefore be it

Resolved,, That each constituent state medical association be urged to budget sufficient funds to defray the cost of the activities of its auxiliary and to pay the annual dues of the national auxiliary, thus making the wife of every member automatically a member of the state and national auxiliaries and eliminating the collection of state and national auxiliary dues from individual auxiliary members.

Resolution on Review of Hospital Standardization

Dr. Raymond M. McKeown, Oregon, presented the following resolution, which was referred to the Reference Committee on Medical Education:

Whereas, The interests of the public and the medical profession as a whole are best served by the establishment and enforcement of hospital and other standards which give due weight to all the various phases of medical service by an agency which represents all aspects of medical practice; therefore be it

Resolved, That the Council on Medical Education and Hospitals be authorized and directed to review the present status of hospital standardization and inspection, and, in cooperation with the constituent state medical associations and with due consideration of the activities of the American College of Surgeons and any comparable organization of specialists and any combinations of any such national organizations, promulgate new and more inclusive standards for hospitals, with the eventual purpose of developing a standardization and inspection service.

Resolutions on Activities of Veterans Administration

Dr. H. Gordon MacLean, California, presented the following resolutions, which were referred to the Reference Committee on Legislation and Public Relations:

Resolved, That this House of Delegates register its condemnation of the extension of government medical care by bureaucratic interpretation and demand that the Veterans Administration restrict its activities to those specified in existing federal law; and be it further

Resolved, That the practice of medical officers' serving with the Armed Forces under conditions of involuntary service being loaned to a civilian agency for the purpose of providing medical care for disabilities not connected with military service be condemned and means of achieving the discontinuance of such service be sought with all possible vigor.

Resolution on Removal of Fellows from One State to Another

Dr. H. Gordon MacLean, California, presented the following resolution, which was referred to the Reference Committee on Amendments to the Constitution and By-Laws:

Resolved, That Section 3, Chapter XII of the By-Laws be and is hereby amended by deleting the entire section and substituting therefor the following: "A Fellow who changes the location at which he practices, from the state through whose constituent association he holds membership in the American Medical Association to another state in which there is a constituent association shall forfeit his membership and fellowship in this association, unless within one year after such change of residence he becomes a member of the constituent association of the state to which he has moved."

Resolution on Change of Residence

Dr. H. Gordon MacLean, California, presented the following resolution, which was referred to the Reference Committee on Amendments to the Constitution and ByLaws:

Resolved, That Section 1, Chapter XII of the By-Laws be and is hereby amended by deleting the following: "*Provided*, that when the member is also a Fellow of the Scientific Assembly the By-Law defining the effect on Fellowship of removal to another state shall have precedence over this section."

Resolution on National Health Assembly

Dr. Thomas K. Lewis, New Jersey, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

Whereas, The National Health Assembly, a Corporation not for profit, was formed February 17, 1948, on proper application by Abe L. Savage and Cornelius A. Wood Jr., with offices at 4605 and 4611 in the Federal Security Administration quarters in Washington, D. C., and Harold M. Marsh, a private attorney; and

Whereas, The term for which said corporation is originated shall be *perpetual;* and

Whereas, The particular business and object of said corporation shall be: (*a*) to engage in such activity as may facilitate the closing of the gap between the present knowledge of medical science and the organization of the basic services which make this knowledge generally applicable to the people of the several states, the District of Columbia and the possessions of the United States of America, by assembling and disseminating information relating to medical and other studies and research in the fields of health and welfare, and by arranging, sponsoring, conducting, financing and/or participating in the financing of conferences, conventions and/or other meetings of organizations and of individuals, both public and private, engaged in or interested in activities directed to advancing health and welfare; (*b*) to cooperate with individuals and organizations, both public and private and with federal, state and international agencies and organizations looking to the correlation, integration and/or aid of studies and research in the field of health and welfare; (*c*) to provide financial assistance for the study of problems relating to the health and welfare of the people of the several states, the District of Columbia and the possessions of the United States of America; (*d*) to engage in such other educational public activities as may promote the health and welfare of the people of the several states and District of Columbia and the possessions of the United States of America; and

Whereas, The first meeting of the National Health Assembly was held at the call of Mr. Oscar Ewing, Federal Security Administrator, in Washington, D. C., on May 1-4, 1948; and

Whereas, Mr. Ewing publicly has stated: "President Truman has made known that he and his Administration favored National Health Insurance, and, naturally, I had no right to accept an office in his Administration unless I was wholeheartedly prepared to go along with the President's policies. Furthermore, I explained that, I happened to agree with that policy thoroughly and that it was one for which I expected to fight"; and

Whereas, Findings of the several panels of this Assembly have resulted in recommendations providing that the solution of the problems of medical education, medical research, dental education, dental research and the distribution of medical and dental care involve, in most instances, federal financing and/or Federal subsidy; and

Whereas, Several recommendations are in direct conflict with actions taken by this House of Delegates concerning federal participation in the financing and distribution of medical care in the United States as elucidated in the Ten Point Program in Section 3, "When local funds are lacking for the care of those unable to pay, federal aid should be supplied with the funds administered through local or state agencies" and, further, Section 5—in connection with facilities: "Such facilities are preferably supplied by local agencies, including the community, church and trade agencies which have been responsible for the fine development of facilities for medical care in most American communities up to this time. Where such facilities are unavailable and cannot be supplied through local or state agencies, the federal government may aid, preferably under a plan which requires that the need be shown and that the community prove its ability to maintain such institutions once they are established" (Hill-Burton Bill); and

Whereas, It is the opinion generally held that the National Health Assembly with a permanent Charter has as its main purpose the introduction of a new technic for the purpose of the promotion of a form of complete government medical and dental service. The necessity is created for this House of Delegates to take action to reaffirm its previously expressed policies on this subject or to formulate a new basic policy in connection with federal participation in the financing and distribution of medical and dental care; therefore be it

Resolved, That this House of Delegates go on record as reaffirming actions previously taken dealing with this important subject.

Resolution on Purveyal of Medical Service Involving Amendment to Principles of Medical Ethics

Dr. John M. Fallon, Massachusetts, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

Whereas, The House of Delegates this afternoon has been informally advised that it is unethical for physicians to be employed by lay organizations in such way that profits from their professional services be diverted from the physician to the lay organization; be it therefore

Resolved, That the Judicial Council be instructed to add the following sentence to Chapter III, Section 5 of the Principles of Medical Ethics: "The terms of employment between physicians and lay organizations shall preclude diversion to the lay organization of profits derived from the professional service of the physician."

Resolution on Voluntary Insurance

Dr. Stephen R. Monteith, in behalf of the Medical Society of the State of New York, presented by title a Resolution on Voluntary Insurance, which was referred to the Reference Committee on Medical Service and Prepayment Insurance.

On motion of Dr. E. Vincent Askey, California, seconded by Dr. Edwin S. Hamilton, Illinois, and carried, the House requested that Dr. Paul R. Hawley be invited to present a fifteen minute address before the House as the first order of business on Tuesday afternoon.

Nominations for Honorary Fellowship

Dr. George F. Lull, Secretary, presented the following report from the Council on Scientific Assembly:

The Council has considered the scientific attainments and professional character of the following: Dr. Raffaele Paolucci, Director of the Surgical Clinic of the University of Rome, Italy; Dr. A. M. Dogliotti, Director of the Surgical Clinic of the University of Turin, Italy, and President of the Italian Section of the International College of Surgeons; Dr. Francisco Grana, Lima, Peru, and recommends them for approval by the House of Delegates for Honorary Fellowship, provided ways and means can be found to fulfil the requirements of the present By-Laws.

On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. H. B. Everett, Tennessee, and carried, these physicians were elected to Honorary Fellowship, but the Speaker declared that this had to lay over until tomorrow.

On motion of Dr. F. F. Borzell, Pennsylvania, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried, the House went into executive session at 5:15 p. m.

Executive Session

The House met in Executive Session in the Red Lacquer Room of the Palmer House, Chicago, at 5:15 p. m., with the Speaker, Dr. R. W. Fouts, in the Chair.

The following resolutions were presented and referred as indicated:

1. Resolution on Disapproval of Utterances of a Representative at National Health Assembly, introduced by Dr. Lowell S. Goin on behalf of the California delegation, was referred to the Reference Committee on Executive Session.
2. Dr. Donald Cass, for the California delegation, presented a Resolution on Nonsubscription to Some of Principles Adopted by National Health Assembly, which was referred to the Reference Committee on Executive Session.
3. Dr. F. J. Pinkerton, Hawaii, presented Resolutions on Red Cross Blood Bank Program, which were referred to the Reference Committee on Miscellaneous Business with the request that that committee meet in executive session when considering them and report in executive session.
4. Dr. George E. Armstrong, United States Army, presented Resolutions on Advancement of Rank of Surgeons General of Army and Navy and of Air Surgeon, which were referred to the Reference Committee on Legislation and Public Relations, which may report in open session.
5. Dr. John W. Green, California, presented Resolutions on Washington Office of the American Medical Association, which were referred to the Reference Committee on Legislation and Public Relations.
6. Dr. Philip W. Morgan, for the Kansas Medical Society, presented Resolutions on Expression of Gratitude, which were referred to the Headquarters Office without reference to a committee.
7. Dr. Allen H. Bunce, Georgia, presented the Resolution on Staff Personnel at Headquarters, introduced by him by title during the morning, which was referred to the Reference Committee on Executive Session.

The House recessed at 5:30 p. m. to reconvene in regular session at 1:15 p. m., Tuesday, June 22, 1948.

Second Meeting—Tuesday Afternoon, June 22

The House of Delegates was called to order at 1:40 p. m. by the Speaker, Dr. R. W. Fouts.

The Speaker announced the appointment of Dr. C. F. Strosnider, North Carolina, to take the place of Dr. Thomas S. Cullen, Maryland, who was not in attendance, on the Reference Committee on Medical Education, and of Dr. D. A. Rhinehart, Arkansas, to take the place of Dr. W. R. Brooksher, who was not in attendance on the Reference Committee on Medical Service and Prepayment Insurance.

Because two members of the Reference Committee on Miscellaneous Business had introduced resolutions on a subject which that reference committee was to consider, the Speaker declared that they had disqualified themselves as members of the reference committee and that the committee would consist of Dr. E. S. Hamilton, Illinois, as chairman, and Drs. Thomas M. Brennan, New York, Charles R. Rountree, Oklahoma, C. R. Keyport, Michigan, and John H. Moore, North Dakota.

The Speaker also announced that the Report of the Council on Scientific Assembly was being taken back from the Reference

Committee on Medical Education, to which it had been referred and was being referred to the Reference Committee on Sections and Section work.

Address of Dr. Paul R. Hawley

Dr. E. L. Henderson, Chairman, Board of Trustees, announced that Dr. Hawley requested that his address be heard in Executive Session. Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, moved that the request be granted and the motion was seconded by several and carried.

Dr. A. A. Walker, Alabama, stated that it was his understanding that former Presidents of the American Medical Association were permitted to remain in Executive Session and moved that that privilege be extended to former Vice-Presidents. The motion was seconded by several and carried.

On motion of Dr. B. H. Minchew, Georgia, severally seconded, and carried by a standing vote, secretaries of constituent state medical associations were granted permission to attend the Executive Session.

A motion of Dr. H. B. Goodrich, Missouri, seconded by Dr. T. K. Gruber, Michigan, to admit presidents and chairmen of councils of constituent associations was lost.

Dr. E. Vincent Askey, California, moved that the House proceed immediately with the order of business, and the motion was seconded by several and carried. The House went into Executive Session at 2 p. m.

Executive Session

The House convened in Executive Session at 2. p. m. with Dr. R. W. Fouts, Speaker, presiding.

Dr. E. L. Henderson, Chairman, Board of Trustees, introduced Dr. Paul R. Hawley, who addressed the House in Executive Session.

On motion of Dr. Mather Pfeiffenberger, Illinois, seconded by Dr. George W. Kosmak, New York, and carried, the House arose from Executive Session at 2:15 p. m.

Tuesday Afternoon—Continued

The House reconvened in regular session at 2:15 p. m. with the Speaker, Dr. R. W. Fouts, presiding.

Minutes

It was moved by Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, and carried, that the House dispense with the reading of the minutes.

Report of Reference Committee on Amendments to Constitution and By-laws

Dr. Arthur J. Bedell, Chairman, presented the following report: 1. Resolution on Opposition to Amendment to Constitution: Your reference committee recommends that Article 5, Section 1, paragraph (*A*) of the revised Constitution (Article 8, Section 1 of the present Constitution) be amended to read as follows:

"A. Active Members. Active membership shall be limited to those members of constituent associations who (1) hold the degree of Doctor of Medicine or Bachelor of Medicine and (2) are entitled to exercise the rights of active membership in their constituent associations, including the right to vote and hold office, as determined by their constituent association, subject to the provisions of the By-Laws."

2. Resolution on Removal of Fellows from One State to Another: Your committee finds that this resolution is covered by Chapter II of the By-laws on page 7 of the proposed revised Constitution and By-Laws and that part of Division II, Chapter IV by Section 2 reading as follows:

"The rules governing fellowship in case of removal of the practice of a fellow to another state shall be the same as the rules governing membership."

The rules governing membership, Chapter. II of the By-Laws, read as follows:

Membership in this Association shall continue as long as a physician is a member of a component society of the constituent association through which he holds membership. When the Secretary is officially informed that a member is not in good standing in his component society he shall remove the name of said member from the membership roll. A member shall hold his membership through the constituent association in the jurisdiction in which he practices. Should he remove his practice to another jurisdiction he shall apply for membership through the constituent association in the jurisdiction to which he has moved his practice. Unless he has transferred his membership within one year after such change of practice, the Secretary shall remove his name from the roster of members.

3. Proposed Amendment to By-laws Re Citation for Distinguished Lay Service: Your committee recommends that the following be made Chapter XV:

CHAPTER XV. CITATION FOR DISTINGUISHED SERVICE

Section 1. CITATION FOR DISTINGUISHED SERVICE.—The Board of Trustees shall create and establish a citation to be known as "The Citation for Distinguished Service" which shall consist of a suitably engrossed citation. The Board of Trustees shall consider the merits of nominees for this citation who shall be persons not of the medical profession who have, by their cooperation and aid in the advancement of medical science, medical education or medical care, contributed to the achievement of the ideals of American medicine.

Section 2. The Board of Trustees shall nominate to the House of Delegates on the first day of the annual session of each year not more than three persons for this citation. The House of Delegates shall then select the recipient of this citation from the nominees so submitted, the selection to be made by ballot.

Section 3. The Board of Trustees shall be charged with the duty of preparing a suitable citation and arranging for the time and place of its presentation.

Respectfully submitted,

ARTHUR J. BEDELL, Chairman.
WILLIAM F. COSTELLO, Secretary.
JAMES Q. GRAVES.
HOWARD R. DUDGEON.
THEODORE H. HARWOOD.

Dr. Bedell moved adoption of the report of the reference committee dealing with the Resolution on Opposition to Amendment to Constitution and the motion was seconded by several and carried

The portion of the report of the Reference Committee referring to the Resolution on Removal of Fellows from One State to Another was adopted on motion of Dr. Bedell, seconded by Dr. H. B. Everett, Tennessee, and carried.

Dr. Bedell moved adoption of the report of the Reference Committee, recommending addition of a chapter dealing with Citation for Distinguished Service, and the motion was seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, and carried after discussion by Dr. Bedell and the Speaker.

On motion of Dr. Bedell, seconded by several and carried, the report of the reference committee was adopted as a whole.

Dr. E. L. Henderson, Chairman, Board of Trustees, asked whether some one could be elected at this session and after discussion by the Speaker, Dr. Henderson and Dr. Bedell, Dr. James R. Reuling, New York, moved that the Board of Trustees be requested to present names at this session, and the motion was seconded by several. There was discussion by Dr. Henderson, Dr. Reuling, the Speaker, Dr. E. Vincent Askey, California, and Dr. W. F. Costello, New Jersey. After an interval during which the Speaker did not put the vote, it was moved by Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, and carried, that the citations be created at this session.

Report of Reference Committee on Reports of Officers

Dr. Allen H. Bunce, Chairman, presented the following report, which was adopted section by section and as a whole on motions of Dr. Bunce, duly seconded and carried. (During the presentation of the report dealing with the Speaker's address, the Vice-Speaker presided.)

Your Reference Committee on Reports of Officers presents the following report:

1. President's Address: The President's address presents an excellent review of the activities of the American Medical Association which is worthy of the attention of the physicians not only of this country but elsewhere as evidence of the widespread interests in which the Association is engaged. With a feeling of innate modesty our President fails to mention the excellent work which he has done in acquainting the public and the profession with the aims and purposes of American medicine in its efforts to provide the people with what may be designated as the most satisfactory medical care in the world and this without control by a central government. Your committee congratulates the retiring President on the success of his administration of the affairs of the Association which have been delegated to him as his responsibilities and which he has carried out so ably.

Your committee commends the President's address for the careful study of each and every member of the House of Delegates and suggests that the members carry back to their constituent associations his summary of the great work of the Association.

2. Speaker's Address: The address of the Speaker reflects his personal endeavor to carry out the recommendations of the House to expedite its extensive business and your committee commends him for his devotion to his onerous duties.

The appointment of reference committees in advance of the meeting is a desirable feature and should not constitute any difficulty for the state associations in the selection of their delegates. It would appear that a simple resolution by each constituent association and society to make the term of office of delegates begin January first following their own annual meeting should be sufficient and make unnecessary any changes in their constitutions and by-laws. Your committee recommends that the Secretary of the American Medical Association again notify the secretaries of the constituent associations of this action of the House of Delegates.

Dr. Fouts' association with this body as delegate, Vice-Speaker and Speaker deserves this note of appreciation by your reference committee and should likewise call for a rising vote of confidence for his accomplishments and his devotion to the duties of the office to which he was elected.

Respectfully submitted,

Allen H. Bunce, Chairman.
George W. Kosmak.
Louis M. Orr II.
Walter E. Vest.
Roland W. Stahr.

Resolutions on "Free Blood" Feature of Red Cross National Blood Program

Dr. Scott Lord Smith, New York, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business.

Whereas, That portion of the Red Cross National Blood program which is designed to furnish free blood to any person in need of it, regardless of his financial status, constitutes (1) a serious breach in the bulwark of our American free enterprise and consequent personal responsibility, social structure, and (2) an ominous precedent for future social change; and

Whereas, From the pamphlet "Report to Physicians by American Red Cross," (1) no charge can be made by the Red Cross for blood because it is obtained from voluntary donors, and (2) charge for its administration is the prerogative of the individual hospital or physician; and

Whereas, The Red Cross has done splendid work in providing blood during national emergencies and would undoubtedly be needed in future crises; and

Whereas, It is therefore imperative that a Red Cross blood program be kept in active existence; and

Whereas, The House of Delegates at the last interim session approved in principle the Red Cross National Blood Program; therefore be it

Resolved, That hospitals, blood banks or other agencies dispensing blood obtained from Red Cross donors be authorized to make a "ready-to-serve" or "standby" charge for their services in addition to the service charge. This charge to be, for private patients one-half the locally current rate for transfusions; for semiprivate patients, one-third the local rate; for ward patients, no charge; and where the blood is dispensed in the home, the same as the "service charge" made by the physician administering the blood; and be it further

Resolved, That this House of Delegates desires to keep open every feasible avenue to obtain supplies of blood.

Resolution on Housing

Dr. Edward H. McLean, Oregon, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

Whereas, The health and medical care of the indigent and semi-indigent have been and continue to be a major concern of the medical profession; and

Whereas, The housing of the individual is one of the important factors in the preservation of health and the prevention of disease; and

Whereas, The advocates of federal paternalism are proposing, on the basis of sentimental appeal and play on humanitarian emotions, a vast program of public housing ostensibly to meet the needs of the indigent and semi-indigent; and

Whereas, This program is deceptive in that it does not provide housing for the chronically ill, the indigent ,the unemployable, the casual worker, or the very low wage earner, since they cannot make the regular payments required by the contract, even with exemption from state and local taxes; and

Whereas, The proponents of this legislation openly admit that this program will put the federal government permanently into the business and control of all housing, with the elimination of private housing; and

Whereas, Similar public housing programs have been disastrous failures throughout Europe, in that they did not produce more houses, they did not produce houses for the poor, they did not remove slums and they did not reduce the prevalence of disease, but did become dangerous drains on the national treasuries; and

Whereas, These European government housing programs were one of the principal means by which socialistic cabinets and parliaments captured control; and

Whereas, Similar tendencies have already appeared in the propaganda machines of many housing authorities in this country, in the political corruption involved in the placement of housing projects and in the selection of tenants; therefore be it

Resolved, That this body record its unqualified opposition to any further encroachment of the federal government in the housing business.

Resolutions on Veterans' Administration Submitted by Board of Trustees as Supplementary Report

Dr. E. L. Henderson, Chairman, Board of Trustees, submitted as a Supplementary Report the following resolutions, which were referred to the Reference Committee on Legislation and Public Relations:

Whereas, Point seven of the Ten-Point National Health Program of the American Medical Association states: "The veteran shall be entitled to the highest available quality of medical care in accordance with existing law, and preferably in his community with a physician and hospital of his own choice"; and

Whereas, The Veterans Administration has the authority under certain conditions in service-connected disability and disease to make use of private practitioners and hospitals, thus allowing free choice; and

Whereas, The Veterans Administration is in urgent need of its presently available full time and part time personnel for pension and compensation examinations, for veteran hospital care and for authorization and administrative duties; and

Whereas, Proposed increases in the military services including those added by new draft provisions will tend to reduce the number of physicians available for Veterans Administration personnel; and

Whereas, Hospital care in private hospitals and the additional beds to be provided under the Hill-Burton legislation may limit the building of additional veterans' hospitals beyond our present day needs and available personnel; and

Whereas, Numerous veterans in many states have requested the right to make their own choice of physician and hospital in the treatment of their service-connected disability or disease; be it therefore

Resolved, That this House of Delegates of the American Medical Association request the Veterans Administration to put into uniform practice a free choice regulation for medical and hospital treatment in service-connected cases; and be it further

Resolved, That we urge state medical societies or associations to conform to this principle when making contracts or agreements with the Veterans Administration.

Report of Committee to Study Revision of the Constitution and By-Laws

Dr. F. F. Borzell, Chairman, presented a part of the proposed Revision of the Constitution and By-Laws, a mimeographed copy of which had been sent each member of the House, reading first the Constitution section by section, which sections were adopted individually and as a whole on motion of Dr. Borzell, duly recorded and carried, after amendment, with the exception of Section 3, Article 9, which was referred to the committee for rewording. Later, the committee submitted Section 3, Article 9, of the Constitution as it had been reworded, and this Section was adopted, on motion of Dr. Walter E. Vest, West Virginia, duly seconded and carried.

Dr. Borzell then read part of the proposed revised By-Laws until Dr. J. D. McCarthy, a member of the committee, relieved him. The By-Laws were adopted after amendment section by section on motions duly seconded and carried.

Dr. Mather Pfeiffenberger, Illinois, moved the adoption of the By-Laws as amended as a whole. Dr. George W. Kosmak, New York, moved to amend the motion that consideration be given to the appointment of a committee of three members from the committee that drew up these By-Laws, including the chairman, to edit and revise them in accordance with the suggestions made at this meeting. Both the original motion and the amendment were severally seconded and carried. Dr. Borzell thanked the members of the committee for their help.

Dr. Walter E. Vest, West Virginia, moved that the committee be thanked by a rising vote and the audience arose for the purpose.

A copy of the revised Constitution and By-Laws will be published after the committee to edit them has turned in its report.

Dr. James R. Reuling, New York, moved that the House recess until 9:30 a. m. Wednesday, June 23, and that the first order of business be the Executive Session, and the motion was seconded by several, and carried.

Third Meeting—Wednesday Morning, June 23
Executive Session

The House reconvened in Executive Session at 10 a. m., Wednesday, June 23, 1948, with the Speaker, Dr. R. W. Fouts, presiding.

The speaker read from the new Constitution and By-Laws referring to what an Executive Session is.

A motion of Dr. Thomas P. Murdock, Connecticut, to include certain officers of constituent associations, seconded by Dr. Walter E. Vest, West Virginia, and carried after amendment to include other individuals, was passed so that the House voted to include in Executive Session the presidents, secretaries, executive secretaries and editors of journals of constituent associations.

Report of Reference Committee on Credentials

Dr. G. Henry Mundt, Chairman, reported 173 delegates registered and requested that if the delegate from Puerto Rico is known to any of the delegates, he be requested to get in touch with Dr. Mundt.

Report of Reference Committee on Executive Session

Dr. Charles H. Phifer, Chairman, presented the following report:

1. Resolution on Nonsubscription to Some of Principles Adopted by National Health Assembly: Your reference committee has carefully considered this resolution. It has been informed that this is a preliminary recommendation of a lay committee and that the final action on this recommendation will be considered in the near future. Your reference committee recommends that at that time the representatives of the American Medical Association reaffirm to the officers of the National Health Assembly that the means test be utilized as a prerequisite for free medical service.

2. Resolution on Staff Personnel at Headquarters:

Your reference committee has given careful consideration to this resolution. It is of the opinion that the highly trained personnel from the headquarters office of the American Medical Association should be available to any committee requesting advisory service. It is the belief of your reference committee that diplomacy and tact can be used in the utilization of this service.

3. Resolutions on Editorials in The Journal of the American Medical Association: The resolutions were introduced unsigned. No one appeared to support them. It is the opinion of your reference committee that the Board of Trustees of the American Medical Association alone is responsible for the editorial policies as expressed in the various publications of the American Medical Association.

4. Resolution on Change in Constitution: It is the opinion of your reference committee that the component medical society is the sole judge as to whom it elects to membership, provided the applicant shall meet the medical requirements for membership, and so recommend.

5. Resolution on Disapproval of Utterances of a Representative at National Health Assembly: This resolution pertains to statements of representatives of the American Medical Association.

Your reference committee heard members of the American Medical Association in reference to both sides of this question. Several of these witnesses were in attendance at the Conference of the National Health Assembly in Washington. It developed during the inquiry that there was a misunderstanding in reference to statements made during the Assembly by representatives of the American Medical Association. A physician representing a member who introduced the resolution attended the hearing and requested that the resolution be withdrawn, thus disposing of the resolution.

Respectfully submitted.

Charles H. Phifer, Chairman.
George Braunlich.
A. A. Walker.
Raymond L. Zech.
Walter F. Donaldson.
George P. Johnston.
W. A. Coventry.

Dr. Phifer moved adoption of the report of the reference committee on the Resolution on Nonsubscription to Some of Principles Adopted by National Health Assembly, and the motion was seconded. Dr. Phifer accepted the suggestion of Dr. Lowell S. Goin, California, to include "and the use of government funds." With the inclusion of these words the House adopted the first section of the report of the reference committee after discussion by Dr. Lowell S. Goin, California, Dr. Walter E. Vest, West Virginia, and Dr. Phifer.

It was moved by Dr. Phifer and seconded by Dr. H. B. Everett, Tennessee, that the report of the reference committee on the Resolution on Staff Personnel at Headquarters be adopted. After discussion by Dr. John W. Cline, California, and Dr. Phifer, Dr. Cline moved as a substitution the adoption of the resolution as presented by Dr. Allen H. Bunce, Georgia, and this motion was seconded by Dr. Lowell S. Goin, California, and carried after discussion by Dr. Allen H. Bunce, Georgia, and Dr. Cline.

The report of the reference committee, dealing with the Resolutions on Editorials in The Journal of the American Medical Association was adopted on motion of Dr. Phifer, seconded by several and carried.

Dr. Walter E. Vest, West Virginia, moved adoption of the section of the report of the reference committee referring to Resolutions on Staff Personnel at Headquarters as amended and the motion was seconded by several and carried.

It was moved by Dr. Phifer that the report of the reference committee on the Resolution on Change in Constitution be adopted. The motion was severally seconded and carried.

Dr. Phifer moved adoption of the report of the reference committee on the Resolution on Disapproval of Utterances of a Representative at National Health Assembly. The motion was seconded by Dr. John W. Cline, California, and carried.

Report of Reference Committee on Emergency Medical Service

Dr. George E. Armstrong, Chairman, presented the report of the Reference Committee on Emergency Medical Service, which was adopted section by section and as a whole, after discussion and amendment. The report as amended reads:

1. Report of Council on National Emergency Medical Service as printed in Handbook: The first order of business was a consideration of the basic principles promulgated by the Council on National Emergency Medical Service as published in the House of Delegates Handbook. A consideration of these principles resulted in the following action by the Committee:

1. Approved as published.
2. Approved as published.
3. The first paragraph was approved as printed. However, it was unanimously decided that the second paragraph should be completely revised to read as follows:

"Plans should be immediately initiated which would insure procedures by which a single physical examination prior to induction into the armed forces will be carried out."

4. Approved as published.
5. Approved as published.
6. Approved as published.
7. Approved as published.
8. It was unanimously decided that paragraph 1 of Section 8 should be deleted completely. It was further agreed that paragraph 2 in the same section should be revised to read as follows:

"In the event of war or threatened war, requiring the procurement by the military establishment of medical officers from civilian life, *reasonable* provision should be made for their replacements after tour of active duty by others from civilian life." This merely consisted in the insertion of the word "reasonable" before the word "provision" and the deletion of the word "reasonable" from its position before the word "tour."

9. Approved as published.

2. Subjects Presented to Reference Committee by Dr. Richard L. Meiling, Secretary, Council on National Emergency Medical Service: The second general subject considered by the Reference Committee followed the appearance before it of Dr. Meiling, Secretary of the Council on National Emergency Medical Service. At his request, the following subjects were discussed and unanimously approved:

(*a*) The Council on National Emergency Medical Service requests that each state medical association or society and its component county medical societies, as well as the Medical Society of the District of Columbia, appoint and organize a committee directly responsible for national emergency medical service within its organization. Each such state committee is requested to present to the American Medical Association, Council on National Emergency Medical Service, a list of its members, as well as of the members of its component county society committees, and the terms of organization under which the committee is authorized to function. It is further requested that each state association cooperate fully with the Committee on National Emergency Medical Service in its program to meet the great and growing problems of medical health and sanitary services confronting the medical profession as related to national defense.

(*b*) Inasmuch as during times of peace as well as in times of national emergency a majority of the physicians composing the medical corps of the armed forces are of civilian origin, equitable general and flag ranks should be provided for amongst these civilian components of the armed services.

3. Resolutions on Emergency Medical Service: The third general subject considered and approved was the resolutions introduced by Dr. Ralph B. Eusden of California, with the notation that the resolution should begin "*Resolved,* That the American Medical Association through its Council on National Emergency Medical Service . . ."

Respectfully submitted,

GEORGE E. ARMSTRONG, Chairman.
HUGH P. SMITH.
WYMAN D. BARRETT.
MORTON D. WILLCUTTS.
GEORGE A. WOODHOUSE.
RAYMOND M. MCKEOWN.

Report from Reference Committee on Executive Session

Dr. Charles H. Phifer, Chairman, stated that the gentleman who introduced the Resolution on Change in Constitution reported on by the Reference Committee on Executive Session previously, desires to have his name withdrawn, and the committee desires to comply with the request and simply state that the resolution was received. The request was complied with by vote of the House.

Dr. Phifer reported further that the resolution referred to has received great publicity in New York and requested information as to whether the report in Executive Session should be released. On vote of the House it was agreed that the report of the reference committee stating in effect that the county medical society is the sole judge of its membership could be released.

Announcement of Secretary

Dr. George F. Lull, Secretary, announced that it was certain that the printers and managers had come to an agreement for a contract for eighteen months.

Request for Copies of Dr. Paul R. Hawley's Address

It was moved by Dr. William M. Skipp, Ohio, seconded by several and carried, that a copy of the address of Dr. Paul R. Hawley be given each member of the House.

On motion of Dr. H. B. Everett, Tennessee, duly seconded and carried, the House rose from Executive Session at 11 a. m.

Wednesday Morning—Continued

The House of Delegates convened in regular session at 11 a. m., the Speaker, Dr. R. W. Fouts, presiding.

Resolution on Membership in Council on Medical Education and Hospitals

Dr. Hilton S. Read, New Jersey, presented the following resolution, which was referred to the Reference Committee on Medical Education:

Mindful of the fact that 90 per cent of medical care in this country is dispensed in communities outside of medical centers and that an important function of the Council on Medical Education and Hospitals is the husbanding of medical education in these communities; therefore be it

Resolved, That this House directs the Board of Trustees to limit its nominations for one of the members of this Council to private practitioners of medicine, not faculty members of a medical school nor on the staff of a hospital asociated with a medical school or university.

Resolutions on Shortage of Interns

Dr. Robert H. Hayes, Illinois, presented the following resolutions, which were referred to the Reference Committee on Medical Education:

WHEREAS, The community hospital is confronted with a critical problem, "a shortage of interns"; and

WHEREAS, Without interns, the community hospital is seriously handicapped; and

WHEREAS, The American Medical Association is attempting to encourage its members to administer the best medical care possible to the sick; and

WHEREAS, The larger hospitals are now obtaining the greater percentage of the medical graduates as interns, and

WHEREAS, An intern who completes his training in a community hospital is well equipped for the general practice of medicine, and

WHEREAS, By our present day practices we are reducing the number of general physicians; therefore be it

Resolved, That in order to preserve the general practice of medicine, the American Medical Association institute a program to limit the number of interns of all approved hospitals on an equal basis according to yearly admissions, and be it further

Resolved, That this be referred to the Council on Medical Education and Hospitals for consideration.

Resolutions on National Congress of Parents and Teachers

Dr. Elmer Hess, Pennsylvania, presented the following resolutions, which were referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, The National Congress of Parents and Teachers has requested the cooperation of the American Medical Association through several of its departments, including the Council on Medical Service, the Committee on Rural Medical Service and the Bureau of Health Education; and

WHEREAS, The objectives of the National Congress are in many ways identical or similar to the objectives of the American Medical Association, particularly in the area of public health, school health services and health education; and

WHEREAS, The National Congress, in common with the American Medical Association, stands for local autonomy in government and for local health councils and for the maintenance of high standards of medical care, with emphasis on the responsibility of the home and the family physician; and

WHEREAS, The National Congress has a 4-point Health Program which is in general harmony with the 10-Point Health Program of this Association; therefore be it

Resolved, That it is the sense of this House of Delegates that the aforementioned departments of this Association, or other appropriate departments, be directed to cooperate fully with the National Congress so far as its objectives coincide with those of the American Medical Association; and be it further

Resolved, That this House of Delegates recommends that representatives of state medical associations enter into conferences with state health departments, state boards of education, and state Congresses of Parents and Teachers in order to counsel, advise, guide and assist the National Congress of Parents and Teachers in the attainment of our mutual objectives.

Request for Interpretation of the Question of Balloting

Dr. W. A. Coventry, Minnesota, requested an interpretation of the question of balloting as it appears in the Handbook, and the Speaker referred to this to the Reference Committee on Rules and Order of Business.

Greetings to Canadian Medical Association

It was moved by Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. Walter E. Vest, West Virginia, and carried, that a message of greeting and best wishes be sent to the Canadian Medical Association, now in session, to be composed by the Secretary of the Association and sent immediately.

Report of Reference Committee on Reports of Board of Trustees and Secretary

Dr. W. P. Anderton, Chairman, presented the following report dealing with the report of the Secretary, which on motions of Dr. Anderton, duly seconded and carried, was adopted section by section and as a whole:

REPORT OF THE SECRETARY

Your Reference Committee on Reports of Board of Trustees and Secretary has considered carefully the matters assigned to it in the Handbook distributed to this House of Delegates. It commends highly to you the Secretary's report. It is a fine example of what Dr. George Lull can do.

This report states that on April 1, 1938, there were 109,435 members of the American Medical Association and 173,879 physicians in the United States and its dependencies, showing that only 62.3 per cent of those eligible were members of our Association. In 1948, there are 201,200 physicians in the United States and its dependencies and 136,668 members of the American Medical Association. This shows an increase in the total and in the percentage of members of the American Medical Association during the last ten years. However, these figures show that 67.9 per cent of the physicians in the United States are members of the American Medical Association, whereas 32 per cent are not members. Your committee recommends that this House request the Board of Trustees to initiate a strong and persevering drive for new members extending through the constituent associations to the component societies, where vigorous committees should seek to enroll every eligible doctor.

The Secretary described in his report the cohesive value of the Annual Conference of State Secretaries and Editors. He includes a chart entitled "Organization of Constituent State and Territorial Medical Associations," April 1, 1948, which is worthy of study, although your committee feels that the column entitled "Number of Physicians in State 17th Ed. Directory" might well have been dated 1942.

Dr. Lull states that he has carried out the directives of the House of Delegates. What he has done, he has done well. However, your committee recommends that matters referred from this House for action or study or recommendation should each be reported on specifically, under some such heading as "Résumé of Matters Referred from House of Delegates."

Dr. Lull's short paragraph regarding his field activity is another example of his modesty. He has accomplished a great deal for the American Medical Association by his various speeches in different parts of the country. Many members who do not go to the annual session of the American Medical Association hear him, and have their faith and interest stimulated in our great body.

The wisdom in the appointment of Dr. Ernest B. Howard as Assistant Secretary is manifest. Your committee hopes it frees Dr. Lull from ordinary routine work of his office. The office of executive assistant has also been created, and Mr. Lawrence W. Rember has been occupying that post since last December, while Theodore R. Sills & Co. have been acting as public relations counsel. Considerable space in Dr. Lull's report is given to Mr. Rember's efforts and accomplishments for the public and the profession. It will take more than six months to evaluate the results. Your committee commends the Secretary's newsletter as helping many to keep in touch with the headquarters office. It is heartening to know that Dr. Lull believes the Press Relations Bureau has been a constructive effort and that the many other public relations activities have been beneficial for the Association.

Dr. Lull's well phrased peroration expresses his appreciation to his fellow members and the headquarters staff. In this your committee joins in the name of the House of Delegates.

SUPPLEMENTARY REPORT OF THE SECRETARY

In his Supplementary Report Dr. Lull took up two topics: The 1948 Budget for Public Relations and the labor situation at 535 North Dearborn Street.

Dr. Lull stated that the Public Relations estimated budget for 1948 had been inadvertently omitted from his original report. The item amounts to $397,000. This does not include public relations features accomplished by several committees, councils and officers.

In explaining the general labor conditions at headquarters, he told about the compositors' strike and how it is part of a similar citywide effort that became incipient in January and fully manifest on March 8, 1948. He stated that 230 out of 300 unionized employees are working loyally. THE JOURNAL and other publications are still appearing. Your committee congratulates Dr. Lull and his staff for their resourcefulness.

Respectfully submitted,

WALTER P. ANDERTON, Chairman.
THOMAS A. FOSTER.
WARREN L. ALLEE.
JESSE D. HAMER.
HERMAN A. LAWSON.

Report of Reference Committee on Legislation and Public Relations

Dr. Thomas A. McGoldrick, Chairman, presented the following report, which, on motions of Dr. McGoldrick duly seconded and carried, was adopted section by section and as a whole after discussion and amendment:

1. Resolution on Policy of Federal Children's Bureau: Your reference committee recommends that the House of Delegates of the American Medical Association enter a formal protest against this policy with the Federal Security Administrator, recommending to him that the Administration's policy be liberalized to permit participation on a state level by all physicians qualified.

2. Resolutions on Federal Grants-in-Aid to States: Your reference committee recommends approval of these resolutions.

3. Resolutions on Bacteriological Warfare: Your reference committee recommends that no action be taken by this House of Delegates on these resolutions.

4. Resolution on the National Health Assembly: Your reference committee recommends approval of this resolution.

5. Resolution on Association of Interns and Medical Students: Your reference committee recommends approval of this resolution.

6. Resolutions on Advancement of Rank of Surgeons General of Army and Navy and of Air Surgeon: Your reference committee recommends approval of these resolutions.

7. Resolution on Method of Selecting Outstanding General Practitioner: Your reference committee recommends approval of this resolution.

8. Resolutions on Activities of Veterans Administration: As the situation complained of does not obtain at the present time, your reference committee recommends that no action be taken.

9. Resolutions on Hospital and Medical Care for Veterans: Your reference committee recommends approval of these resolutions.

10. Resolutions on Washington Office of the American Medical Association: Your reference committee recommends approval of the first two parts of the resolutions, with the deletion of the third part.

11. Resolution on Life Insurance Fees: Your reference committee recommends that this matter be referred to the Bureau of Medical Economic Research for study.

12. Supplementary Report of Board of Trustees on Resolutions on Veterans Administration: A supplementary report

of the Trustees containing resolutions on the Veterans Administration supplements some of the statements previously reported. The reference committee approves adoption of the resolutions.

13. Resolution on Housing: One final matter came to your committee today from the delegate of the Oregon State Medical Society, which deals with the general housing situation and the dangers which can arise in other countries and might arise here, tending to socialization of people through housing plans of the federal government. While your reference committee is generally opposed to encroachment by the federal government into the field of private enterprise, it is not sufficiently informed on the proposed subject to recommend any action at this time.

Respectfully submitted,

Thomas A. McGoldrick, Chairman.
George A. Unfug.
Donald Cass.
Clark Bailey.
Charles L. Shafer.

Report of Reference Committee on Rules and Order of Business

Dr. H. P. Ramsey, Chairman, presented the following report:

All five members of the committee met on the question of the conduct of elections tomorrow, with the Secretary of the Association.

If you will refer to the Handbook, pages 38, 39 and 40, you will find the rules and the order of business for this session laid down. To these rules the reference committee adheres.

If you will look on page 40, no. 8, you will find a reference to "Roll Call for Casting Ballots"—that is ballots in the pleural. There will be one roll call for the casting of all three ballots as indicated at that point.

If you will refer to page 38, Title 4, which says "Election of Officers," at that point, this chairman will be glad to reinterpret this over again in case any members are not now present, to the following effect, that at the time nominations are to be opened the Secretary agrees to move the blackboard to the middle here, where it may be easily visible chiefly from the central portion of the room. That will be a good time for delegates to get as close to the front as possible.

At that time nominations will be taken for the white ballot. On this white ballot are places for your votes for the following officers: President-Elect, Vice President, Secretary, Treasurer, Speaker of the House, and Vice-Speaker of the House.

As these nominations are made, the Secretary will record the nominations on the blackboard in your full view. At the conclusion of all the nominations for the white ballot, the Speaker will be requested to announce that all nominations for officers appearing on the white ballot are in, and will request at that time that you inscribe your ballots as you please and put them in your pockets.

The Speaker asked if he is to declare nominations closed for each office or at the conclusion of all of them and Dr. Ramsey stated: The rule is to require each office closed as all nominations are in for that office, but at the conclusion of all, on the white ballot, for clarification, the Speaker will declare that all nominations for the white ballot are in, at which time you may inscribe the ballots and put them in your pockets. The same procedure will be then followed for the items which appear on the blue ballot which are for members of the Board ofTrustees and for the place of the annual session of this Association in 1951.

At the conclusion of that, the Speaker will be asked to notify you that the blue ballot nominations are all in. The same procedure will then be followed with respect to the yellow ballot which has places for members of the Judicial Council, members of the Council on Scientific Assembly, members of the Council on Medical Education and Hospitals, and members of the Council on Medical Service.

At the conclusion of all of that, there will then be one roll call. This is for the expedition of business.

The members may pass and drop their folded ballots all at once into the one ballot box.

At this point, Mr. Speaker, the committee has a special recommendation for you, namely, that there have been appointed by the Speaker three tellers. It is recommended by the reference committee that the committee have tellers assigned, one color to each of these members, and that the Speaker appoint two associates to each member, making a total list of tellers of nine, so that each section of the tellers' committee may count his color ballots simultaneously, thus further expediting the business of the House. If the Speaker will do that, this will not take much more than the length of time consumed by the actual roll call.

The Speaker asked if the three ballots were to be passed out simultaneously or whether in the beginning the white ballot would be passed out and then each in succession, and Dr. Ramsey replied that they would all be passed out at the same time and added:

One further point, and that concerns the matter of any offices for which there may be a recount. The same type of ballot will not be circulated. The Secretary will be requested to circulate a particular type of paper for recount ballots.

On motion of Dr. Ramsey, seconded by several and carried, the report of the reference committee was adopted.

Report of Reference Committee on Medical Education

Dr. W. D. Stovall, Chairman, presented the following report of the Reference Committee on Medical Education:

1. Report of Council on Medical Education and Hospitals: The Reference Committee on Medical Education has carefully reviewed the report of the Council on Medical Education and Hospitals as printed in the Handbook and the Supplementary Report of the Council, and is impressed by the number and variety of the problems dealt with by the Council.

Special attention is called to the survey of medical schools. During the course of the year the Council enlarged the survey of medical schools to include a survey of medical education in its broad aspects. The Council decided that the time is appropriate to reexamine the methods and objectives of medical education so that a clear view may be obtained of the extent to which medical education has been adapted to modern needs.

The Council was also concerned with the training of general practitioners and is encouraged by the number of medical schools already conducting programs to interest students in general practice. It is encouraged with the number of internship and residency programs being established to provide training for young physicians to enter general practice.

The Council gave considerable attention to the cost of medical education and, in studying this subject, it finds that exclusive of the costs of patient care and funds from outside sources, more than $43,000,000 was spent for the current academic year. Less than 28 per cent of this amount was provided from student fees. The urgency with which the Council views this matter is revealed by its action taken since publication of the Handbook in recommending that funds for medical education be obtained by public donation and that the American Medical Association and other interested groups form a national foundation for this purpose. This recommendation has been approved by the Board of Trustees.

The reading of this report shows that the Council has dealt vigorously with such problems as the supply of physicians, supply and distribution of interns and uniform intern placement. In the latter respect, the Council has suggested to medical schools and hospitals a plan for securing registration and placement of interns.

The forward looking activities of the Council are illustrated in its action concerning inspection of residency programs in hospitals. The Council collaborated in a review of all residencies in orthopedic surgery as a pilot experiment designed to evaluate the system employed by the Council in appraising residencies, and was pleased to find that the results of inspection by one of its own staff were in close agreement with those performed by selected orthopedic surgeons.

The Council established a liaison committee between the Advisory Board for Medical Specialties and the Association of American Medical Colleges, which meet three or four times a year to bring before these agencies the methods for satisfying their differences. This liaison committee "should be in a position to make constructive suggestions with respect to many of the general problems related to the specialty movement." These and many other activities portray the vigor with which the Council is making earnest and sincere efforts to solve the problems of medical education.

2. Supplementary Report of Council on Medical Education and Hospitals: The Supplementary Report of the Council on Medical Education and Hospitals has raised the question of the advisability of attempting the conditioning of approval of educational programs of medical schools and hospitals on the basis of financial agreements of such institutions with staff members.

The committee concurs with the Council in the opinion that such is unwise and possibly illegal.

3. Resolutions on Hospitals and Medical Schools Engaging in the Practice of Medicine: The committee feels that the resolutions submitted by the Missouri State Medical Association can be more appropriately handled by the Committee on Hospitals and the Practice of Medicine, the chairman of which is Dr. Elmer Hess of Pennsylvania. The committee recommends that these resolutions be referred to that committee.

4. Report of Committee on Intern Placements: The Report of the Special Committee on Intern Placements, of which Dr. William Bates of Pennsylvania is chairman, was considered by the reference committee. It was noted that this special committee was appointed by the Speaker of the House at the request of the House at its session in January 1948, to study the supply and distribution of interns.

The reference committee recommends the adoption of this report with commendations to this special committee for the amount of work which it put into this investigation and its excellent recommendations.

5. Resolutions on Medical Education: The resolutions introduced by Dr. S. J. McClendon, California, concerning the subsidizing of medical education and medical students by the federal government, and the report of the Committee for the Improvement of Child Health of the American Academy of Pediatrics recommending federal support for pediatric education, were discussed by a large group before the reference committee. The committee is unanimous in its disapproval of the federal government's subsidizing medical education, and in view of the fact that the Council on Medical Education and Hospitals took the following action on last Sunday, the committee recommends that the Council's statement be substituted for the resolution introduced by Dr. McClendon:

> The Council has gone on record favoring an intensive effort to secure voluntary support for medical education. Therefore, the Council is opposed to the plan of the American Academy of Pediatrics. The Council feels that it is extremely unwise for one specialty in medicine to seek federal support before medicine and medical education in general have approved this principle.

6. Resolution on Bureau of Health Education: The resolution introduced by New Jersey recommending the change in name of the Bureau of Health Eucation to the Bureau of Child Health and Health Education seems unnecessary to the Reference Committee. Since health education is an all-inclusive term, the committee recommends that the name of the Bureau be retained as it is. This resolution is therefore not approved.

7. Resolution on Review of Hospital Standardization: This resolution, offered by the Oregon State Medical Society, asking the Council on Medical Education and Hospitals to authorize and direct a study for more inclusive standards for hospitals, deals with a subject which is now under consideration by the Council on Medical Education and Hospitals. The Council is actively engaged in the promulgation of such standards. Therefore, your committee recommends that this resolution be referred to the Council on Medical Education and Hospitals for further guidance.

8. Resolution on Method of Selecting Each Year the Outstanding General Practitioner of American Medical Association: The resolution introduced by the Illinois State Medical Society provides for the selection of the outstanding general practitioner of the year. It recommends that each county society recommend to its state society the name of the candidate of its choice as the outstanding practitioner, and that the state societies submit a candidate in turn to the Board of Trustees of the American Medical Association. The Board of Trustees shall select three names which will be submitted to the House of Delegates for its selection of the outstanding practitioner of the year. The resolution further provides that state medical societies may confer awards with fitting public ceremony on the physician of their choice. The committee approves this resolution.

On motions of Dr. Stovall, duly seconded and carried, the first seven sections of the report of the reference committee were adopted.

Dr. Stovall moved adoption of the report of the reference committee dealing with the Resolution on Method of Selecting Each Year the Outstanding General Practitioner of the American Medical Association, but after discussion concerning action on the resolution by another reference committee presented a substitute motion that this section of the report be not received, which was adopted.

On motion of Dr. Stovall, seconded by several and carried, the report of the reference committee was adopted as a whole.

On motion of Dr. G. V. Caughlan, Iowa, seconded by Dr. H. B. Everett, Tennessee, and carried, the House recessed at 12:25 p. m., to reconvene at 2 p. m.

Wednesday Afternoon

The House of Delegates reconvened at 2:15 p. m., with Dr. R. W. Fouts, the Speaker, presiding.

Discharge of Committee to Study Revision of the Constitution and By-Laws

The Speaker stated that after the adoption of the revised Constitution and By-Laws, nothing was said about discharging the committee.

It was moved by Dr. Walter E. Vest, West Virginia, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, and carried, that the Committee to Study Revision of the Constitution and By-Laws be discharged.

Appointment of Committee to Edit and Prepare for Publication the Revised Constitution and By-Laws

The Speaker appointed Dr. F. F. Borzell, Philadelphia, Dr. Joseph D. McCarthy, Omaha, and Dr. Louis A. Buie, Rochester, Minn., members of the Committee to Edit and Prepare for Publication the Revised Constitution and By-Laws.

Report of Reference Committee on Reports of Board of Trustees and Secretary

Dr. W. P. Anderton, Chairman presented the following report:

REPORT OF BOARD OF TRUSTEES

Your committee notes the increased expenditures which exceeded income by $50,827.55. Although mindful of increasing expenses, the committee expresses concern over this deficit and recommends that the House of Delegates be informed of the prospects of subsequent deficits and the proposed plans for meeting them, if they occur.

After meeting with the Chairman of the Board of Trustees, the committee is prepared to inform the House in some degree of the budget as follows:

First, the Centennial Meeting of the Association produced extraordinary expenses, especially for the entertainment of distinguished foreign guests. Also, salary increases, increased costs of materials, extended field work and regional meetings by the Councils have added to expenses. In order to meet the anticipated increase of operating expenses, the advertising rates in our publications have been increased, and at the last Interim Session the Fellowship dues were raised from $8 to $12 a year. With due regard to these facts, the Trustees believe that a deficit will be avoided in 1948. However, we feel that this House should be aware that each time we create a new committee or new council we are in effect increasing expenditures.

Your reference committee reads with gratifying interest the achievements of the editorial boards and business management of the publications and expresses justifiable pride in the results. It furthermore commends the work on the publication of

Standard Nomenclature. Your reference committee, as have similar committees in the past, commends the editorial boards for their success in publishing special periodicals of excellent quality. It believes that the publishing of books by contract with outside, well established publishing concerns has been satisfactory.

It notes the financial loss from the publication of *Hygeia.* It believes, however, that *Hygeia* is an important magazine in its field and is justified, even at a loss. As has been said before, *Hygeia* is a vehicle for spreading accurate information on health matters and should be a messenger of good will from the American Medical Association. It is hoped that work on the Directory may go forward with increasing speed.

The work of the Library gives aid of inestimable value to the profession, and particularly to our colleagues in foreign lands —work which the committee believes should be encouraged and well supported. The same may be said of the Quarterly Cumulative Index Medicus.

The committee feels that the Cooperative Medical Advertising Bureau has improved its efficiency since its reorganization and it deserves commendation.

The reports of the councils and laboratories indicate, as they have in the past, the abundance and excellence of their diversified accomplishments. The committee recommends that some method of furnishing information on the work of the councils and laboratories to the rank and file of the membership be studied. Your committee believes that information about the accomplishments of these departments of the Association gains for the Association improved understanding and cooperation from the membership.

Council on Industrial Health: Your reference committee has reviewed the report of the Council on Industrial Health. It contains no specific recommendations requiring action of the House, nor recommendations to the House from this reference committee. We commend particularly the promotion of health services for small industrial plants and small business concerns. We note with approval the joint study of the Council on Industrial Health and the Council on Pharmacy and Chemistry on the prevention and treatment of silicosis by means of aluminum.

Bureau of Health Education: In reviewing this splendid report your committee finds no recommendations requiring action of the House.

Bureau of Legal Medicine and Legislation: (*a*) Local Public Health Units: The Bureau calls attention to U. S. Senate Bill 2189 providing funds to assist the states in providing for local public health units. This bill has the approval of the organized State and Territorial Health Officers and the National Congress of Parents and Teachers. To the extent that the bill will provide federal aid in development of local health units, it conforms to policies adopted by our House of Delegates. Attention should be directed, however, to the fact that the bill as now phrased gives no assurance that local health departments will not provide care for the sick. S. 2189 should be amended by adding a definition of basic public health function, and definitely to exclude care of the sick. Should this be done the legislation would, in principle, conform to policies adopted by this House of Delegates.

(*b*) Inequities of Income Structure—Pension Plans for Physicians: Considering in detail the discussion in the report concerning the inequities in the income tax structure as related to physicians, the committee would recommend that this House of Delegates record its thanks for the action of the Board of Trustees wherein the Board recorded its approval, in principle, of the proposal that physicians as small proprietors, or as partners, be permitted deduction of costs in computing income taxes to formulate pension programs for themselves, provided a reasonable ceiling be placed on the amount of pension. The committee recommends that the Bureau of Legal Medicine and Legislation keep in close contact with this development and report further at future meetings.

(*c*) Epilepsy and Automobile Accidents—Drunken Drivers: It is recommended that the Committee to Study Problems of Motor Vehicle Accidents created by the House of Delegates in 1936 continue its efforts in cooperation with the National Safety Council, especially in the matter of assisting states to adopt laws requiring that names of epileptic persons be furnished to each state motor vehicle department. Furthermore, we feel that the Bureau should continue to stress the value of chemical tests for alcoholic intoxication.

(*d*) Medical Legal Aspects of Artificial Insemination: Inquiries have developed from many sources regarding the status of a child born after artificial insemination. The primary interest as reflected by these inquiries has to do with the legitimacy of the offspring when the donor is a person other than the husband of the woman inseminated. Many medical-legal aspects of this type of situation have been created and the answer is not clear, in view of several court decisions. We recommend that this House of Delegates endorse, in principle, enactment of legislation designed to legitimize children born after this manner.

(*e*) The Medical Examiner: It is noted with considerable interest that the coroner-medical examiner system is gradually replacing the old coroner system. Particular attention is called to the accomplishments in Virginia, while the medical examiner laws have also been improved in Maine, New Hampshire and New Jersey. Your committee wishes to reemphasize the previous pronouncements of this House in favor of the medical examiner system to replace the antiquated coroner system.

The Bureau of Legal Medicine also discusses in its report the bills introduced in several states designed to prohibit use of animals for medical research. It is gratifying to note that none of these bills passed in 1947. Several states, on the contrary, passed laws or strengthened preexisting laws specially recognizing the need for utilization of animals in continuing medical research. Your committee wishes to endorse the action of the National Society for Medical Research in sponsoring legislation in the various states for the protection of medical research.

Bureau of Exhibits: We note with approbation the report of the Bureau of Exhibits and the splendid scientific and technical exhibits at both the interim and annual sessions. These exhibits speak for themselves and are of inestimable educational value.

Bureau of Medical Economic Research: Your committee has reviewed the excellent report of the Bureau of Medical Economic Research and finds no recommendations that require action by this House. We know of the fine work this Bureau has been doing and we commend its usefulness and practical help to our professon.

Bureau of Industrial and Personnel Relations: Your committee reviewed the comprehensive report of the Bureau of Industrial and Personnel Relations. It shows that accepted business practices are applied in the administration of the American Medical Association.

Committee on Scientific Research: This committee shows in its financial statement that $14,680 was paid in grants for scientific research in 1947. Its detailed report shows the magnitude and ramifications of the investigations which it encourages. Your reference committee recommends to this House that it advocate to the Board of Trustees the continuance of support for such valuable activities, including those under the auspices of the Committee on Therapeutic Research of the Council on Pharmacy and Chemistry.

SUPPLEMENTARY REPORTS OF THE BOARD OF TRUSTEES

1. Revision of National Health Program: This reference committee notes the rewording of point 7 in the National Health Program and recommends adoption of the following revision: "7. The veteran shall be entitled to the highest available quality of medical care in accordance with existing laws, and preferably in his own community with a physician and hospital of his own choice."

2. World Medical Association: Dr. Elmer L. Henderson, Chairman of the Board of Trustees, read to this House an interesting and informative account of the part played by our representative in the formation of the World Medical Association. The reference committee commends the vision and ability of the Board of Trustees in this matter. It congratulates the World Medical Association on its good sense in electing Dr. Louis H. Bauer to be Secretary-General.

3. Cooperation with the Secretary of the Interior: This reference committee has reviewed the report of the Trustees concerning the consultant medical teams which the Department of

Interior sent to Puerto Rico and the Virgin Islands, Alaska, and the Navajo Indians. It commends this action of the Board of Trustees.

4. Merger of the Committee on Rural Medical Service With the Council on Medical Service: Your reference committee has considered the recommendation that the Committee on Rural Medical Service be merged with the Council on Medical Service,. and your reference committee recommends that the following be substituted for this recommendation:

Amend Chapter X, Section 4 (A) of the By-Laws by adding: "5. Council on Rural Health and Medical Care."

Amend Chapter X, Section 4 (B) of the By-Laws by adding the following paragraph:

"The Council on Rural Health and Medical Care shall consist of nine members appointed by the Board of Trustees, with the Secretary and a member of the Board of Trustees as exofficio members. To the original membership of the Council, two members shall be appointed for a term of one year, two members for terms of two years, two members for terms of three years, two members for terms of four years and one member for a term of five years. Thereafter members shall be appointed for a term of five years."

Amend Chapter X by adding the following new paragraph under "I. Duties":

"(5) Council on Rural Health and Medical Care.—The functions of this Council shall be: (1) to study the needs of the rural population with regard to health and medical care in their broadest aspects; (2) to promote cooperation with all individuals and organizations interested in the rural health problem; (3) to stimulate a program of education among rural people and rural physicians concerning all the factors involved in the rural health problem; (4) to exercise closest cooperation with the Board of Trustees and with all councils, bureaus and committees of the American Medical Association in the furtherance of the functions of this Council; and (5) to develop and assist committees on rural medical service originating within the constituent and component societies of the American Medical Association."

5. Conclusion: It is difficult for this reference committee properly to phrase the debt of gratitude which is owed to the Board of Trustees by this House of Delegates, the American Medical Association and the entire people of the United States. The unselfish and self-sacrificing devotion of these gentlemen brings its own reward in the knowledge of a job well done.

Respectfully submitted,

W. P. Anderton, Chairman.
Thomas A. Foster.
Warren L. Allee.
Jesse D. Hamer.
Herman A. Lawson.

On motions of Dr. Anderton, duly seconded and carried, the report of the reference committee was adopted section by section and as a whole, with the exception of Section 4, which was referred to the Reference Committee on Amendments to the Constitution and By-Laws, and after deletion of a paragraph referring to the Red Cross Blood Bank Program. Dr. Louis H. Bauer, Trustee, suggested that if the proposed amendment to the By-Laws is adopted, the article in the By-Laws pertaining to the Council on Medical Service would also have to be amended.

Report of Committee on Hospitals and the Practice of Medicine

Dr. Elmer Hess, Chairman, presented the following report:

As you all know, the Board of Trustees appointed a special committee, of which I happen to be the Chairman, to study this problem of the hospitals practicing medicine. Your committee has had many meetings since this House has been in session, and this morning resolutions from Missouri were referred to our committee. I rather questioned whether these resolutions could be referred to us because we are not at the moment a committee of this House.

On the other hand, I should like to call your attention to something which I think you should know, and that is this, that so far as your committee can find out, the American Medical Association has no police power and it cannot discipline anybody or anything, and in the resolutions this morning you have asked us to recommend to the Board of Trustees that we discipline medical schools and hospitals. We have no such authority legally. Your committee is having a difficult time trying to find out what we can do to put teeth into our actions toward organizations and individuals which do not comply with the broad terms of our Principles of Medical Ethics. But I want you to know and understand that the American Medical Association per se has no police power.

Report of Reference Committee on Medical Education

Dr. W. D. Stovall, Chairman, presented the following report:

1. Resolution on Cancer Detection Centers: Your reference committee approves of this resolution.

2. Resolution on Membership on Council on Medical Education and Hospitals: Your Reference Committee on Medical Education, mindful of the fact that two vacancies will occur on the Council on Medical Education and Hospitals at this session, suggests that this House of Delegates request that the nominees by the Board of Trustees for one of these vacancies be limited to private practitioners of medicine not on the faculty of nor connected with any institution associated with any medical college or university.

3. Resolutions on Shortage of Interns: Your Reference Committee recommends adoption of the following resolutions:

Whereas, The community hospital is confronted with a critical problem "a shortage of interns"; and

Whereas, Without interns, the community hospital is seriously handicapped; and

Whereas, The American Medical Association is attempting to encourage its members to administer the best medical care possible to the sick; and

Whereas, The larger hospitals are now obtaining the greater percentage of the medical graduates as interns; and

Whereas, An intern who completes his training in a community hospital is well equipped for the general practice of medicine; and

Whereas, By our present day practices we are reducing the number of general physicians; therefore be it

Resolved, That in order to preserve the general practice of medicine, the American Medical Association institute a program to limit the number of interns of all approved hospitals on an equal basis according to yearly admissions, and be it further

Resolved, That this be referred to the Council on Medical Education and Hospitals for consideration.

Respectfully submitted,

W. D. Stovall, Chairman.
Joseph H. Howard.
J. D. McCarthy.
Joseph F. Londrigan.

On motions of Dr. Stovall, duly seconded and carried, the first two sections of the report of the reference committee were adopted.

Dr. Stovall moved adoption of the Resolutions on Shortage of Interns, and the motion was seconded. After discussion, the resolutions, on motions, duly made, seconded and carried, were amended so as to substitute the word "allocate" for the word "limit" so that the first part of the resolutions will read: "*Resolved*, That in order to preserve the general practice of medicine, the American Medical Association institute a program to allocate the number of interns of all approved hospitals on an equal basis according to yearly admissions."

On motion of Dr. Stovall, duly seconded and carried, the report of the reference committee as amended was adopted as a whole.

Report of Reference Committee on Sections and Section Work

Dr. Robertson Ward, Chairman, presented the following report, which was adopted on motion of Dr. Ward, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried:

The only business referred to this committee was the report of the Council on Scientific Assembly, on pages 187, 188 and 189 of the Handbook.

At the close of this report, a suggestion was made that instead of each section being represented by a delegate in the House of Delegates, as is now the case, there be formed a scientific representative assembly of Section delegates, and that this body elect a maximum of five delegates to represent the Sections. It is the consensus of the reference committee that since the House of Delegates is now operating under the new Constitution and By-Laws, which does not limit the number of delegates of which the House consists, the reason for this suggestion no longer exists.

The reference committee further recommends that the Sections be represented by an elected delegate, as is now in vogue.

Respectfully submitted,

Robertson Ward, Chairman.
A. S. Giordano.
Leo G. Christian.
Charles T. Stone.
Edward L. Compere.

Report of Reference Committee on Medical Service and Prepayment Insurance

Dr. H. B. Mullholland, Chairman, presented the following report, which, on motion of Dr. Mullholland, duly seconded and carried, was adopted section by section and as a whole after discussion:

1. Several Resolutions Referring to Current Health Insurance Coverage of Employees of the American Medical Association: Your committee considered the several resolutions referred to it pertaining to the current health insurance coverage of the employees of the American Medical Association. Your committee also considered the evidence presented to it by the official representatives of the American Medical Association, House of Delegates and others.

Your committee is of the opinion that because the American Medical Association has sponsored and encouraged the development of nonprofit voluntary prepayment hospitalization and medical service plans that the discontinuance of Blue Cross Hospital Service for its employees has reacted unfavorably to the nonprofit voluntary prepayment hospital and medical service philosophy and, likewise, unfavorably to the interest of plans developed by the various state and county medical societies throughout the country.

However, your committee is of the opinion that circumstances and conditions prevailing at the time the present insurance contract was entered into were such that this action was thought to be in the best interests of the employees of the American Medical Association.

Your committee recommends because of the above-stated opinions that at the expiration of the present contract of hospital and medical health coverage the American Medical Association, through its proper officials, make every sincere effort to procure this coverage for its employees through Blue Cross-Blue Shield local organization. The committee understands that this coverage is and will be available.

2. Report of Committee on Nursing Problems: Your committee has considered the report of the committee appointed to study the nursing problem of the United States. It would especially commend the members of this committee for the tremendous volume of work done and the excellency of the report submitted.

The recommendations with reference to the classification of nurses, namely into (*a*) professional nurses with a subdivision of (1) nurse educators and (2) clinical nurses; and (*b*) trained practical nurses has the full approval of this committee, and it would like to emphasize the importance of creating opportunity for advancement one grade to the other in the various categories.

It would also call especial attention to the paragraph pertaining to the economic problems affecting nurses.

The committee agrees that it would be most unwise for groups of nurses to set themselves up as bargaining agents. It would heartily concur in the recommendation for the continuance of this committee. It would suggest that copies of the nursing committee report be sent to all hospital associations, the American Nurses Association, the National League for Nursing Education, the American College of Surgeons, the American Surgical Association and the American College of Physicians, and that the widest possible publicity be given to this report.

3. Report of Committee on Rural Medical Service: The committee approves the report of the Committee on Rural Medical Service and highly commends it on the splendid progress already made in its three years of work. The members have given unsparingly of their time from their busy practice to this work. The increasing interest of foreign groups in community health matters and their need for guidance in these activities has created a need for a field secretary which has already been authorized by the Board of Trustees. It is hoped that this addition to the committee's personnel will relieve the members of much arduous work and enable them to carry their influence deeper into the rural areas.

4. Resolution on Discrimination Against Insurance Industry of This Country: Your committee has considered the resolution of the Rhode Island Medical Society with reference to the requirements of a one year period of operation for plans underwritten by private insurance carriers before such plans can be formally considered for the seal of acceptance, and recommends that this resolution be referred to the Council on Medical Service for its consideration.

Respectfully submitted,

Henry B. Mulholland, Chairman.
H. G. Hamer.
Stephen E. Gavin.
D. A. Rhinehart.
L. Howard Schriver.

Attendance at Executive Session

Dr. E. Vincent Askey, California, raised the question of limiting attendance at the Executive Session to members of the House and moved that the House reconsider the action of the House during the morning as to who should be admitted to Executive Session. The motion was seconded by Dr. William Weston, Section on Pediatrics, and, after discussion, the House voted to reconsider its action.

Dr. Askey then moved that the Executive Session of the House shall consist of members of the House of Delegates only. The motion was seconded and carried after the Vice Speaker read Article VI, Section 2 of the Constitution stating of whom the House of Delegates is comprised.

Proposed Amendment to By-Laws Chapter X, Section 4 (B)

Dr. Hilton S. Read, New Jersey, presented the following proposed amendment to the By-Laws, which was referred to the Reference Committee on Amendments to the Constitution and By-Laws:

It is recommended that Chapter X, Section IV (B) Standing Committees—Membership, of the By-Laws as adopted by this House yesterday which now reads "The Council on Medical Education and Hospitals shall consist of seven members elected by the House of Delegates on nomination by the Board of Trustees for terms of seven years so arranged that at each annual session the term of one member expires" shall be amended to read:

"The Council on Medical Education and Hospitals shall consist of seven members or Service Fellows one of whom shall be a private practitioner of medicine not a faculty member of a medical school and not a member of a staff of a hospital associated with a medical school or university, elected by the House of Delegates on nomination of the Board of Trustees for seven years so arranged that at each annual session the term of one member expires."

Resolution on Executive Sessions

Dr. James C. Sargent, Wisconsin, presented the following resolution, which was referred to the Reference Committee on Rules and Order of Business:

Whereas, The interests of the constituent state and territorial associations of the American Medical Association are identical with those of the American Medical Association; and

Whereas, The constituent state and territorial medical associations elect or employ officers and executives whose loyalty to their associations is unquestioned; and

Whereas, The constituent state and territorial medical associations, at their own expense, send their officers and executives to the meetings of the American Medical Association; therefore be it

Resolved, That the policy of the House of Delegates of the American Medical Association shall be that executive sessions of the House of Delegates shall include among those permitted to remain in attendance all registered delegates, all registered alternate delegates, all properly registered and identified presidents, secretaries, editors and executive secretaries of the constituent state and territorial medical associations, and the heads of Councils, Bureaus and Committees of the Association, with the understanding that this policy may be set aside or restricted when in the judgment of the House of Delegates such a change shall be deemed desirable.

On motion of Dr. Robert H. Hayes, Illinois, seconded by Dr. Val H. Fuchs, Louisiana, and carried, the House went into Executive Session at 3:30 p. m.

Executive Session

The House of Delegates convened in Executive Session at 3:40 p. m., with the Speaker Dr. R. W. Fouts, presiding.

Report of Reference Committee on Miscellaneous Business

Dr. E. S. Hamilton, Chairman, presented the following report, which was adopted unanimously on motion of Dr. Hamilton, seconded by Dr. James R. Reuling, New York, and carried.

REPORT AND RESOLUTION DEALING WITH THE RED CROSS BLOOD BANK

Your reference committee had referred to it that portion of the report of the Board of Trustees in regard to blood banks as well as several resolutions in regard to the same subject. It has reviewed and studied all carefully and held several committee meetings with excellent attendance at which every man present had the opportunity of free discussion. Your reference committee feels that it is unnecessary to consider each resolution individually and much more important to view the problem on a broad national basis and attempt to outline some general principles in regard thereto.

Realizing the possibility of a national emergency requiring large amounts of blood in the treatment of civilian and military casualties and realizing the unique position of the American Red Cross in disaster relief, your committee is of the opinion that no change should be made at this time in the "approval in principle" of the participation of the American Red Cross in the national blood program voted at the Interim Session in January 1948.

However, your committee would call attention of the House to the fact that long before the Red Cross entered this field of medical practice many previously established blood banks had been operating successfully and adequately under strictly local supervision and had rendered invaluable services to the community. To disturb such independent local units would, in the opinion of your committee, be unwise and disastrous, for they have repeatedly demonstrated their ability to meet local and regional needs. Furthermore, they have demonstrated the practicability of free enterprise and local initiative.

From the testimony presented at the several hearings before your reference committee, it is quite evident that there has been confusion and misunderstanding between local chapters of the Red Cross and the medical profession at local levels.

It is the opinion of your reference committee that the "Approval in Principle" be construed as follows:

First, local control must be by the county medical society.

Second, the local medical society should be the initial contact in the contemplation of inauguration of a new blood bank.

Third, no publicity nor news releases shall be released except by mutual consent of the local county medical society and the local chapter of the American Red Cross.

Fourth, difference of opinion in establishment or operation of a blood bank in either administrative or technical detail shall be arbitrated at state levels by joint committees from the state medical society and the American Red Cross.

Recognizing the professional ability of the physicians constituting the Advisory Committee of the national American Red Cross and the efforts they have made in behalf of this program as well as the efforts of a similar committee approved by the House of Delegates of the American Medical Association in January 1948, your reference committee feels that this intimate cooperation should be continued. However, it is also the feeling of your committee that in a program of such national importance, even greater effort and cooperation is needed in the future to attain desired objectives. Accordingly, it recommends that the committee of the American Medical Association be enlarged to nine members with definite instructions to meet at stated intervals at the call of either the chairman of our committee or that of the Red Cross. The committee of the American Medical Association so appointed shall report to the House of Delegates at each session.

Your reference committee feels that any provision of free medical service or supply to everyone without regard to ability to pay is in opposition to the principle that it is the responsibility of an individual to assume the obligations of medical expense just as he does for other living expense. Your reference committee deplores the use of the term "free blood" in the publicity of the American Red Cross.

Respectfully submitted,

Edwin S. Hamilton, Chairman.
Charles R. Rountree.
J. H. Moore.
Thomas M. Brennan.
Claude R. Keyport.

Report of Reference Committee on Executive Session

Dr. Charles H. Phifer, Chairman, presented the report, which was adopted, section by section and as a whole after discussion on motions of Dr. Phifer, duly seconded and carried after amendment of the first section. The report as amended reads as follows:

1. Report of the Council on National Emergency Medical Service: This report of the Council on National Emergency Medical Service deals with the conservation and constructive utilization of the medical manpower of this nation in the event of a national emergency. Your reference committee has carefully reviewed pages 80-92 of the report in the Handbook and the supplementary report of the Council on National Emergency Medical Service. It desires to commend this Council for its meticulous and excellent report. It appreciates the tremendous amount of time, energy, planning and constructive work done by the various members of this Council as well as the careful study and thoughtful evaluation of this very important question. It recommends the adoption of this section of the report, taking into consideration the changes presented by the Reference Committee on Emergency Medical Service and approved by the House.

2. Supplementary Report of the Council on National Emergency Medical Service: Your Reference Committee recommends adoption of the portion of the Supplementary Report of the Council on National Emergency Medical Service containing a resolution urging the President of the United States and the Chairman of the National Security Resources Board to take action for the immediate establishment of a Civilian Medical Coordinating Board as a functioning part of the National Security Resources Board.

3. Committee on Medical and Hospital Services of the Armed Forces: Your committee recommends the adoption of that portion of the Supplementary Report of the Council on National Emergency Medical Service which contains a resolution commending the Secretary of National Defense for his appointment of a committee on Medical and Hospital Services of the Armed Forces and urging him to establish a permanent Medical Advisory Board.

4. Resolution on calling Civilian Personnel into the Armed Forces: Your committee recommends adoption of the part of the Supplementary Report of the Council on National Emergency Medical Service which contains a Resolution on Calling Civilian Personnel Into the Armed Forces.

5. Resolution on Continuation of Graduate Medical Training Program: Your reference committee recommends the adoption of the portion of the Supplementary Report of the Council on National Emergency Medical Service containing a Resolution on Continuation of Graduate Medical Training Program.

Respectfully submitted,

Charles H. Phifer, Chairman.
George Braunlich.
A. A. Walker.
Raymond L. Zech.
Walter F. Donaldson.
George P. Johnston.
W. A. Coventry.

During the reading of the report the Vice Speaker, Dr. F. F. Borzell took the Chair.

The Secretary asked the House what its desire was as to giving publicity to its action on the Red Cross Blood Bank. It was moved by Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. James R. Reuling, New York, and carried, that the report on the Red Cross Blood Bank be released for publication in the wisdom of the Public Relations Department.

On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. Val H. Fuchs, Louisiana, and carried, the House rose from Executive Session at 4:05 p. m.

Wednesday Afternoon — Continued

The House convened in regular session at 4:05 p. m., with Dr. F. F. Borzell, Vice Speaker, in the Chair.

Report of Reference Committee on Miscellaneous Business

Dr. E. S. Hamilton, Chairman, presented the following report:

1. Resolutions on Specialty Boards: Resolutions were presented by Dr. Edward Flood. After careful consideration of these resolutions, your reference committee is of the opinion that they should also be referred to the Committee on Hospitals and the Practice of Medicine of which Dr. Elmer Hess is chairman.

2. Resolutions on Paying Physicians Engaged in Examinations for Armed Forces: Your committee recommends the adoption of these resolutions.

3. Resolutions on Closer Integration of Medical Services of Army, Navy and Air Force: Your reference committee has revised these resolutions and in view of the studies now under way in this regard recommends their approval:

Whereas, It is apparent that a much closer integration of the medical services of the Army, Navy and Air Force would lead to greater efficiency, increased economy and a higher level of medical care; and

Whereas, Studies of means and methods of this integration have been undertaken by certain agencies or committees of the government; and

Whereas, It is believed that these studies should be developed with the greatest possible speed consistent with sound planning; therefore be it

Resolved, That the House of Delegates of the American Medical Association is heartily in favor of this integration; and be it further

Resolved, That the House of Delegates of the American Medical Association requests that the President of the United States and the Secretary of National Defense develop immediately ways and means to further this integration; and be it further

Resolved, That a copy of these resolutions be sent to all members of the Armed Services Committee of both the Senate and House of Representatives.

4. Report of the Joint Committee for the Coordination of Medical Activities: Your reference committee has reviewed this report and commends it as a report of progress and recommends that the committee continue its activities.

5. Resolutions on American Physicians' Art Association: Your reference committee expresses its warm approval of these resolutions and moves that they be adopted.

6. Resolution on Funds to Defray Expenses of the Woman's Auxiliaries of the States: Your reference committee is of the opinion that, since this resolution has to do with finances, it should be referred to the Board of Trustees.

7. Resolution on Compulsory Cash Sickness Compensation: It is the opinion of your reference committee that this resolution should be referred to the Board of Trustees for reply.

8. Resolutions on Hospital Exploitation of Medical Services, and Resolution on Approval of Hospitals: While the contents of these two resolutions are somewhat dissimilar, it is the opinion of your reference committee that they fall in practically the same category and are related to a subject which is now under investigation by a special committee appointed by the Board of Trustees following the last Interim Session to investigate the practice of medicine in hospitals. This committee is under the chairmanship of Dr. Elmer Hess of Pennsylvania, and your committee is informed that it is holding meetings on this subject frequently during this annual session. Accordingly, your reference committee recommends that these two resolutions be referred directly to the Committee on Hospitals and the Practice of Medicine, of which Dr. Elmer Hess is chairman, for its investigation and further study. The problems involved can be reported to the Board of Trustees by said committee and then considered by the House of Delegates if considered desirable.

9. Resolutions on Single Examination Acceptable to Armed Forces: Your reference committee has carefully reviewed these resolutions. There is some difference of opinion regarding the number of examinations that might be necessary in any individual case in arriving at the proper decision as to the availability of an individual for military service. While apparently in World War II many reexaminations of candidates were made, your committee cannot feel that a single examination will always be sufficient. Accordingly, it recommends that the House of Delegates should not restrict the powers of government agencies in setting up rules and regulations in regard to examination of candidates. The number of examinations in any case must necessarily be decided on an individual basis.

With these exceptions the committee recommends the adoption of these resolutions.

Respectfully submitted,

Edwin S. Hamilton, Chairman.
Charles R. Rountree.
J. H. Moore.
Thomas M. Brennan.
Claude R. Keyport.

Dr. Hamilton moved adoption of the section of the report of the reference committee recommending reference of the Resolutions on Specialty Boards to the Committee on Hospitals and the Practice of Medicine, and the motion was seconded by Dr. Val H. Fuchs, Louisiana, and carried.

It was moved by Dr. Hamilton, seconded by several and carried, that the House adopt the Resolutions on Paying Physicians Engaged in Examinations for Armed Forces.

Dr. Hamilton moved that the report of the reference committee approving the Resolutions on Closer Integration of the Medical Services of Army, Navy and Air Forces be adopted and the motion was seconded by Dr. Arthur J. Bedell, Section on Ophthalmology. After discussion by Dr. George E. Armstrong, United States Army, and Dr. E. Vincent Askey, California, Dr. J. F. Londrigan, New Jersey, moved that the matter be laid on the table. The motion to lay on the table was seconded by several and carried.

The section of the report of the reference committee commending the report of the Joint Committee for the Coordination of Medical Activities was adopted on motion of Dr. Hamilton, seconded by several and carried.

Dr. Hamilton moved that the section of the report of the reference committee recommending adoption of the Resolutions on American Physicians' Art Association be adopted, and the motion was seconded by Dr. E. Vincent Askey, California, and carried.

Dr. Hamilton moved that the House approve of the report of the reference committee referring to the Board of Trustees the Resolution on Funds to Defray Expenses of the Woman's Auxiliaries of the States. The motion was seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and was lost after discussion by Dr. E. Vincent Askey, California, and the Vice Speaker.

Dr. Askey then moved adoption of the Resolution on Funds to Defray Expenses of the Woman's Auxiliaries of the States and the motion was seconded by several and carried.

On motion of Dr. Hamilton, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried, the report of the reference committee referring to the Board of Trustees for reply the Resolution on Compulsory Cash Sickness Compensation was adopted.

It was moved by Dr. Hamilton and seconded that the report of the reference committee referring to the Committee on Hospitals and the Practice of Medicine, of which Dr. Elmer Hess is chairman, the Resolutions on Hospital Exploitation of Medical Services and the Resolution on Approval of Hospitals be adopted. After an amendment was adopted on motion of Dr. James P. Kerby, Utah, seconded by several and carried that the Board of Trustees bring in a report at the next Interim Session, a motion to adopt the report as amended was carried.

It was moved by Dr. Hamilton, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried after discussion by Dr. Hamilton that the report of the reference committee on the Resolutions on Single Examination Acceptable to Armed Forces be adopted.

On motion of Dr. Hamilton, seconded by Dr. Charles H. Phifer, Illinois, and carried, the report of the reference committee as amended and deleted was adopted as a whole.

Permission to Publish Report of Reference Committee on Executive Session Dealing with National Emergency Medical Service

On motion of Dr. Charles H. Phifer, Illinois, seconded by Dr. Arthur J. Bedell, Section on Ophthalmology, and carried, permission was granted for publication of the Report of the Reference Committee on Executive Session Dealing with National Emergency Medical Service.

The House recessed for fifteen minutes and was then called to order by the Speaker, who resumed the Chair.

Report of Reference Committee on Rules and Order of Business

Dr. Herbert P. Ramsey, Chairman, presented the following report, which was adopted on motion of Dr. Ramsey, seconded by Dr. E. Vincent Askey, California, and carried:

The Reference Committee on Rules and Order of Business has considered the resolution submitted to it with respect to the executive session and by majority vote recommends that in view of the fact that the House only yesterday adopted a By-Law, Division Three, Chapter IX, Section 3 (C) covering this matter, reconsideration at this time is premature.

The House recessed at 5:00 p. m., to reconvene at 1:00 p. m.,

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Fourth Meeting—Thursday Afternoon, June 24

The House of Delegates convened at 1:40 p. m., in the Red Lacquer Room of the Palmer House, Chicago, with the Speaker, Dr. R. W. Fouts, presiding.

Report of Reference Committee on Credentials

Dr. G. Henry Mundt, Chairman, reported that there were 173 delegates seated and that the members of the committee were very anxious to contact the delegate from Puerto Rico if he be present.

Minutes

On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, and carried, the House dispensed with the reading of the minutes.

Report of Reference Committee on Amendments to the Constitution and By-Laws

Dr. Arthur J. Bedell, Chairman, presented the following report:

1. Proposed Amendment to By-Laws, Chapter X, Section 4 (A).

The Reference Committee on Reports of Board of Trustees and Secretary made a report on a resolution relating to the merger of the Committee on Rural Medical Service with the Council on Medical Service which has been presented to the House.

In its consideration of this problem, your reference committee finds that, if the formation of a new council is approved, there would follow the necessity for a further change in the Constitution relative to the Council on Medical Service.

It is the considered opinion of your reference committee that the development of a new council is one that merits and demands the very careful consideration of this House. Your committee feels that it has not had time to explore this problem as fully as its importance demands. Your committee is deeply appreciative of the wonderful contribution that the activities of the Committee on Rural Medical Service have made to organized medicine and is convinced that nothing should be done which might lessen their efficiency in the future.

Your reference committee further feels that, in view of the fact that Dr. Borzell's committee has worked for many months compiling a new Constitution and By-Laws, which was approved at this session, no amendments should be hurriedly made.

Your Reference Committee therefore recommends: (1) That the Board of Trustees be empowered to continue the activities of the Committee on Rural Medical Service on a committee basis; (2) that the Speaker of the House refer the matter of merging this committee with the Council on Medical Service and the alternative proposal of the development of a new Council on Rural Medical Care to the appropriate committee of this House for consideration and report at a subsequent meeting.

2. Proposed Amendment to By-Laws, Chapter X, Section 4 (B). Your reference committee finds that the House has already approved a report of another reference committee on this subject:

After a careful review of the points brought out by those who appeared at the hearing, it is the judgment of your committee that the action taken by the House in approving the report of the other reference committee on the subject adequately covers this matter. Your reference committee recommends disapproval of the proposed amendment.

Respectfully submitted,

Arthur J. Bedell, Chairman.
William F. Costello, Secretary.
James Q. Graves.
Howard R. Dudgeon.
Theodore H. Harwood.

Dr. Bedell moved adoption of each recommendation in the section of the report of the reference committee dealing with the merger of the Committee on Rural Medical Service with the Council on Medical Service, and the motions were duly seconded and carried.

It was moved by Dr. Bedell and seconded by several that the report of the reference committee disapproving the proposed amendment to the By-Laws, Chapter X, Section 4 (B) be adopted.

Dr. Hilton S. Read, New Jersey, moved to amend the report by the adoption of the proposed amendment as originally submitted to the reference committee. This motion was seconded by several. There was discussion by Dr. John W. Cline, California; the Speaker, Dr. Hilton S. Read, New Jersey, Dr. Lowell S. Goin, California, and Dr. Victor Johnson of the Council on Medical Education and Hospitals; the amendment to adopt the proposed amendment to the By-Laws instead of the report of the reference committee was adopted.

On motion of Dr. Bedell, seconded by Dr. Mather Pfeiffenberger, Illinois, and carried, the report of the reference committee as amended was adopted as a whole.

Dr. Bedell stated that the reference committee would now have to meet again to bring in the contemplated change in the By-Laws, and the Speaker referred the matter to the reference committee after discussion by Dr. Lowell S. Goin, California; the Speaker, Dr. E. P. Flood, New York, and Dr. Allen H. Bunce, Georgia.

Report of Reference Committee on Medical Service and Prepayment Insurance

Dr. H. B. Mulholland, Chairman, presented the following report:

1. Report of Committee to Study Conditions of General Practice: Your reference committee has considered the Report of the special committee appointed by the Board of Trustees in accordance with the action of this House to study conditions as outlined under seven headings in the address of President Shoulders at the Atlantic City Session. The proposals are most comprehensive, some of them including studies that have been in progress for some time and will require much additional effort to finish. The Committee approved the definition of "General Practitioner" as contained in the report. Studies to determine the need for more medical graduates, studies of graduate and postgraduate medical training, and studies of need of communities for additional medical services are being conducted by agencies of the American Medical Association.

Your committee approves the recommendation that qualified general practitioners have staff privileges and representation on hospital staffs and that the utilization of community hospitals for training of general practitioners be encouraged. It is in accord with the recommendation that the American Medical Association be the evaluating agency in medical education, both graduate and undergraduate, and that there should be closest possible liaison with all other agencies and organizations. It agree with the committee that general practitioners should be encouraged to participate in the scientific and organizational activities of organized medicine.

The report is comprehensive and is approved in its entirety.

2. Supplementary Report of Council on Medical Service: Your committee has considered the Supplementary Report of the Council on Medical Service which contains a reference to the activities of the American Medical Association's representatives during the recent National Health Assembly in Washington. American medicine should be justly proud of the able service rendered by these representatives.

Your committee feels that sections of this report contain ambiguous statements which should be clarified. Page 1, paragraph 2, reads:

"The principle of contributory health insurance should be the basic method of financing medical care for the large majority of the American people, in order to remove the burden of unpredictable sickness costs, abolish the economic barrier to adequate medical services and avoid the *indignities* of a 'means test.'"

It should be distinctly understood that the term "contributory health insurance" should not include government contributions in financing this type of medical care except where the need for such government contributions is definitely established. In the same paragraph it should be emphasized that the terms "avoid the indignities of a means test" does in no sense indicate favoring the abolition of this test. Your committee recommends that these clarifications be given the widest possible publicity.

3. Report of Council on Medical Service Re Meeting of Council June 19, 1948: Your reference committee met to consider the report of the Council on Medical Service on a meeting held by this Council and representatives of thirty-six state medical associations and the Territory of Hawaii on June 19, 1948.

The purpose of this meeting was to discuss the advisability of Associated Medical Care Plans and Blue Cross establishing or creating a national enrolment organization to implement the hospital and medical health insurance coverage of employees of national employer. It was agreed by those attending the meeting that there was a need for such organization. This matter was then referred to the Council on Medical Service and the Commission of Associated Medical Care Plans for further study to determine the structural organization and proper function of such a needed organization and they were asked to report their recommendations at an early date.

Your committee, after hearing the opinions expressed by the Council on Medical Service and representative commissioners of the Associated Medical Care Plans, is in accord with and approves the principles enunciated and the action taken at the meeting on June 19, 1948.

Respectfully submitted,

H. B. Mulholland, Chairman.
H. G. Hamer.
Stephen E. Gavin.
D. A. Rhinehart.
L. Howard Schriver.

Dr. Mulholland moved adoption of the section of the report of the reference committee approving the Report of the Committee to Study Conditions of General Practice, and the motion was seconded by several. Dr. James P. Kerby, Utah, requested that there be added that it is the sense of the House that medical services shall be furnished only by doctors of medicine and that no medical services shall be furnished by Blue Cross plans, and this was seconded by Dr. E. Vincent Askey, California, and was lost after discussion by Dr. Robert L. Novy, Michigan; Dr. Kerby; Dr. L. G. Christian, Michigan; Dr. Mulholland, and the Speaker.

The motion of Dr. Mulholland to adopt this section of the report of the reference committee was then adopted.

The portion of the report of the reference committee referring to the Supplementary Report of the Council on Medical Service was adopted on motion of Dr. Mulholland, seconded by several and carried.

Dr. Mulholland moved that the report of the reference committee dealing with the Report of the Council on Medical Service Re Meeting June 19, 1948, be adopted, and the motion was seconded by Dr. H. P. Ramsey, District of Columbia, and carried.

On motion of Dr. Mulholland, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, the report of the reference committee was adopted as a whole.

Report of Reference Committee on Amendments to Constitution and By-Laws

Dr. Arthur J. Bedell, Chairman, presented the following report:

Proposed Amendment to By-Laws, Chapter X, Section 4 (B): Your reference committee at the request of the House recommends adoption of a change in Chapter X, Section 4 (B) so as to read:

"The Council on Medical Education and Hospitals shall consist of seven Member or Service Fellows, at least one of whom shall be a private practitioner of medicine not a faculty member of a medical school and not a member of a staff of a hospital associated with a medical school or university, elected by the House of Delegates on nomination by the Board of Trustees for terms of seven years so arranged that at each annual session the term of one member expires."

The By-Laws were amended to read as indicated by the reference committee on motion of Dr. Bedell, seconded by Dr. H. B. Everett, Tennessee, and carried by more than a two-thirds vote of the House.

Report of Committee on Hospitals and the Practice of Medicine

Dr. E. L. Henderson, Chairman, Board of Trustees, requested Dr. Elmer Hess, Chairman, Committee on Hospitals and the Practice of Medicine, to present the report of that committee, which follows:

This Committee was asked to study the practice of medicine by hospitals with due consideration to the many resolutions pertaining to this subject that have been acted on by the House of Delegates in the past ten or fifteen years, to correlate these and to determine if any further action is necessary to enforce them.

These resolutions for the most part have been presented by the radiologists, pathologists and anesthesiologists. They have received serious consideration by various reference committees and many hearings have been held. In 1942 the Trustees were asked to hold a conference with the American College of Surgeons and hospital associations and representatives of various special interested groups. This was done and a comprehensive report was presented to the House of Delegates by the trustees, and thereafter printed in full in The Journal. Since that time several other resolutions of similar nature have been acted on. A study of this mass of material suggests to your Committee that certain policies have been agreed on: (1) that some positive action against those institutions be taken by the American Medical Association where investigation has proved that these institutions were not operating under the broad general principles of ethics expounded by the American Medical Association; and (2) that physicians as individuals could be disciplined for unethical conduct only according to the machinery set up for the control of such conduct already established at the county society level.

Your Committee has had four meetings during this session of the House, and many men representing various groups have been fully heard. It *recognizes the seriousness of the entire situation* and realizes that something *must* be done about it. The more we study the situation, the wider and wider are the ramifications of the problem, many of which are contradictory and simply impossible of solution at the present time. At this particular moment the Committee does not believe that it has had sufficient time to study all of these tremendous problems and arrive at satisfactory conclusions which will be acceptable to the Board of Trustees and to this House of Delegates. This problem is likewise of grave importance to the Commission of the Blue Cross and Blue Shield, which are cooperating in an endeavor to furnish medical service under physicician-sponsored programs, and we have the following assurances from the committee appointed by the Commission to study this problem: "(1) No definite action be attempted by this Committee or the Blue Shield Commission until such time as the relationships inherent in the solution of the problem have been agreed on by the official bodies of the specialty groups involved and the American Medical Association, and (2) Because its membership is composed of persons intimately familiar with the administration of Blue Shield plans, its services should and will be made available on a consultative and cooperative basis to the specialty groups concerned and to the American Medical Association whenever and wherever desired by those organizations." Your committee therefore has two recommendations to make:

1. Because of the difference in the laws of the various states, your Committee recommends that the Bureau of Legal Medicine and Legislation of the American Medical Association be instructed immediately to make a study of the various state laws defining the legal status of corporations attempting to practice medicine in the various states, defining in each instance the differences in the various state laws concerned with this problem, and that, if necessary, legislation be prepared by the Bureau of Legal Medicine and Legislation which will define all of these matters so that uniform legislation to simplify legal interpretations may be prepared and supported by the American Medical Association to insure the legality of the actions taken.

2. That the House of Delegates request the Board of Trustees to send within the next six weeks an official communication to medical schools and hospitals informing them of the principles and policies of the House of Delegates concerning the practice of medicine by institutions and stating that the American Medical Association will be glad to cooperate in every way with such institutions and appealing to them for immediate cooperation in the general over-all plan and for assistance in the preservation of the private practice of medicine.

Respectfully submitted,

Elmer Hess, Chairman.
Walter G. Phippen.
Walter E. Vest.
John W. Cline.
Edwin S. Hamilton.

The suggestions of the committee, on consent of Dr. Hess, were amended by including the American Hospital Association and other national hospital organizations, and the suggestions as amended were then adopted.

(To be continued)

Washington Letter

(From Our Regular Correspondent)

July 8, 1948.

Three-Point National Health Assembly Plan Proposed

At its first meeting (June 28) since the National Health Assembly was held May 1-4, the Assembly's executive committee advanced three proposals. As made public by the Federal Security Agency, under whose auspices the May conference was held, the suggestions were: (1) that the executive committee maintain its existence and continue to function as an advisory and coordinating group; (2) that the Federal Security Administrator name a small subcommittee to draft plans for public health education and on organization and financing; (3) that each state be urged to hold a health assembly of its own at regular intervals, with equal representation to professional and "consumer" groups in order to stimulate the widest possible cooperation among all concerned in health. Local health assemblies also were advocated.

Tasks which Oscar R. Ewing, as Federal Security Administrator and chaiman of the National Health Assembly, will ask the subcommittee to consider include: publication of final recommendations of the fourteen sections which comprised the Assembly; implementation of these recommendations, and development of plans for guidance of the proposed state and local health conferences.

Plans for $40,000,000 Research Center

Full cooperation will be maintained with voluntary organizations and private teaching institutions, as well as government agencies, in the operation of the new five hundred bed clinical research center to be erected at nearby Bethesda, Md., according to Oscar R. Ewing. The Federal Security Administrator, at a special press conference, disclosed that bids for the initial stages of construction will be opened in July. It is hoped to have the $40,000,000 project, a unit of the National Institutes of Health, completed and in use before the end of 1951. Cancer and cardiovascular, mental, tropical and certain infectious diseases will receive major emphasis in the research center's laboratories and wards. Dr. Leonard A. Scheele, Surgeon General of the U. S. Public Health Service, who participated in the conference, said: "There will be a rigid adherence to the principle that no treatment shall be applied to a patient until its safety has been thoroughly proved. We will do our best to cure patients suffering from diseases which now afflict a vast number of persons and for which only limited treatment has as yet been discovered."

Admission of patients will be through reference by physicians, hospitals and staffs of other health agencies throughout the country, Dr. Scheele asserted. Medical reports will form the basis for selection and, on discharge from the hospital, patients will be referred back to their private physicians. Entirely air conditioned, the structure—thirteen stories in height—will be of such size that its five hundred beds will occupy less than one third of the space. The north side of the main building and six wings will be devoted to laboratories. Dr. Jack Masur is administrative officer for the undertaking.

Medical Committee on Civil Defense Planning Meets

July's first press announcement by the Office of the Secretary of Defense was that the special advisory committee to the Office of Civil Defense Planning would meet on July 6. It was scheduled to present recommendations to Russell J. Hopley, director of the Office of Civil Defense Planning, for a peacetime organization of medical resources that could be quickly enlarged in event of war. Dr. Perrin H. Long heads the committee, whose other members are Drs. E. H. Cushing, N. C. Kiefer, E. F. Daily, R. B. Snaveley, Robin Buerki, James A. Crabtree, C. E. Albricht, P. S. Owens, F. Wilson, R. L. Sensenich, R. P. Fischelis, W. R. Krill and C. Willard Camalier, the Rev. D. A. MacGowan, Miss Margaret Arnstein, Lieut. Col. K. E. Baltz, Capt. C. C. Myers, Col. E. S. Standlee and Brig. Gen. J. M. Hargreaves.

Dr. Louis G. Welt Leaves Veterans Administration for Yale

The Veterans Administration has announced the resignation of Dr. Louis G. Welt as head of the section on general medical research. His replacement, scheduled to report in August, is Dr. Alfred Lawton, dean of the University of North Dakota School of Medicine. Dr. Welt, who joined the Veterans Administration last year after Army service, has accepted a post on the Yale medical faculty and will devote a large portion of his time to research in the university hospital.

Millions Approved for Hospital Expansion Planning

A cumulative report, up to June 25, by U. S. Public Health Service (Division of Hospital Facilities) shows that approval has been given forty-eight state plans for expansion of their hospital and health center facilities under the Hill-Burton Hospital Survey and Construction Act. Allotments for the execution of these plans aggregate $74,438,700. Alaska, the District of Columbia, Hawaii and Puerto Rico are included among the forty-eight approvals.

Rehabilitation Record

On the occasion of the fifth anniversary (July 6) of legislation expanding the federal-state program of vocational rehabilitation for the physically handicapped, Director Michael J. Shortley of the Office of Vocational Rehabilitation reported that more than 50,000 cases were handled successfully during the fiscal year ended June 30. "Outstanding allies" in the program's success, said Shortley, include the American Medical Association, the National Society for Crippled Children and Adults, the National Tuberculosis Association, the American Hearing Society, National Industries for the Blind, the National Association to Control Epilepsy, the National Association of the Deaf, Goodwill Industries, the National Fraternal Society of the Deaf, American Instructors of the Deaf and the National Society for Prevention of Blindness.

NAVY

FIFTIETH ANNIVERSARY OF HOSPITAL CORPS

When the Navy Hospital Corps was established by act of Congress in 1898, fewer than two hundred hospital corpsmen were in the Navy; the hospital corps during World War II reached an all time high of 137,000. Of the 14,748 corpsmen on active duty today, about 10 per cent are constantly under formal instruction in subjects allied to the medical profession and peculiar to the needs of the armed forces. To supply trained enlisted personnel for the Medical Department, formal advanced courses of instruction are carried on in addition to basic training. Specialty courses available to enlisted personnel in the Medical Department include clinical laboratory, pharmacy, physical medicine, x-ray, neuropsychiatry and aviation medicine; those demonstrating special aptitude are instructed in and may become certified technicians in medical photography, medical supply, orthopedic appliances mechanics, equipment repair, hospital commissary, administrative procedures and submarine and diving duty. The Navy trains hospital corpsmen also as medical research assistants and in the new science of atomic medicine. Until last year the enlisted hospital corpsmen desiring to make the Navy a career could be promoted only to the rank of chief warrant officer; then Congress established the Medical Service Corps as a commissioned officer promotion outlet with ranks up to and including that of captain.

MEETING OF RESERVE VOLUNTEER DIVISION

The U. S. Naval Reserve Volunteer Medical Division 4-9 held its first meeting May 25 at the Naval Base, Philadelphia, where the principal speaker was Dr. Lowell Aston Erf, professor of hematology, Jefferson Medical College, Philadelphia, a captain in the Army Medical Corps Reserve. His subject was "Atomic Energy and Its Relation to Medicine." Capt. J. R. Thomas, Fourth Naval District Medical Officer, announced at the meeting that the activation of the twenty-two divisions assigned to the Fourth Naval District would be completed in a short time.

NEW REGULAR OFFICERS

Dr. John Robert Lee Jr., Brooklyn graduate of Cornell University School of Medicine, has accepted an appointment as Lieutenant (jg) in the regular corps of the Navy.

The following recent graduates of medical schools have accepted appointment as lieutenants (jg) in the Medical Corps of the Regular Navy: John J. Downey of Port Jefferson, N. Y.; Anthony R. Gennaro of Passaic, N. J.; Paul Hart of Arlington, Mass.; James L. Pollock Jr., of Denver, Colo.; Richard E. Sullivan of Binghamton, N. Y., and Joseph C. Whatley of Marshall, Va.

NEW NAVY INTERNS

The following young doctors have accepted appointments as Lieutenant (jg) in the Medical Corps Reserve of the U. S. Naval Reserve, and have been assigned duty as interns as indicated:

Marvin S. Allen of Atlanta, Ga.; Ernest L. Bauer of Benton, Ill.; Ernest Alfred Blakey of Pawtucket, R. I.; Wallace F. Buttrick of Burlington, Vt.; Robert J. Clohecy of Smithfield, Pa.; Thomas S. Ely of Bethesda, Md.; Rodney H. Foss of Portland, Me.; Clifford W. Gates of Abington, Mass.; Charles M. Hendricks Jr., of Greenville, S. C.; Forster G. Huhl of Northfield, Mass.; Clifford A. Johnson Jr. of Omaha, Neb.; Robert R. Klamt of Ashton, Idaho; Chester L. Klein of Redlands, Calif.; Francis J. Linehan Jr. of Stamford, Conn.; Lindsey F. Lovett of Atlanta, Ga.; Vernon J. Merkle of Omaha, Neb.; George D. Mogil of Cleveland; Joseph T. Morreale of Los Angeles; David Walker Mullins of Logan, W. Va.; Joseph W. Peabody Jr. of Chevy Chase, Md.; Jarvis H. Post of Greensburg, Pa.; Lew W. Purinton of Pleasanton, Kan.; Harvey O. Randell of Camp Hill, Pa.; William C. Rountree of New Orleans; Robert J. Schramel of Overland, Mo.; John R. Shanahan of Washington, D. C.; Thomas W. D. Smith of Murray, Utah; Frank J. Strick of Kansas City, Kan.; James D. Thornton of Baltimore; Charles W. Werner of Los Angeles, and George M. Wilson Jr. of Washington, D. C.

VETERANS ADMINISTRATION

HOMES FOR VETERANS IN WHEEL CHAIRS

The President has signed into law a bill which provides certain paralyzed veterans with federal grants up to $10,000 to be used to purchase or remodel homes especially designed for wheel chair living. Those eligible under the law are veterans who served in the armed forces in war or peace since April 21, 1898, who have a permanent total service-connected disability resulting in paralysis of the legs and lower part of the body. In determining the eligibility of applicants the Veterans Administration must ascertain that it is medically feasible for the veteran to live in the house, that the cost of the house bears a proper relation to his income and that it is suitable to his particular requirements. Veterans Administration is authorized also to supply eligible veterans, free of charge, with plans and specifications of suitable housing units. The special features which may be incorporated in such homes include ramps instead of stairs, special bathroom arrangements and fixtures, extra wide halls and doorways, larger rooms, and in some cases facilities for exercise. A veteran who qualifies is entitled to a federal grant not to exceed 50 per cent of the total cost of the home including the lot or a maximum of $10,000.

NON-SERVICE-CONNECTED DISABILITIES

On May 31 the total number of veterans in hospitals was 106,089, of whom 12,775 were in nonveteran hospitals. Of the total number of hospital patients 68,900 (about 65 per cent) were veterans with non-service-connected disabilities.

DR. THORNDIKE TO DIRECT PROSTHETIC SERVICE

The medical director of the Veterans Administration, Dr. Paul B. Magnuson, announces the appointment of Dr. Augusta Thorndike of Boston as director of the Prosthetic and Sensory Aids Service, which is in charge of providing artificial limbs, eyes, hearing aids, orthopedic shoes and similar devices for disabled veterans and conducts research endeavoring to improve such appliances. The service operates fifteen plastic artificial eye laboratories and supervises twenty-nine brace shops for the making and repair of braces and artificial limbs. Dr. Thorndike, an associate in surgery at Harvard Medical School and consultant in traumatic conditions at Massachusetts General Hospital, served overseas in the Pacific during the recent war and later was director of the Army's reconditioning program in the Surgeon General's Office. He is a member of the American Surgical Association, Boston Surgical Society, and is a specialist certified by the American Board of Surgery.

CONTRACT FOR HOSPITAL

A contract for $4,779,200 has been awarded for the construction of a 250 bed addition to the veterans' hospital at Alexandria, La. The addition will be used for the treatment of veterans suffering from tuberculosis and will bring the total capacity of the hospital to 912 beds, of which 662 are for general medical and surgical patients.

INFLUENCE OF RADIOACTIVE MATERIALS ON CROPS

The Atomic Energy Commission and the Department of Agriculture announce a study of the influence of radioactive materials on growth of crop plants. The new project will aim to determine the effects of radioactive materials used in fertilizer applications, not as tracers measuring the effects of standard fertilizer materials but as a direct influence on the fertilized crops. The investigation is designed to answer a number of questions on the relation between plant growth and radioactivity. It has long been known that all soils are radioactive to some degree. Will applications of radioactive materials improve plant growth? What degree of radioactivity will the crop have as a result of the application?

While many experiments have been conducted in Europe and America to study the influence of radioactivity on plant growth, the results have been conflicting and inconclusive. Investigations by qualified American and Japanese scientists failed to reveal any basis for the claim that radiation from the atomic bomb benefited crops at Nagasaki. Except for experimental purposes, the use of radioactive material by farmers cannot be recommended on the basis of present knowledge. Many important questions must be answered before the influence of radioactive materials on plant growth is known.

AWARDS AND COMMENDATIONS

Edward F. Knipling

The Department of National Defense on May 20, 1948 awarded the Medal of Merit to Edward F. Knipling, director of the Orlando Station of the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, during the war period. The citation, which was signed by the President of the United States, read as follows: "He planned and directed investigations for the development of insecticides and repellents for the prevention of insect-borne diseases in the United States Army. As a result of these studies the Armed Forces adopted the use of DDT for the control of insect-borne diseases and new uses and equipment were developed for the dispersing of insecticides by new methods, including the airplane spraying of infested areas. All these research contributions were of inestimable value to the health and morale of United States troops, as well as to the Nation as a whole."

Dr. G. Canby Robinson

The Medal for Merit has been awarded to Dr. G. Canby Robinson of Baltimore for exceptionally meritorious conduct in performance of outstanding services to the United States from July 1941 to December 1945. The citation, signed by the President of the United States, read in part as follows: Dr. Robinson, as Director of the National Blood Donor Service of the American National Red Cross, labored unceasingly in the operation and rapid expansion of this vast activity which never failed to meet the constantly increasing needs for more and more blood plasma, serum albumin or whole blood for transfusion into the veins of wounded men in theaters of operation. He personally directed the machinery in arousing and sustaining the interest of his fellow countrymen in giving voluntarily of their blood, in recruiting and screening hundreds of thousands of potential donors throughout the United States and in arranging for the proper handling and transportation of the drawn blood to processing laboratories or to centers from which it was flown as whole blood to European or Pacific theaters of operation. These efforts, involving over thirteen millions of bleedings of individuals, required constant maintenance of high professional medical standards, in addition to an unusual degree of skill and efficiency in operation, all the while working not with formal and regulated groups recognizing one central authority, but with the unregimented general public throughout the Nation. The phenonemal success attained and which resulted in the wholesale saving of life through supplying the armed forces with the blood needed for transfusion purposes reflects great credit on him. Dr. Robinson's efforts were characterized by unfailing energy, sound judgment, foresight, tact, capacity to cooperate with others, ability to obtain results and a marked devotion to duty. Dr. Robinson graduated from Johns Hopkins University School of Medicine in 1903.

STUDY OF OPERATING ROOM EXPLOSIONS

The Federal Government has established a committee to make a scientific investigation into the causes of explosions in hospital operating rooms. The nine man committee was created by the Commissioner of the Public Buildings Administration of the Federal Works Agency, whose architects and engineers have been building hospitals for almost a century and who are now preparing plans for the five hundred bed research laboratory at Bethesda, Md., for the National Institute of Health. Other major projects they are working on are the 1,250 bed District of Columbia Hospital Center and a 635 bed Marine hospital in San Francisco. The committee's recommendations will be incorporated in the design of the operating rooms of these projects. This is the first time that the Federal Government has started a thorough scientific inquiry into the reasons for these explosions. A subcommittee will prepare tentative specifications for operating room floors which will include the floor extending 15 feet (4.6 meters) outside of the operating room doors. Moreover, the specifications will embrace a testing device which shall be installed to check the resistance of the shoes worn by the occupants before they enter the room. The report of the full committee not only will include the architectural and engineering features of an operating room but will also present definite recommendations for those in charge of hospitals to guide them in the control of the personnel and movable equipment.

PERSONALS

John J. Swearingen has been appointed chief of Aeromedical Design and Material Division of the Medical Facility laboratories of the Aeronautical Center, Civil Aeronautics Administration, at Oklahoma City. Lieut. Swearingen was recently on active duty in the Naval Reserve serving as head of the school of physical therapy at the Naval Medical Center, Bethesda, Md.

J. J. Donnell has been appointed chief of the Roentgenologic and Diagnostic Research Laboratory of the Aviation Facility, Aeronautical Center, Civil Aeronautics Administration, at Oklahoma City. Dr. Donnell formerly was a member of the staff of the Jersey City Hospital.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARKANSAS

State Society Appoints Executive Secretary.—The Arkansas Medical Society has appointed Mr. Sid Wrightsman Jr. as executive secretary. He will maintain a business office at 310 Professional Building, Fort Smith.

Narcotic Violation.—Dr. Albert G. McGill, Little Rock, entered a plea of nolo contendere to section 2554 of the internal revenue code in the United States District Court at Little Rock. On March 17 a sentence of two years was suspended and he was placed on probation.

CALIFORNIA

California Society of Internal Medicine.—Dr. Harold M. F. Behneman, president of the California Society of Internal Medicine, is chief of staff of The Desert Clinic, Palm Springs, Calif., and not a resident of San Francisco as stated in THE JOURNAL, May 29, 1948, page 476.

University Appointment.—Dr. Mervin C. Myerson, Beverly Hills, was recently appointed associate professor of otolaryngology at the College of Medical Evangelists, Loma Linda-Los Angeles, and director of the college's division of otolaryngology at the Los Angeles General Hospital.

ILLINOIS

Increase in Undulant Fever in Illinois.—Morbidity statistics released by the state department of health, June 30, show a steady rise in the reported prevalence of undulant fever in Illinois. Only 5 cases were reported in Illinois in 1927; by 1935 the number had risen to 144; in 1938 to 216; in 1943 to over 300, and in 1947 553 cases were reported. During the first twenty-four weeks of this year 232 cases had been reported to the state department of public health, as compared to 223 cases in the same period in 1947. Only 8 of the 232 cases reported this year occurred in Chicago.

Chicago

Dr. Cori to Receive Garvan Medal.—Dr. Gerty T. Cori, Washington University School of Medicine, St. Louis, has been named the recipient of the American Chemical Society's Francis P. Garvan Medal, which will be bestowed at the fall meeting. Dr. Cori shared the 1947 Nobel Prize in medicine with her husband, Dr. Carl F. Cori, Washington University, and Dr. Bernardo A. Houssay, Buenos Aires.

Betatron for Research at Illinois.—Delivery of a 20,000,000 volt betatron for cancer treatment and research is expected to be made in five months to the University of Illinois College of Medicine. Dr. Roger A. Harvey, head of the department of radiology, will be in charge. The betatron will be housed in a small building, mostly underground, erected south of the university's research and educational hospitals. Ground-breaking exercises were conducted June 18.

Orientation Course in Allergy.—Northwestern University Medical School will offer a five day orientation course in allergy under the sponsorship of the American Academy of Allergy, October 25-29. The course will comprise a practical coverage of the subject and will utilize teachers not only from Northwestern University, but also from other local and out-of-town medical schools. For particulars, direct communications to Department of Allergy, Northwestern University Medical School, Chicago.

Appoint Curator of Pollen Collection.—The American Academy of Allergy has named Ralph F. Voigt, Ph.D., assistant professor of pharmacognosy and pharmacology, as curator of its collection of allergenic pollen and specimens of all plants producing hay fever throughout the United States. The samples of pollen and their respective herbarium specimens will be kept by the University of Illinois College of Pharmacy at its proposed Drug Plant Experimentation Station at Lisle, of which Dr. Voigt is assistant to the director. Physicians and research workers will be able to obtain authentic slides of the various pollens that are common to their particular geographic area as they are made available.

KANSAS

State Disaster Meeting.—A meeting of public officials and American Red Cross disaster officials was held in Topeka May 18 to review governmental and Red Cross functions during disaster situations and to interpret and explain the responsibilities of state, county and municipal governmental agencies. Kansas is said to be the third state to organize a disaster meeting as planned at the national convention last year.

MASSACHUSETTS

Purchase Building for District Society.—The Worcester Medical Library, Inc., has purchased and repaired a building to be used as headquarters for the Worcester District Medical Society. Open house was held April 21. Preservation of pictures and of medical and surgical instruments of historical value is a possibility for the future. There are rooms for committee meetings and for development of a program for health education. A strabismus clinic has already been established in one of the rooms.

MISSOURI

Movies for Patients.—The Volunteer Film Association of St. Louis last year conducted 1,670 showings of motion picture films for persons confined to their homes by illness. This organization, started in 1939 with 59 members, two films and one projector, has grown to a membership of 627, a large film library and ten projectors. More than 200 members serve as exhibitors in teams of two, going into homes and hospitals. Films are first reviewed by a committee and are selected for suitability to the patient's physical condition. For example, silent motion pictures are selected for cardiac children; as the physical condition improves, more stimulating films can be shown, sound can be introduced and teaching films coordinated with the home teaching programs are added. A referral committee works with the physicians, social workers, hospital and social agencies to find shut-ins who will benefit from the service. In response to requests from other cities the association is preparing an outline of its experiences as a guide for other organizations. The association is largely the work of Miss Marjorie Land, a former medical student and invalid for many years, and Miss Sue Barnes, an occupational therapist.

NEW YORK

State Takes Over Tuberculosis Sanatorium.—The official transfer of Oneida County Tuberculosis Sanatorium, Utica, from the county to the state was completed June 1. The services of the sanatorium will be expanded, particularly in the field of clinical services in the county. The sanatorium has one hundred and eighty-two beds and a staff of one hundred. Dr. William C. Jensen is expected to continue as superintendent.

Postgraduate Lectures.—The Medical Society of the State of New York and the New York State Department of Health have arranged postgraduate instruction for the Suffolk County Medical Society at Mather Memorial Hospital, Port Jefferson, Long Island, August 26, at 11:30 a. m. Dr. Claude E. Heaton, New York, will speak on "The Management of Difficult Labor," and Dr. John S. Labate, New York, on "The Recognition and Prevention of Injuries and Diseases of the Fetus." The Cayuga County Medical Society, meeting September 16 at the Osborne Hotel, Auburn, will hear Dr. Richard H. Lyons, Syracuse, speak on "The Management of Peripheral Vascular Disease States."

New York City

Appointed to Institute of Rehabilitation.—Dr. Hans Kraus has been appointed assistant professor of clinical rehabilitation at New York University College of Medicine's department of rehabilitation and physical medicine. Dr. Kraus will be associated with the rehabilitation and physical medicine service in Bellevue Hospital.

Construction of Medical Center to Start This Year.—Construction of some buildings of the New York City University-Bellevue Medical Center will begin by early fall, according to Center officials. The first buildings will be the new clinical laboratories and class rooms, the Hall of Residence, and the Alumni Hall. For medical students whose service at Bellevue Hospital requires them to be on call at night, the Hall of Residence will provide about three hundred dormatory rooms. The Alumni Hall will accommodate about five hundred persons. Eleven acres of land are included in the Center's property, which lies between First Avenue and East River Drive. The streets in the area will be closed off. In exchange for this privilege, the university is making available to the city 17,500 square feet of land as a site for the Institute of Forensic Medicine, which will become the headquarters of the chief examiner's office, the city morgue and other facilities and will be jointly operated by the city and the university.

NORTH CAROLINA

Cytologic Laboratory and Tropical Institute.—The Bowman Gray School of Medicine, Winston-Salem, established a cytologic laboratory for the early diagnosis of cancer in the department of pathology on July 1 with Dr. Coy C. Carpenter, dean, who has also served as professor of pathology since 1926, in direct charge. The laboratory will employ the Papanicolaou method of diagnosing cancer by studying abnormal cells. Dr. Carpenter worked in the laboratory of Dr. George N. Papanicolaou for two weeks in May. Services of the laboratory will be offered to practically all women coming to the hospital and to other hospitals and doctors throughout North Carolina. Mass surveys of all women in a given area, such as that being conducted by the state of Delaware, is one of the ultimate objects of the laboratory.

The first step in the establishment of the Institute of Tropical Medicine of the Bowman Gray School of Medicine was made recently with the announcement of a gift of $33,000 from a New York patron for building and equipping an additional floor in the medical school building. The institute will be used by the Veterans Administration as a research and teaching center. The new laboratory will also provide supervisory medical and sanitary service for a sugar company in the Dominican Republic which is building a field laboratory. Each quarter one or two medical students will assist in field survey work there, where surveys of malaria and intestinal infections among the labor population of the plantation will be conducted. A limited number of Dominican doctors will study at the institute.

OHIO

Health Department Adds Two Services.—In the reorganization of the Ohio Department of Health two officers have been added. Dr. Paul Q. Peterson, Columbus, is chief of the new Bureau of Direct Services, which includes the sanitary engineering division, laboratories division, vital statistics division, industrial hygiene division and hospital facilities. Besides coordinating the functions of these direct service divisions, Dr. Peterson will be responsible for the public health training program. A cancer division in the Bureau of Local Services has been created with Dr. Walter B. Lacock, Columbus, as director.

PENNSYLVANIA

Course in Allergy.—Physicians in the vicinity of Pittsburg are invited to enroll in the University of Pittsburgh School of Medicine's orientation course in allergy to be given on ten Thursday afternoons beginning September 2. The course will include didactic, laboratory and clinical presentations in allergy and all the related specialities. Address all inquires to Samuel P. Barbison, M. D., Chairman, Committee on Postgraduate Education, Dean's Office, University School of Medicine, O'Hara Street, Pittsburgh 13. Pa.

Philadelphia

Personal.—Detlev W. Bronk, Ph. D. director of the Johnson Research Foundation of the University of Pennsylvania, has been elected a foreign member of the Royal Society of London. Dr. Bronk returned recently from the dedication of the Nobel Institute in Neurophysiology in Stockholm, Sweden.

University Appointments.—The Woman's Medical College of Pennsylvania has announced the appointment of three of its alumnae to the faculty: Dorothy Macy Jr., who after three years in internal medicine at the Mayo Clinic is returning as an associate in physiology; Annella Brown, after a residency at the Crile Clinic, Cleveland, will return as a fellow in surgery; Isabella H. Perry, San Francisco, will be director of the new cancer teaching program.

VIRGINIA

Horsley Memorial Prize.—The tenth biennial award of the John Horsley Memorial Prize in Medicine was made on April 28, in connection with the Sigma Xi annual initiation of new members. The award, a certificate and a prize of $600, was founded in 1927 by Dr. J. Shelton Horsley, Richmond, in memory of his father. The winner of this year's award was Dr. James W. Culbertson, Boston, graduate of University of Virginia Department of Medicine, Charlottesville, 1940, for his research on the "Effect of Various Types of Sympathectomy Upon Vasopressor Responses in Hypertensive Patients."

WEST VIRGINIA

Society News.—Dr. Chauncy B. Wright, Huntington, has been reelected chairman of the board of directors of the West Virginia Cancer Society; Charles Lively, executive secretary of the state medical association, was reelected secretary.

Appointed to Child Health Committee.—Dr. Newman H. Dyer, state health commissioner, and Robert Roth, director, department of public assistance, will serve as ex officio members of the West Virginia Committee for Community Planning for Children and Youth, organized to arrange the state's participation in the 1950 White House Conference, which will be the first held since 1941.

GENERAL

Society Elections.—At the annual meeting of the American Gastroscopic Society in Atlantic City, N. J., May 2, Dr. James L. Borland, Jacksonville, Fla. was elected president and Dr. J. Edward Berk, Philadelphia, secretary-treasurer.—At the recent meeting of the American Association of Industrial Physicians and Surgeons in Boston, Dr. Harold A. Vonachen, Peoria, Ill., was elected president; Dr. Frederick W. Slobe, Chicago, secretary, and Dr. Edward C. Holmbald, Chicago, treasurer.

International Congress on Mental Deficiency.—At the annual meeting of the American Association on Mental Deficiency in Boston, May 18-22, an International Congress on Mental Deficiency was formed with Dr. Edward J. Humphreys, Columbus, Ohio, president, and Lloyd N. Yepsen, Ph.D., Trenton, N. J., secretary. This session was the first international congress, and the second will be held in New York in May 1951. The first Pan-American Congress on Mental Deficiency is to be held in New Orleans in 1949. Elected officers of the American Association on Mental Deficiency are: Dr. Humphreys, president; Miss Mildred Tompson, St. Paul, Minn., president-elect; and Dr. Neil A. Dayton, Mansfield Depot, Conn., secretary-treasurer. Mr. Richard H. Hungerford, New York, Board of Education, was chosen editor of the *American Journal of Mental Deficiency*.

Aid for Foreign Devestated Areas.—The Medical and Surgical Relief Committee, Inc., 420 Lexington Avenue, New York 17, which in the last seven years has provided more than $1,000,000 dollars' worth of desperately needed medical supplies and publications to stricken overseas areas, continues to carry on and appeals to the public for aid in this work. On the Medical Advisory Council to this committee are many physicians with Dr. Allen O. Whipple as chairman. The Medical and Surgical Relief Committee receives, sorts, re-conditions and ships material that ranges from physicians samples to used instruments in response to authenticated appeals from overseas. The most pressing need is for recent medical, surgical and dental textbooks and journals. Other items urgently needed are adhesive tape; anesthetics, local and general; antiseptics; autoclaves; hot water bottles; syringes; hypodermic needles; microscopes; penicillin; cod liver oil; rubber sheeting and tubing; surgeons gloves and instruments; and thermometers.

Report of Memorial Fund.-- From Nov. 21, 1947 to Feb. 21, 1948 the Jane Coffin Childs Memorial Fund for Medical Research, New Haven, Conn., has authorized grants to institutions totaling $114,000 and six fellowship appointments. Among the grants are the following: Memorial Hospital for Cancer and Allied Diseases, N. Y., $30,000 for studies of cancer with special reference to steroids; Yale University School of Medicine, New Haven, Conn., $36,000 for a three year research on biologic behavior of tumor in natural and alien hosts; Cornell University Medical College, New York, $12,000 for a three year research program on the development, training activities and investigations of the Tumor Clinic; Yale University, $9,000 for a three year study of testicular tumors in animals; Long Island Biological Association, Cold Spring Harbor, Long Island, N. Y., $8,000 for a survey of mutagenic potencies of carcinogens and related chemicals as determined with bacteria; the Donner Foundation, $5,500 for support of the journal, Cancer Research, and Chester Beatty Research Institute of the Royal Cancer Hospital, London, England, $5,000 for research on cancer with special reference to the chemistry of carcinogenesis, viruses and chemotherapy of cancer. Six fellowships ranging from $1,400 to $7,125 were awarded to students in American institutions.

Tuberculosis Society Reorganization.—Reorganization of the National Tuberculosis Association's Medical Section, the American Trudeau Society, has been completed, according to Dr. Howard W. Bosworth Los Angeles, president of the society. The reorganization plan, which was approved by the National Tuberculosis Association Executive Committee, is based on the principle that strictly medical matters should fall within the jurisdiction of the medical section while sociologic and public health objectives should be determined by joint planning between physicians and laymen. The four main divisions established under the medical section are (1) administrative, (2) professional education, (3) medical research and therapy and (4) exchange of scientific information with foreign countries. Both the council and the executive committee recently have stressed the importance of having state Trudeau societies organized as medical sections of the tuberculosis associations, carrying out the organization relationship existing between the National Tuberculosis Association and its medical section.

Biannual Meeting of Hematology Society.—The International Society of Hematology will hold its biannual meeting at the Hotel Statler, Buffalo, August 23-26. There will be symposiums on radioactive and stable isotopes in hematology, diseases related to the red blood cells, diseases related to white blood cells, immunohematology, Rh-Hr (CDE-cde) antigen and antibodies and hemolytic anemias, coagulation problems and hemorrhagic diseases. Applications for the presentation of scientific exhibits are being received by Oliver P. Jones, Ph.D., Department of Anatomy, University of Buffalo, Buffalo. Chairman of the program committee is Dr. Ernest Witebsky, Buffalo General Hospital, Buffalo. Dr. Eduardo Uribe Guerola, Leibnitz 212, Nueva Colonia Anzurez, México, D.F., is in charge of the program from South and Central America, and Sir Lionel Whitby, Cambridge, England, in charge of arrangements for the program from Europe. Communications concerning applications for the program will be received by these committeemen. Communications and applications concerning membership will be received by Dr. William Dameshek, Chairman, 25 Bennett Street, Boston, for the United States. Those who are interested in attending may communicate with Sol Haberman, Ph.D., Secretary, William Buchannan Blood Center, Baylor Hospital, Dallas, Texas.

CORRECTION

The Nauheim Bath Not Indicated.—In the Panel Discussion on Physical Medicine in General Practice in The Journal, May 8, 1948, page 140, second column, the sentence beginning in the fifth line of Dr. McClellan's answer should read as follows: The Nauheim bath is not indicated for the patient with severe hypertension who has disability and is perhaps confined to bed because of it. In Dr. McClellan's paper in the same issue of The Journal, page 132, column 1, in the sixth line under the head "Rheumatic Conditions" the third word should be "than" instead of "that."

Marriages

THOMAS LEWIS HARRIS, Parkersburg, W. Va., to Mrs. Elizabeth Williams Moran of New York, April 17.

WILLIAM JAMES MOORE, Trenton, N.J., to Miss Marjorie Joan Van Sciver at Beverly, May 22.

EDWARD DOUGLAS HORNING, Detroit, to Miss Mary Frances Dickinson of Annapolis, Md., April 10.

FREDERICK ROBERT BROWN, Floral Park, N.Y., to Miss Cynthia Barnett of Brooklyn, March 14.

Deaths

Theodore Gaillard Croft, Jacksonville, Fla.; born in Aiken, S.C., Aug. 26, 1887; Medical College of the State of South Carolina, Charleston, 1912; member of the American Medical Association and of the Association of Seaboard Air Line Railroad Surgeons; past president of the Duval County Medical Society; served in France during World War I; lieutenant colonel in the medical reserve corps not on active duty; during World War II medical director of St. Johns River Shipbuilding Company and the Merrill-Stevens Drydock Company and served on the procurement and assignment committee; associated with the Duval County, St. Luke's and St. Vincent's hospitals; died in the Presbyterian Hospital, New York, March 17, aged 60, as the result of an operation on the chest.

George B. Weiser ⊕ New Ulm, Minn.; born in Dalmatia, Pa., in 1857; Jefferson Medical College of Philadelphia, 1879; for many years member and twice president of the state board of medical examiners; for many years member and president of the school board; past president of the Redwood-Brown Counties Medical Society; chief examiner for draft boards during World War I; formerly member of the State Tuberculosis Sanatorium Commission; served as president of the Union Hospital staff; formerly associate editor of *Minnesota Medicine;* died March 23, aged 90.

Charles French Blake ⊕ Baltimore; College of Physicians and Surgeons, Baltimore, 1893; professor of diseases of the rectum and colon at the University of Maryland School of Medicine and College of Physicians and Surgeons; past president of the Baltimore City Medical Society; fellow of the American College of Surgeons; served on the staffs of Mercy Hospital, Hospital for Women, West Baltimore General and South Baltimore General hospitals; died March 20, aged 79, of coronary thrombosis.

Thomas Philip O'Connor ⊕ Chicago; John A. Creighton Medical College, Omaha, 1914; assistant professor of otolaryngology at Northwestern University Medical School; specialist certified by the American Board of Otolaryngology; fellow of the American College of Surgeons; on the courtesy staff of the Passavant Memorial Hospital; chairman of the department of otolaryngology, Wesley Memorial Hospital where he died March 25, aged 56, of peptic ulcer.

Estes Nathan Blount, Bassfield, Miss.; born in Williamsburg, Miss., in 1874; University of Nashville (Tenn.) Medical Department, 1904; member of the American Medical Association; served in the medical department of the U. S. Army in the Philippines during the Insurrection from 1902 to 1905; served during World War I; for many years secretary of the local school board; died in the Veterans Administration Hospital, Jackson, March 19, aged 73, of paralysis agitans and bronchopneumonia.

Henry Louis Bauer, McComb, Miss.; Atlanta Medical College, 1895; Medical Department of Tulane University of Louisiana, New Orleans, 1898; member of the American Medical Association; past president of the Pike County Medical Society; veteran of the Spanish-American War; surgeon for the Illinois Central Railroad; died March 15, aged 81, of heart disease.

George Washington Betton, Jacksonville, Fla.; University of Maryland School of Medicine, Baltimore, 1895; died March 27, aged 72.

John T. Bird, Pontiac, Mich.; Detroit College of Medicine, 1898; served as county physician for many years; died March 20, aged 76.

Walter Lee Boswell ⊕ Clarendon, Ark.; Memphis (Tenn.) Hospital Medical College, 1913; past president of the Monroe County Medical Society; served during World War I; died in the Baptist Hospital, Memphis, Tenn., March 16, aged 59, of chronic lymphatic leukemia.

Cyrus Everette Bush, Denver; University of Colorado School of Medicine, Denver, 1917; served in the regular navy during and after World War I; member of the American Medical Association; associated with St. Luke's Hospital and Porter Sanitarium and Hospital; died March 27, aged 55, of heart disease.

J. Isaac Campbell, Wytheville, Va.; College of Physicians and Surgeons, Baltimore, 1893; died in Staunton March 13, aged 79.

Edgar Close, Jerusalem, Ark. (*licensed in Arkansas in 1903*); member of the American Medical Association; died in St. Anthony's Hospital, Morrilton, March 15, aged 77, of hypostatic pneumonia.

Alphonse Middleton Crawford, Mount Clemens, Mich.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1924; member of the American Medical Association; president of the Macomb County Medical Society; an officer in the Royal Canadian Air Force during World War I; associated with St. Joseph Hospital where he died March 25, aged 49, of injuries received in an automobile accident.

Charles Camille De Gravelles ⊕ New Iberia, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1910; fellow of the American College of Physicians; past president of the Louisiana State Medical Society; honorary member of the staff of Hotel Dieu; died March 22, aged 64, of coronary occlusion.

Beatrice Pearce Dickinson, Ketchikan, Alaska; Woman's Medical College, Chicago, 1887; died March 16, aged 82.

Willis L. Dixon ⊕ Grand Rapids, Mich.; Loyola University School of Medicine, Chicago, 1916; member of the American Society of Anesthetists, Inc.; past president of the Kent County Medical Society; served during World War I; on the staff of St. Mary's Hospital; died in Corbin, Ky., March 12, aged 57.

Horace Colburn Dodge, Asheville, N. C.; Northwestern University Medical School, Chicago, 1902; served overseas during World War I; at various times manager of the Veterans Administration Hospitals in Memphis, Oteen, N. C., and Fort Bayard, N. Mex.; died in the Mission Hospital March 3, aged 70, of coronary thrombosis.

Henry Bardwell Donaldson, Chicago Heights, Ill.; Northwestern University Medical School, Chicago, 1909; member of the American Medical Association; affiliated with St. James Hospital, where he died March 22, aged 68.

William H. Doncaster, Jeannette, Pa.; American Eclectic Medical College, Cincinnati, 1893; died in the Allegheny General Hospital, Pittsburgh, March 20, aged 82, of carcinoma of the colon.

Wilbur Smith Eaton, Colfax, Iowa; University of Nebraska College of Medicine, Omaha, 1937; served during World War II; died in the Mary Frances Skiff Memorial Hospital, Newton, March 6, aged 43.

Paul Williams Fetzer, Reidsville, N. C.; University of Virginia Department of Medicine, Charlottesville, 1916; member of the American Medical Association; served overseas during World War I; formerly member of the county board of health and the school board of Reidsville; on the staff of the Memorial Hospital; died March 11, aged 59, of lymphosarcoma.

Gilbert Edwin Garvin ⊕ Blanchester, Ohio; Eclectic Medical College, Cincinnati, 1935; interned at the Bethesda Hospital and the Catherine Booth Home and Hospital in Cincinnati; served during World War II; affiliated with Our Lady of Mercy Hospital in Cincinnati; surgeon for the Baltimore and Ohio Railroad; killed in a plane crash at Chicago March 10, aged 42.

Demosthenes John Generales, Lowell, Mass.; National University of Athens School of Medicine, Greece, 1892; died in Baker Memorial Hospital, Boston, March 12, aged 78, of injuries received in a fall on the ice.

Alice Winnifred Graham ⊕ Lincoln, Neb.; Barnes Medical College, St. Louis, 1905; on the honorary staff of St. Elizabeth Hospital; died March 14, aged 72.

Ira Clay Hicks ⊕ Huntington, W. Va.; College of Physicians and Surgeons, Baltimore, 1898; an Affiliate Fellow of the American Medical Association; served as assessor of Putnam County and as a member of the state senate from his district; died in a local hospital March 22, aged 79, of multiple injuries received in a fall.

Edward Marcellus Holmes ⊕ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; affiliated with St. Anne's Hospital; died in Oak Park, Ill., March 24, aged 71.

Garrett Curtiss Jacobus, Wauwatosa, Wis.; Columbia University College of Physicians and Surgeons, New York, 1947; served during World War II; interned at the Presbyterian Hospital in Chicago; found dead March 23, aged 25.

Joseph Isham Jenkins ⊕ Hartwell, Ga.; University of Georgia Medical Department, Augusta, 1900; past president of the Hart County Medical Society; served as a member of the board of regents of the University of Georgia; formerly a trustee of many county schools; died in the Emory University Hospital, Atlanta, March 16, aged 71.

Thomas A. Kerr, Lewiston, N. Y.; University of Vermont College of Medicine, Burlington, 1885; member of the American Medical Association; health officer; served as a member of the school board, village trustee and president of the library; formerly on the staff of Memorial Hospital in Niagara Falls, where he died March 20, aged 84, of arteriosclerosis

William Kerr, Bay City, Mich.; Detroit College of Medicine, 1894; member of the American Medical Association; past president of the Bay County Medical Society; died March 25, aged 82, of acute urinary suppression.

Heman B. Kiehle, Lapeer, Mich.; College of Physicians and Surgeons, Keokuk, Iowa, 1887; helped organize the Ogemaw, Montmorency, Crawford, Oscoda, Roscommon and Otsego Medical Society, serving as vice president at the time of its establishment; formerly health officer of Rose City; died in Lapeer City Hospital March 15, aged 94, of chronic myocarditis.

Errett Le Fever, Glouster, Ohio; Medical College of Ohio, Cincinnati, 1890; member of the American Medical Association; served as a state senator and as a member of the house of representatives; affiliated with the Sheltering Arms in Athens; died March 18, aged 81, of coronary thrombosis.

Alexander Graham Little ⊕ Valdosta, Ga.; Bellevue Hospital Medical College, New York, 1893; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; co-founder and chief surgeon at Little Griffin Hospital; died April 9, aged 78, of coronary thrombosis.

Carl Carruth Lytle, Dubuque, Iowa; Drake University College of Medicine, Des Moines, 1903; member of the American Medical Association; served during World War I; died March 18, aged 68, of arteriosclerosis.

John MacLean, Los Angeles; University of Toronto Faculty of Medicine, 1911; fellow of the American College of Surgeons; formerly a member of the state board of medical examiners; on the staffs of Los Angeles County Hospital and the Methodist Hospital of Southern California; died March 18, aged 66.

William Henry McOwen, Newton, Mass.; Harvard Medical School, Boston, 1883; member of the American Medical Association; for many years on the staff of Newton Hospital; died in Garden City, N. Y., March 9, aged 85, of heart disease.

Henry Markee, Blandinsville, Ill.; Eclectic Medical Institute, Cincinnati, 1902; died in Manitou Springs, Colo., March 19, aged 85.

John Crocker Medd ⊕ Maplewood, N.J.; Long Island College Hospital, Brooklyn, 1896; for many years assistant medical director of the Metropolitan Life Insurance Company; died in the East Orange General Hospital March 17, aged 81, of miliary tuberculosis and meningitis.

Harry Corwin Moss, Carbondale, Ill.; Missouri Medical College, St. Louis, 1898; member of the American Medical Association; affiliated with the Holden Hospital, where he died March 23, aged 75, of congestive heart failure.

Alfred Chambers Ray Sr., Richmond, Va.; University College of Medicine, Richmond, 1897; for many years college physician for Randolph-Macon College in Ashland; served as medical director of Tidewater Memorial Hospital in Lynnhaven and as physician at the City Home; died March 22, aged 72.

John Francis Ryan, Brooklyn; M.B. in 1915 and M.D. in 1918, Queen's University Faculty of Medicine, Kingston, Ontario, Canada; served with the British Army during World War I; on the staff of St. Peter's Hospital; died March 21, aged 55, of coronary thrombosis.

William Burkhart Scherr ⊕ Morgantown, W. Va.; University of Cincinnati College of Medicine, 1920; past president and secretary of the Monongalia County Medical Society; served in the medical corps of the U. S. Naval Reserve during World War II; served during World War I; died in the U. S. Naval Hospital, Bethesda, Md., March 21, aged 54, of adenocarcinoma of the rectum.

Herbert Julius Schmidt ⊕ Chicago; University of Illinois College of Medicine, Chicago, 1920; formerly clinical instructor in orthopedics at his alma mater; member of the surgical staff of the Englewood Hospital; died in the Research and Educational Hospitals March 21, aged 57, of cerebral hemorrhage.

George Cullison Seitz ⊕ Swissvale, Pa.; University of Pittsburgh School of Medicine, 1912; chief of staff of surgery at the Braddock (Pa.) General Hospital, where he died February 28, aged 66, of cardiorenal vascular disease.

Colin Shaw, Atkinson, N.C.; North Carolina Medical College, Charlotte, 1911; served during World War I; died March 22, aged 57, of carcinoma of the throat.

Benager Columbus Teasley ⊕ Hartwell, Ga.; University of Georgia Medical Department, Augusta, 1900; formerly member of the state board of health; member of the county board of education; died in St. Joseph's Infirmary, Atlanta, March 10, aged 72, of cerebral hemorrhage.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 29, 1948.

The National Health Service

As foretold in previous letters, the quarrel between the government and the British Medical Association appears about to be composed. The association has again met Mr. Bevin and submitted fourteen questions to him. He has replied with assurance on most of the points to which objection had been taken. Every physician will be free to practice where he chooses unless the area is one in which there are more doctors than are needed. All will be free to choose colleagues, partners and assistants. Partnerships and groups will be free to allocate duties and responsibilities as now, and doctors will be free to decide where an additional partner or assistant is necessary. Freedom of speech and publication within the service on professional scientific and administrative matters is guaranteed.

Existing hospital staffs are given security when they will be taken over by the regional hospital boards. Thereafter it will be the duty of the boards to review the specialist services of their regional members, and they will offer new appointments to their staffs, which they will be free to accept or refuse.

Private pay-bed accommodation has been promised. The minister agrees that in teaching hospitals will be representatives of all consultants and specialists on the staff. Both boards of governors and hospital management committees will include members of the medical committees, and the minister certainly thinks that consultation should include consultation with the medical committee.

The medical profession has certainly gained, as most of its demands have been granted; but the great drawback of the whole scheme is that socialism is imposed on medical practice. Nobody seems to trouble much about that, and when the representatives of the medical profession were negotiating this point was never considered. Perhaps it would have been futile with the labor government in office. The great advances made by British medicine took place under an individualistic system. It remains to be seen what effert socialism with its bureaucratic control will have.

The Fiat Review of German Science

The Foreign Office announces the publication of the first volume of the "Fiat Review of German Science," compiled by German experts under the control of the British, American and French field intelligence agencies (technical). The review, written in German, covers fundamental research in science during 1939-1946. By agreement the first printing is a restricted edition for official distribution between the three allies and UNESCO. The allied edition will be followed by a German one to be published in Wiesbaden. The subjects covered are physics, chemistry, mathematics, medicine, biology and geology. The chemistry volumes include Biochemistry (R. Kuhn), Pharmacology and Toxicology (F. Eicholtz) and Chemotherapeutics (F. Schönhöffer).

The medical volumes include Internal Medicine (R. Schon), Pediatrics (H. Kleinschmidt), Neurology (G. Schaltenbrand), Psychiatry (E. Kretschmer), Tropical Medicine (E. G. Nauck), Hygiene (E. Rodenwaldt), Surgery (K. H. Bauer), Obstetrics and Gynecology (H. Martius), Radiology (H. Holthisen), Physiological and Pathological Chemistry (F. Lenhartz), Pathology (F. Buchner), Bacteriology (H. Schmidt), Virus Diseases (R. Beling and H. Heinlein), Physiology (H. F. Rein) and Anatomy (P. Stöhr).

Change in the Practice of Vaccination

With the coming into operation of the National Health Service Act, compulsory vaccination against smallpox will cease and this vaccination will be placed on the same footing as immunization against diphtheria. The Ministry of Health has therefore issued a memorandum on vaccination that gives the latest views of experts. The routine vaccination of infants during the first few weeks of life before breast or artificial feeding is well established is declared unwise. On the other hand, primary vaccination should be done before the infant is aged 6 months. The site should be the arm, and there should be only one small area of insertion, by the multiple pressure technic. Primary vaccination should not be undertaken in school children or adults except in those exposed to smallpox infection and those required for the armed forces or to undertake foreign travel, as the risk of encephalomyelitis, though small, is greater at school age or later. The frequency of revaccination varies with circumstances. For children primarily vaccinated in infancy it should be both on entering and on leaving school. For the armed forces the routine is to revaccinate at 5 year intervals on home service and 2 year intervals during overseas service.

BUENOS AIRES

(From Our Regular Correspondent)

May 3, 1948

Gram-Negative Bacteria of the Respiratory Tract

In a communication to the National Academy of Medicine, Drs. M. R. Castex, E. L. Capdehourat and C. Rechniewski report investigations of 378 species of gram-negative bacteria isolated from 1,000 samples of subacute and chronic processes, localized in the different areas of the respiratory apparatus (41 from nasal fossas, 123 from paranasal sinuses, 55 from pharyngeal secretion, 129 from sputum, 30 from pus of pulmonary abscesses and pleurisies). The isolated species are: Escherichia coli (26 cases), Proteus vulgaris (48), Aerobacter aerogenes (20), Klebsiella pneumoniae (239), Pseudomonas aeruginosa (20) and unclassified (23). The importance of these investigations lies in the fact that in comparison with observations made before the era of antibiotic and sulfonamide drugs, in the mentioned diseases the gram-negative bacteria have increased in frequency and quantity. The abundance of the mentioned flora is not only apparent by diminution of the gram-positive organisms, but by real increase of the gram-negative types The reason may be a pathogenic exaltation of the gram-negative bacteria as a consequence of the inhibition of the common pyogenic flora by the use of antibiotics and sulfonamide agents. The authors advise that antibiotic treatment be not used in infectious respiratory conditions, however trivial, without previous knowledge of the nature of the responsible bacteria and the degree of their individual sensitivity against the different medicaments which presumably would be efficient. When such conditions continue for a long time in spite of treatment which is believed to be effective, periodic bacteriologic examinations should be carried out to determine the influence of the administered drugs and also the possible appearance of new refractory species. According to the authors, the use of penicillin has determined the increase of the chronic refractory processes, originated at least partly by the gram-negative bacteria which are insensible to its action. For these reasons it would not be wise to treat a patient exclusively with penicillin or sulfonamide drugs, when a primary or secondary gram-negative flora exists. Penicillin and sulfonamide agents must therefore be used with great caution, whatever way of administration may be elected.

Furthermore, the authors observed that in the serious respiratory conditions of putrid and gangrenous character the gram-negative bacteria coexist constantly with anaerobic forms. The gram-negative organisms are the most difficult ones to inactivate; often they are the residual flora, and therefore responsible for the incurability of a chronic process. If antibiotics are used against those gram-negative germs, it must be done from the beginning in efficient large doses. In many cases streptomycin is preferable to penicillin! The gram-negative bacteria frequently cause intense cutaneous reactions with or without others of symptomatic focal type (allergic). The gram-negative organisms, especially Esch. coli, produce penicillinase, which inactivates penicillin and which can explain the failure of local treatment. The increase of gram-negative forms increases also the production of penicillinase, thus decreasing more and more the effect of penicillin.

Brief Items

Professor C. Bonorino Udaondo has been elected president of the National Academy of Medicine for 1948-1949.

The Argentine government has given 36,000,000 pesos to the city of Buenos Aires for improvement of the hospital services.

Dr. Oscar Ivanissevich, until now Argentine ambassador in Washington, D.C., has been nominated secretary (minister) of education in Buenos Aires. He is the first chief of a new secretariate which replaces the section of public instruction, which was formerly a part of the Ministry of Foreign Affairs. Professor Roque A. Izzo has been named interventor of the Medical Faculty at Buenos Aires. Professors Pedro L. Errecart (otorhinolaryngology), Venancio Deulofeu (biologic chemistry) and Adrian J. Bengolea (surgery) have been elected members of the National Academy of Medicine at Buenos Aires. Dr. Herbert Wade of the United States of America has been in Buenos Aires visiting the leprosariums and preparing the next International Leprosy Conference, which will be held in April in Havana, Cuba.

For the first time in the Argentine Republic an extensive private postgraduate course has been organized, by Professor Pedro Cossio. The best teachers and clinicians in surgery, cardiology, endocrinology, clinical hematology, gastroenterology, hepatic diseases and roentgenologic diagnostic procedures have participated. At the end of the course, in which one hundred and fifty-nine Argentine and Latin American physicians participated, the president of the Argentine Medical Association, Professor José Valls, called special attention to the great success of this event.

Professor Enrique Finochietto, well known Argentine surgeon, died on February 17, aged 66.

The Time of Total Circulation

Drs. Alfredo Lanari and F. Labourt reported to the Argentine Society of Cardiology their new method which permits the determination of total time of circulation by means of inhaling acetylene through one lung and collecting, at certain intervals, samples of air expired from the other lung. Owing to the great technical difficulties this method can only be used for experiments or for the diagnosis of certain congenital diseases of the heart.

SPAIN

(From Our Regular Correspondent)

MADRID, May 25, 1948.

Public Health in Spain

Much improvement has been made in public health in Spain during the last nine years under the direction of Dr. J.A. Palanca and the Ministry of the Interior, whose head is senor Blas Perez. According to the Public Health Department, the comparative figures are as follows:

Years	Population	General Mortality	Infant Mortality
1935	24,583,096	15.6	109
1946	27,285,489	12.7	87

The mortality rate for 1946 in Spain is close to that of countries most advanced in matters of health; and although the statistics of infant mortality are based on a somewhat different criterion of "living children," it is evident that our general improvement has kept pace with the evolution of therapeutic means. The success in public health work has been due in part to the amounts assigned in the budgets. In 1935, the Public Health Department's estimate was 33,000,000 pesetas, whereas in in 1947 the figure was 173,000,000, including, besides assignments in the Public Health estimates properly so called, those from the Social and Charitable Help Fund (8,000,000), Surcharges and Lotteries (4,000,000) and Provincial Health Institutes (29,000,000).

In the nine years, the following laws have been enacted: National Public Health (1944), superseding the Act of 1854; Fight against Tuberculosis (Dec. 13, 1943); Children's and Mothers' Health (July 12, 1941); Repression of Abortion and Protection of Child-Bearing (Jan. 24, 1941); Extension of Maternity Insurance Benefits (July 18, 1942); state payment of physicians in the last three classes of the Visiting Public Assistance Services (Dec. 31, 1941); credit for improvement and other emoluments to doctors in the last three classes of the Visiting Public Assistance Services (July 22, 1942). Finally, a law enacted on July 17, 1947, established a bonus of 2,000 pesetas a month for doctors holding appointments under the Visiting Public Assistance Scheme, 1,500 pesetas a month for municipal pharmaceutical inspectors and 30 per cent of the aforesaid doctors' bonus for surgeons' and physicians' assistants and mid-wives in these visiting services. Some of these laws have not yet been fully carried out in practice.

Health Institute

In the course of these years, the Public Health Department has erected ten provincial health institutes, rebuilt five which were destroyed in the civil war and has eight more in course of construction and two about to be opened, while enlargement of three others is being planned. It has created thirty rural hygiene centers, 133 puericulture clinics, fifty emergency maternity and pediatric centers and 90 maternology clinics.

The National Health School, which was further founded before the advent of the new state, has been given impulse. New creations are the Spanish Haematology Institute, the National Health Instructresses Training College, an institute of collapsotherapy within the framework of the fight against tuberculosis; the puericulture schools at Barcelona, Bilbao, Malaga, Murcia, Santa Cruz de Tenerife, Valladolid, Saragossa and Jaen. The Madrid School of Puericulture has been rebuilt. To the present Public Health Department we also owe the Leper Hospital at Trillo, the Mental Hygiene

Clinic at Barcelona, a mental hygiene center at Vallecas (Madrid), a new disinfection center at Baracaldo and a Mental Hospital at Segovia.

For the excellent results in the fight against tuberculosis, the Spanish people are indebted to the Minister of the Interior, Blas Perez.

The comparative figures, under this heading, for eleven years are as follows:

Year	Clinics	Sanatoriums	Beds	Estimates, Pesetas
1936	33	20	2,109	2,000,000
1947	120	70	9,615	123,588,563

An additional 11,514 beds will soon be made available and 3,830 more are in project.

Effective work has been done against venereal disease and leprosy. There are one hundred and forty-one doctors and seventy clinics in these services. The old name "Anti-Venereal Dispensaries" has been changed to "Dermatological and Social Hygiene Clinics." The sulfamides and more particularly penicillin are contributing efficaciously in this fight.

In the campaign against leprosy, the government has put new ideas into practice. We have the Leprological Institute and the Central Leprosy Sanitarium at Trillo, with one hundred beds now available and other wings in construction. Another leper hospital is being built at Toen (Orense) and another at Abona (Tenerife).

A group of leprologists has been organized and merged with that of physicians to the official dermatologic clinics. In all provincial hospitals in leprosy-infected areas, wards with beds for patients with leprosy have been opened by decree. The yearly estimates for the fight against leprosy amount to 987,233 pesetas, 7,467,592 pesetas having been invested in the building of leper hospitals or wards and subsidies to the antileprosy establishments at Fontilles, Malaga, Granada, Corunna, Las Palmas, Tenerife and Madrid (Hospital of St. John of God).

In the field of other infectious diseases the Public Health Department has done excellent work. Compulsory vaccination against diphtheria has been most efficacious. This work started with the experience gained in 1939-1940 by means of the vaccine supplied by the United States and Great Britain. In 1940-1941 there was an outbreak of smallpox which was well studied in the special wing of the National Hospital for Infectious Diseases, and suppressed. There is no longer any problem.

Malaria

In the fight against malaria there were 202 clinics in 1936 and, in 1947, the number had increased to 321. The money spent on antimalarial drugs amounted on an average to 250,000 pesetas, ten years ago, but since 1940 the yearly average is 2,500,000 pesetas, while in 1943, when malaria underwent a new increase, it rose to 4,000,000. In this fight the DDT group of insecticides has been used with great success.

On the other hand, the fight against cancer, in spite of excellent intentions of the Public Health Department, has lagged. According to the report issued by the department, a large scale plan is being worked out. Nevertheless, the old Cancer Institute, which was directed by Dr. Pio del Rio Ortega, who died in exile in Buenos Aires, is practically paralyzed; it has no premises of its own since the old ones were destroyed in the civil war. At present, the institute is directed by Dr. J. Sanz Ibanez, professor of histology and pathologic anatomy in Madrid University.

The work of the General Pharmacy Inspectorate tends to raise the scientific and financial standard of pharmacists, regulate the location of drug stores and favor the development of the national industries and the provident institutions, particularly the Pharmacists' Orphanage.

The Public Health Department supplies official health centers with narcotics, and emphasis must be laid on the foresight exercised during the war and the postwar period in the opium problem and, later, with regard to the distribution of penicillin. The General Pharmacy Inspectorate has created a body of municipal pharmaceutical inspectors, into which entrance is by competitive examination, and a medicinal plant department to encourage the growing and the use of those occurring in Spain.

In the sphere of ocular hygiene, the number of ophthalmologists in the Provincial Health Services has been increased to fifty-two, and new clinics have been opened, there being now a total of fifty-three ocular hygiene departments, of which there were seventeen in 1936. Nearly all the antitrachoma clinics that were destroyed in both zones in the civil war have been rebuilt and equipped. At Aguilas (Murcia) an antitrachoma center has been built with beds for patients; that district is widely infected with this disease, but the number of cases here has dropped from 31,651 before the civil war to 29,442 in 1946.

Recently created were the National Food Trust and the National Food Institute. Thanks to the Public Health Department and the Nutrition Department of the Medical Research Institute and the Supplies Commissariat, in 1943 or thereabouts it was possible to cut short an epidemic of lathyrism which had become alarming. Feeding in the poorer suburbs is of great concern. The authorities have had statistical studies made, some of which, already published, are of scientific importance.

Institute of Haematology

In 1940, the Spanish Institute of Haematology was created. This institute deserves special mention. The state contributed 1,300,000 pesetas for the purchase of the building and its adaptation, repairing and enlargement, and 2,556,127.11 pesetas from 1940 to 1947 for its maintenance. The Institute is directed by Dr. C. Elosegui. The following services have been rendered to date: 20,383 transfusions (142 in 1940, increasing to 4,842 in 1946) and 5,319 cases have been attended to in the plasmotherapy outpatients' department. Teaching also has been given to Army, Navy and Air Force doctors ever since 1942. The institute cooperated in the drive to do away with the epidemic of exanthematic typhus in 1941 and 1942, statistics of which are published in the *Anales del Instituto de Hematologia*. It also helped to deal with the outbreaks of typhoid and in the production of serums against measles, scarlatina and infantile paralysis, and is the only center now preparing and sending all over Spain serums for defining the blood groups.

As regards the visiting public assistance doctors' corps, the salaries of such physicians has been increased in recent years by 1,000 pesetas a month for all classes and the state has undertaken the payment of those in the three lower ones. The state has also furnished a credit of 7,000,000 pesetas for improvements to the latter and a benevolent fund has been opened for doctors holding appointments. Seven competitions have been held in the last few years, 8,886 appointments have been made, and three competitive examinations have been announced.

By Act of July 17, 1947, a bonus of 2,000 pesetas a month was established in favor of appointed doctors; of 1,500 pesetas for municipal pharmaceutical inspectors, and of 30 per cent of the doctors' amount for *practicantes* and midwives in the visiting assistance services.

Medical Economics

ABSTRACTS OF RECENT MEDICAL ECONOMIC WRITINGS

NOTE: Following are abstracts of and comments concerning recent publications on medical economic subjects prepared by the staff of the Bureau of Medical Economic Research.--Ed.

URBAN COST OF FAMILY LIVING

THE CITY WORKERS FAMILY BUDGET. By Lester S. Kellogg and Dorothy S Brady. MONTHLY LABOR REVIEW, U. S. Department of Labor pages 133-170, February, 1948.

This study was undertaken to determine the cost of family living in large cities Four-member families in thirty-four large cities throughout the country were surveyed, and a standard budget was devised at a level which "meets prevailing American standards of what is necessary for health and decent living." The concept of "necessary" used by the Bureau of Labor Statistics includes conventional and social as well as biologic needs; it indicates a modest rather than a minimum standard. The quantities of certain items included in the budget were determined by scientific requirements set up by authorities (such as the Food and Nutrition Board of the National Research Council and the American Public Health Association's Committee on Housing Hygiene) where such standards exist; in other cases, the relation between amounts of the item bought and amount of family income were charted, and the point where increases in buying showed a relative decline was used as the budget level. The cost of items in this basic budget were priced for March 1946 and June 1947. The resulting figures showed the greatest variation between cities to be $375 (from $2,734 in New Orleans to $3,111 in Washington, D.C., in 1947).

The bureau points out that it has no actuarial standards formulated by the members of the medical profession to aid it in determining medical care requirements. It arrives at a budget allowance for medical care ranging from $127 to $202 in 1946 and from $132 to $222 in 1947. This amounts to from 5 to 7 per cent of the total budget, and shows a greater percentage of the total going for medical care in 1946 than in 1947 when incomes were higher. Of the sum spent for medical care, 75 per cent went for medical and dental services 13 per cent for hospital expenses and 11 per cent for medicine and eyeglasses. Almost all the increased expenditure between 1946 and 1947 went for medical and dental services, the amount spent on the other medical care items remaining nearly constant. The budget level for visits to physicians was established at 4.4 calls per year per person; for dental visits, at one plus per year per person Two fifths of the medical and dental costs were incurred by the wife of the family of four; the other members shared the remainder more or less equally.

The Bureau states that the standard represented by these medical care items is characteristic of an income level above the other groups of goods and services included in the budget, and that therefore the majority of American families receive " inadequate" service. The validity of this conclusion depends on the assumption that the budget levels for visits to physicians and dentists is accurate. Without passing judgment on the methods used in the Bureau's study, the figure of 4.4 physician calls per year per person seems excessive when compared with the maximum average of 3 calls per year per person over 65 years of age receiving free care in the state of Washington. In any case, the bureau is certainly not justified in extending conclusions derived from a study of a particular type of family to the majority of American families.

Assuming the correctness of the bureau's estimate of an "adequate minimum" of medical care for its typical urban family, the budget items for medical care are larger than typical amounts actually spent by families in a corresponding income group ($3,200). Moreover, 5 to 7 per cent of the budget for medical care items is far in excess of the national average of 3.9 per cent in 1946. (Cf. Is Medical Care Expensive?, Bureau of Medical Economic Research, American Medical Association, 1947, 12 pp.). Aside from possible rural-urban differences in percentages spent for medical care, these discrepancies could be due to the composition of the Bureau's typical family - a father aged 38, a mother aged 36, son aged 13 and a daughter aged 8 years. It has never been demonstrated that low income families of a fixed size, age and sex distribution spend a higher percentage of their budget for medical care than do similar families in higher income classes, as implied by Engel's Law of Expenditures. It is, however, well established that young fathers of young children are not receiving their maximum lifetime earnings, although their medical care costs are likely to be at the lifetime maximum, except for the period of old age. Had the Bureau's typical family been ten years older, its income would probably have been greater and its medical care costs less. If the members were five to seven years younger; the medical care costs would probably have been somewhat higher, the income of the father somewhat lower, and, of course, the persentage of the family budget spent for medical care would have been even greater

Even if this medical budget is typical for the family specified by the authors it is excessive for most families in the nation. The authors have been wise to confine their discussion to a relatively young family in an urban community. Even they would not claim that their data were applicable to an old family. It should soon be possible to build a family budget for medical care items in most cities by reference to family premium rates for group hospital and medical care plans which cover most of the costs of major but not of minor illnesses; they seldom cover dental costs. Doubtless the two authors, both well known statisticians, would welcome that simplification of the painstaking task of developing one part of a family budget. The Bureau did make use of the premium rates for group hospitalization plans in cities where such plans covered a sizable proportion of the population.

REVIEW OF ILLUSTRATIVE UNITED STATES POPULATION PROJECTION, 1946

Assuming that low fertility produces a decrease in total population and high mortality decreases the number of aged persons, and the reverse, that high fertility produces an increase in total population and low mortality increases the number of aged persons, estimates of total population one hundred years hence can be obtained.

In the report here discussed[1] population figures for 1945 were projected for the next hundred years. Projections were based on the population of the United States as of July 1, 1945, as estimated by the Bureau of the Census.[1]

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eyers, H. J.: Illustrative U. S. Population Projection, 1946, Actuarial Study no. 24, Federal Security Agency, Social Security Administration, Office of the Actuary. January 1948.

1. Population Special Reports, Series P-46, no. 2, United States Department of Commerce, Bureau of the Census, Jan. 27, 1946.

Four projections were made: A assumes a low fertility and high mortality without calculation of immigration (2050 A. D. population—63,521,000); B assumes a high fertility and low mortality. This estimate includes an expected 100,000 immigrants per year (2050 population—372,755,000); C assumes a high fertility and high mortality. Immigration estimates were not included (2050 population—264,014,000); D assumes a medium fertility and low mortality. Immigration estimates were not included (2050 population--153,198,000).

Figures for projection A show a decreasing population trend with a slight peak occurring in 1960 (143,417,000 as compared with 140,434,000 in 1945). However, beyond 1960 the decreasing trend continues to 63,521,000 in 2050. Decrease in this instance is due to the low fertility and high mortality effects described. Greatest numbers of persons occur in the age group 20 to 44 but all groups decrease in size. Projection B demonstrates the opposite effect The population increases; in 2050 it reaches 372,755,000, two and a half times the 1945 figures In this instance all age groups increase in size Projection C demonstrates an increasing trend, but lesser than that in B. The total population estimate in 2050 is 264,014,000, double the base figure Obviously most static effects appear in projection D, in which total population reaches a peak 173,312,000 in 2000, then declines slightly but still remains above that of 1945. Age groups in this projection are more constant.

The highest percentage of population always falls in the age group 20 to 44. With the high fertility rate assumed in projection B the under 20 year group is ten times the same figure for A. For the group aged 65 and over the numbers of persons increases in projection B and projection C, with the latter increasing at a less rapid rate. Projection A produces the reverse picture showing a decline after 2010 while D demonstrates a leveling off after 2010. All curves demonstrate a hump at the year 2000 followed by a slight dip and a secondary rise. This result is due to the varying numbers of births during the depression period and the subsequent postdepression period.

Groups which decrease in size when calculated as percentages of the total population are those under 20 years and 20 to 44 years. The remaining two groups, 45 to 64 years and 65 years and over, tend to increase In projection A the first age group decreases almost half whereas the last age group almost triples itself Projection B is stationary except for the 65 year and over group which approaches twice the 1945 figure. Projection C is similar to B in that the group size does not change radically. Projection D follows the same pattern as A but the change is less well defined.

Little sex variation occurs in projections A and C, but B and D show relative increase in numbers of males. This increase is due partly to immigrants. The little variation that does appear in projections A and C demonstrates the relative numbers of males to be decreasing. For the aged population the ratios remain about the same; a slight decrease for A and C and a slight increase for projections B and D. Mortality among females has always been slightly lower than among males The number of nonwhite persons increases in all projections. The greatest increase in this category appears in projections B and D.

MEDICAL SERVICE PLANS UNDER COLLECTIVE BARGAINING:

Monthly Labor Review 66:34-39 (Jan.) 1948.

This study describes briefly two medical service plans established under collective bargaining: the Labor Health Institute in St. Louis and the Union Health Center in Philadelphia. Both plans started in the war years, when wage increases were hard to get for reasons other than economic and tax benefits made welfare plans particularly suitable substitutes from the point of view of employers. The Philadelphia center was initiated by a local board of the International Ladies' Garment Workers' Union; the St. Louis center by the United Retail and Wholesale Union, Congress of Industrial Organization. The International Ladies' Garment Workers' Union had the precedent of a health center already operating in New York and set up what amounts to a group diagnostic clinic providing service free to referred ambulatory persons who are eligible. Specialist services not offered are obtained elsewhere, the center paying the bill. Pharmaceuticals and appliances are available at reduced fees. Dependents get the services of the center at low fee for service rates. Annual physical examinations at the center are free for eligible persons; other than this, no person receives care at the center unless referred by his private physician. The center is financed by one third of a total employer payroll contribution of 6 per cent. The balance of the contribution is used for vacations, unemployment insurance and administrative costs.

The St Louis center was set up without a union health center to serve as a model Instead, experience of certain personnel in the cooperative health movement was utilized. Those eligible are offered what the medical director calls " portal to portal" medicine-complete care. Hospitalization is handled through the Blue Cross; the center handles all the other required services, including dentistry, social work and psychiatry. Pharmaceuticals and appliances are available at reduced cost. Funds come from a 3½ per cent employer payroll contribution

Each center experienced difficulty at first in getting eligible persons to make use of the facilities offered. The St. Louis center has maintained an aggressive policy of health education and has taken as clients groups other than the initiating union. The Philadelphia center has not attempted to expand its services. The medical staff of each center works part time, at hourly rates of $5 in St. Louis and $6 in Philadelphia. Medical staffs appear to have considerable autonomy. Employer acceptance of the centers has been greater in Philadelphia, attributable to the fact that in the needle trades the tradition has become accepted that employers share responsibility for employees. It is expected that in depression employers will attack this type of plan on the basis of its cost.

ANNUAL REPORT OF THE FEDERAL SECURITY AGENCY. SECTION ONE. SOCIAL SECURITY ADMINISTRATION:

For the Fiscal year 1947. Washington, D.C., United States Government Printing Office, 1948

This report describes the operations of the Social Security Administration for its first year under that name; it makes recommendations for the extension of social security in accordance with section 702 of the original Social Security Act. These recommendations provide a forecast of the testimony of Social Security employees in future hearings on bills pertaining to health and related matters. The following are some explicit assumptions on which the argument for expanded social security services are based: (1) Present provisions are incomplete in coverage of risks and of persons. (2) The extent of protection for persons insured against similar risks varies greatly. (3) The preservation of free competition and democracy cannot be possible unless the larger forms of insecurity are removed from our society.

The Administration recommends "that our present programs of social insurance should be broadened into a comprehensive basic national system of contributory insurance." Persons falling between the cracks of this system should be cared for by specific welfare programs, " including public assistance and family and child welfare services." The insurance aspects of this recommendation are shown to contribute to free enterprise and democracy by protecting persons from the economic hazards of life, to some degree; in short, it is argued that this insurance is required in order to preserve 'the economic ability to make free choices. The welfare aspects are said to be in the old tradition of public provision of special services where no private method is suitable to fill a recognized need.

Compulsory health insurance is listed among the items in the services which should be added. There is nothing new in the arguments for this aspect of social security, except its presentation in the larger context as one of several programs, all of which are said to require expansion.

UNION-MANAGEMENT WELFARE PLANS: ROBERT J. ROSENTHAL. Quart. J. Economics 62:64-94 (Nov.) 1947 (Includes a large tabular presentation of details of many labor-management and labor plans).

Labor's policy in the early twenties was to favor union-controlled and financed benefit plans. Employer-sponsored plans then were considered labor-busting devices. Compulsory health insurance was frowned on in favor of labor's own. The depression wiped out most of these plans. Bargaining in the thirties was on matters of wages and hours. Not until the war froze wages did welfare plans appear as a means to get further benefits—something for labor's negotiators to bring home from the negotiation table and a device for employers to keep from paying excess profits taxes.

The spate of labor-management plans that blossomed during the war years have varying degrees of labor control. Many use private insurance carriers. Most involve employer contributions on the basis of total payroll; only one or two plans base the employers' contributions on gross output - as does the United Mine Workers' plan (imported from England in this regard).

Labor in general thinks of these plans as a temporary stopgap, until the Wagner-Murray-Dingell Bill becomes law. The existence of welfare plans on the negotiation agenda is to a large extent dependent on the relative bargaining strength of labor—these plans appear only after all possible wage demands have been exploited. Tougher times will see less of these plans, as bargaining reverts to the hoary issues of wages and hours.

BUDGETING THE COSTS OF ILLNESS: H. LADD PLUMLEY, National Industrial Conference Board, Studies in Individual and Collective Security No. 1, 1947.

This sixty-six page pamphlet discusses in general terms the nature of voluntary health insurance plans in the United States. The pamphlet is not well documented and should be considered a secondary source. Discussion of employee mutual benefit associations is based chiefly on a ten year old study in *Public Health Reports*. The conclusion is that this type of insurance will not expand significantly. Comment on trade union plans mentions the difficulty experienced by unions operating such plans and states that the trend is toward no more plans organized by unions alone. A long table, for which no source is listed, gives data on contemporary union benefit plans. There is a brief discussion of Blue Cross development, totally undocumented, which omission is not serious since the data are all available in other convenient sources. Coverage of prepayment medical care plans includes an interesting brief historical sketch and mentions the need for the American Medical Association to publish actuarial data on these plans. Discussion of individual policies sold by private insurance companies carries the cautionary statement that these policies often combine health clauses with accident and other provisions. The conclusion is that voluntary health insurance is advancing on a broad front with many different types of plans; that the period of experimentation is over and that extension of coverage through existing mediums is to be expected.

COMMUNITY HEALTH SERVICES FOR CHILDREN IN EIGHT STATES: CHARLES L. WILLIAMS JR., M.D.; JOHN P. HUBBARD, M.D., and KATHERINE BAIN, M.D.: Am. J. Pub. Health 38:75-81 (Jan.) 1948.

This is a brief preview of the results of the Academy of Pediatrics-Public Health Service-Children's Bureau survey of child care in the United States. This article presents bar-diagram comparisons of well child conferences and public health nursing services available in a sample of counties, broken down into the interesting classification developed for this study according to density of population and adjacence to dense population.

MEDICAL CARE OF THE INDIGENT AGED IN WASHINGTON STATE

FRANK G. DICKINSON, Ph.D.
Director, Bureau of Medical Economic Research
Chicago

Washington state has provided medical care for the recipients of old age pensions; they constitute about two fifths of all the residents of Washington over 64 years of age. In 1941 the voters approved Initiative No. 141, "The Senior Citizens Grant Act," establishing a new method of handling the medical care costs of the approximately 60,000 citizens of that state who receive old age pensions. Mr. Odin W. Anderson presents an analysis of this program in his book "Administration of Medical Care: Problems and Issues" (Research Series 2, Bureau of Public Health Economics, School of Public Health, University of Michigan, Ann Arbor, Mich., 1947).

This study covers the four year period April 1941 to March 1945; the plan was in operation until April 1947. The biennial appropriations rose from $5.5 million to $8 million or from $44 to $68 per year. The services included medical, dental, hospital and nursing care, drugs and appliances. Free choice of physician and fee for service were provided; basic fee schedules were worked out with the state medical, dental and hospital associations. The policy-making, supervision, finance and record-keeping operations were handled by the state department of social security; the actual administration of the program at the local level was conducted by the county welfare departments. There were both state and county medical-dental advisory boards. The county medical service bureaus, which have played such a prominent role in the development of the prepayment medical care program of organized medicine in the state of Washington, handled the medical, dental and drug aspects of the program.

In addition to the increase in cost, which Mr. Anderson does not place into a frame of reference, several other shortcomings are noted in the operation of the plan and have doubtless been among the reasons for discontinuing the program in April of 1947. Mr. Anderson contends that the large amount of control exercised by the representatives of the county and state medical societies was detrimental and that a better plan would have provided more control by government and less by the profession. By September of 1941, about a half year after the program started, over half of the licensed physicians and dentists were participating in the program. In 1944 the gradual withdrawal of participants started, according to Mr. Anderson, with the downward revision of the fee schedule. He also complains of red tape that was involved, especially at first, in submitting claims and keeping records

Some of his over-all statistics are most interesting. Each month one fifth to one fourth of the persons over 64 years of age who are receiving old age assistance saw a physician and 5 per cent were in institutions. Annual home and office calls per recipient varied from 2.4 to 3, a surprisingly high rate of utilization. The percentage of recipients requesting physician's services rose steadily, from 19.2 per cent in the last quarter of 1941 to 27.5 per cent in the first quarter of 1945. On the contrary, the number of dental visits decreased, probably reflecting the considerable number of accumulated dental deficiencies which were eliminated in 1941 soon after the plan was inaugurated. The monthly percentage of recipients hospitalized rose from 1.6 to 2.7. The proportion of cases handled by the county hospitals increased slightly during the four years from 61 to 64 per cent, although the average number of days for hospitalization per patient remained almost constant in private hospitals while increasing about one half in county hospitals. Per capita cost of drugs rose from 15 cents a month to 65 cents. Two thirds of the entire $600,000 expenditure for appliances was made during the first two years.

The monthly per capita cost of the program rose from $3.75 to $6.32, the cost of the services of physicians and dentists remained relatively constant in dollars while the costs of all the other services rose. The physician's share of the total declined from 60 to 40 per cent.

Funds were allocated to the counties according to the number of persons receiving old age assistance. Mr. Anderson contends that this plan of distributing the funds eliminated all connection between the services actually needed as compared with those rendered. He suggests that if any other states seek to model their plan of medical care for the indigent aged on the Washington experience, they should make certain that the law is specific as to services and practitioners to be included. He advocates a period of preparation before the program actually goes into effect. He further argues for an integration of the agency in control with other governmental departments which have medical care functions. He also finds certain shortcomings in the records necessary to provide a clear picture of the actual cost of medical care under the program. Last, he supports the general thesis that the medical care program financed out of public revenues must have some controls on the volume and cost, although such controls will certainly not be popular with the recipients and probably not with some of the providers of the medical services.

This law of 1941 was superseded after Mr. Anderson's book went to press and the responsibility for the care of aged recipients was returned to the counties on April 1, 1947. As the number of persons in our population who are in the group over 64 years of age increases to perhaps 20,000,000 in a few decades, this question of medical care for the indigent aged will force itself increasingly on the attention of all those interested in medical economics. Mr. Anderson's study is a valuable addition to the literature on medical economics.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in THE JOURNAL, July 3, page 903.

BOARDS OF MEDICAL EXAMINERS

ALASKA: * *Examination* Juneau, Sept 7 Sec., Dr W. M. Whitehead, Box 140, Juneau

CALIFORNIA: *Oral.* Los Angeles, Aug 7-8. *Written* Los Angeles, Aug 9-12, Sacramento, Oct 18-21. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14

CONNECTICUT: * *Examination* Hartford, July 13-14 Sec., Dr Creighton Barker, 258 Church St., New Haven. *Homeopathic Examination.* Derby, July 13 Sec., Dr J H Evans, 1488 Chapel St., New Haven.

DELAWARE: *Examination* Dover, July 13 *Endorsement.* Dover, July 22 Sec., Dr J S McDaniel, 229 S. State St., Dover.

HAWAII: *Examination* Honolulu, July 12-15. Sec., Dr. S. E. Doolittle, 881 S Hotel St., Honolulu

IDAHO: Boise, July 13-15. Sec., Bureau of Occupational Licenses, Miss Estella S Mullner, 355 State House, Boise

IOWA: * *Examination* Des Moines, Dec 6-8. *Endorsement* Des Moines, Aug 2 Sec., Dr M A Royal, 506 Fleming Bldg., Des Moines

MASSACHUSETTS: *Examination* Boston, July 13-16 Sec., Board of Registration in Medicine, Dr H Q Gallupe, 413-E State House, Boston.

MISSOURI: Jefferson City, Aug 8 Exec. Sec., Mr. J. A. Hailey, Room 135 Capitol Bldg., Jefferson City

MONTANA: Helena, Oct 4-6. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena

NEVADA: Carson City, Nov. 1. Sec., Dr. G H Ross, Industrial Bldg., Carson City

NEW HAMPSHIRE: Concord, Sept. 9 Sec., Board of Registration in Medicine, Dr J S Wheeler, Room 107, State House, Concord.

NEW MEXICO: * Santa Fe, Oct 11-12. Sec., Dr V. E. Berchtold, 141 Palace Ave Santa Fe.

NORTH CAROLINA: *Endorsement* Morehead City, July 22. Sec., Dr. Ivan Procter, 226 Hillsboro St., Raleigh

OREGON: * *Examination* July 28-30 Final date for filing application is July 14 *Endorsement* July 30-31 Final date for filing application is July 16 Sec Miss L M Cathee 608 Failing Bldg Portland

SOUTH CAROLINA: *Endorsement* Aug 2, Sept. 6. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia

SOUTH DAKOTA: * Pierre, July 20-21. Sec., Dr. Gilbert Cottam Capitol Bldg., Pierre

WASHINGTON: * *Examination* Seattle, July 12-14 Act Dir., Dept of Licenses, Mr G C Starlund, Sec., Miss Virginia Witherspoon, Olympia

* Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Juneau, Last week in Aug Sec., Dr C. Earl Albrecht, Box 1931, Juneau

FLORIDA: *Examination* Gainesville, Nov 6 Final date for filing application is Oct 25. Mr M W Emmel, University of Florida, Gainesville

IOWA: Des Moines, July 13, Oct 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids

MICHIGAN: *Examination.* Ann Arbor and Detroit, Oct. 8-9. Sec., Miss Eloise LeBeau, 1510 West Allegan St., Lansing.

MINNESOTA: *Examination* Oct 5-6. Sec.-Treas., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

NEBRASKA: *Examination* Omaha, Oct 5-6 Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009 State Capitol Bldg., Lincoln

OKLAHOMA: Spring of 1949 Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, Sept. 4 Sec., Basic Science Examining Committee, Dr. C. D. Byrne, Univ of Oregon, Eugene.

WISCONSIN: *Examination.* Madison, Sept 25 Final date for filing application is Sept. 18. Sec., Prof. W. H Barber, Scott & Watson Sts., Ripon.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Right of Corporation to Pratice Optometry.—This was a quo warranto proceeding to oust the defendant, Standard Optical Company, from its corporate rights and privileges. From a judgment for the defendant, The state appealed to the Supreme Court of Oregon.

The defendant, an Oregon corporation, was organized in December 1940 "to operate and carry on a a general optical and merchandising business in all its branches, including manufacturing, buying and selling, at wholesale and retail, for cash or on credit, all optical goods and accessories thereto, and other merchandise which can be sold in optical stores, including fountain pens, radios and jewelry." In each of its stores it employs a registered optometrist as manager and salesman, whose name, as "Registered Optometrist in Charge," is displayed in the store. The defendant advertises that the registered optometrist will, for the convenience of the public, make eye examinations, and contended that he makes such examinations without charge to the customer, whether or not eyeglasses are needed and whether or not glasses, if needed, are purchased from him.

Where the right to practice a profession is conditioned on pursuit of a course of specialized training, the acquiring of a diploma, the passing of an examination, and the furnishing of a certificate of good moral character, said the court, it is obvious that a corporation cannot comply with such requirements. The defendant insisted, however, that public policy does not prevent a corporation from offering the skilled services of a licensed professional man as an adjunct to its own business, as long as it publishes the fact that such professional man is an employee. The defendant argued that such an arrangement does not involve professional practice by the corporation-employer unless the benefit derived by the employer is directly related to the professional work performed. This argument is beside the point, said the Supreme Court. The underlying reason for the regulation of the professions of law and medicine by the state is that the practitioners thereof "render services which are either vital or fiduciary in a high degree and which may be required at a moment's notice by any member of the public, however ignorant. Therefore, if the competent practitioners were not clearly distinguished, the mass of the public would fall into the hands of quacks when their most fundamental needs were at stake." It is true, the court continued, that the employment of professional men by corporations is commonplace. For example, there are so-called "company doctors," "company engineers" and "company lawyers." Those practitioners, however, do not offer their services to the public at large but only to the employer.

The Oregon optometry act specifically designates optometry as a profession and imposes on optometrists standards of qualification of such a high order that they may well be termed professional standards. It was undoubtedly the intention of the legislature in adopting the optometry act to promote the health, safety and welfare of the people of the state. Such regulation of a profession, the practice of which affects the vital interests of the people, said the Supreme Court, is a proper excercise of the police power. The prohibition of the practice of optometry by unlicensed persons would be rendered ineffective if corporations were permitted to furnish optometric services through salaried employees who are licensed optometrists. The defendant argued, however, that optometry is not a profession. Quoting from a prior Michigan case, the Supreme Court of Oregon said: "As to optometrists, there seems to be a conflict of authority. Undoubtedly the fitting and sale of eyeglasses began as a trade and not as a profession. There is some support in decided cases for the proposition that it must remain a trade, in which an unlicensed person or a corporation may engage as of right, provided the actual work is done by a skilled servant duly licensed. The considerations to the contrary seem to us more weighty. In recent times abnormalities of the eye, like those of the teeth, have been found sometimes to indicate and often to result in serious impairment of the general health. The work of an optometrist approaches, though it may not quite reach, ophthalmology. The learning and the ethical standards required for that work, and the trust and confidence reposed in optometrists by those who employ them, cannot be dismissed as negligible or as not transcending the requirements of an ordinary trade. We cannot pronounce arbitrary or irrational the placing of optometry on a professional basis." It would seem that the public has as much need to be protected from quacks and charlatans in optometry as in dentistry or any other subdivision of medicine. One who consults an optometrist for ocular examination is entitled to the same undivided loyalty that he should receive from a physician. The fact that the optometrist is the employee of an optical concern whose main interest is the sale of optical goods tends to be a distracting influence which may adversely affect his loyalty to the interests of his patient. When a customer visits the defendant's store seeking an eye examination, the receptionist refers him to the optometrist, who makes the examination. If eyeglasses appear to be needed, the optometrist makes out a prescription therefor, the original of which is kept in the store while a carbon copy is sent to the Salt Lake City office. Simple lenses are manufactured in the local store; complicated ones, at Salt Lake City. The optometrist in charge is instructed to adhere to the defendant's price list. The majority of patients have their glasses manufactured by defendant. The price of glasses, which includes the hidden charge for the optometrist's work, being fixed by defendant, and the continuation of the optometrist's employment by defendant obviously depending on his success in selling eyeglasses, it can hardly be said that he is practicing his profession with that independence and freedom from extraneous influence which should characterize the work of a professional man We are of the opinion, the Supreme Court concluded, that the evidence indicates that the defendant corporation has unlawfully engaged in the practice of optometry. The judgment in favor of the defendant was therefore reversed and the case remanded with directions to enter a decree enjoining the defendant from continuing to so engage.—*State ex rel. Sisemore v. Standard Optical Co. of Oregon, 188 P. (2d) 309 (Ore., 1947).*

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted.

American Journal of Medical Sciences, Philadelphia
215:123-242 (Feb.) 1948

Results of Prolonged Medical Treatment of Hyperthyroidism with Thiourea. T. S. Danowski, E. B. Man, J. R. Elkinton and others. -p. 123.
*Rutin Therapy for Increased Capillary Fragility and Retinopathy Associated with Diabetes Mellitus. L.M. Levitt, M. R. Cholst, R. S. King and M. B. Handelsman. -p. 130.
Synergistic or Additive Activity of Chemotherapeutic Compounds. J. A. Kolmer. -p. 136.
Morphologic Studies of Intestine in Salmonella Infection in Guinea Pigs and Mice. A. Angrist and Mollie Mollov. -p. 149.
Thromboplastic Factors in Estimation of Prothrombin Concentration. C. L. Conley and W. I. Morse. -p. 158.
Study of Fixed Tissue Sections of Sternal Bone Marrow Obtained by Needle Aspiration. A. S. Weisberger and R. W. Heinle. -p. 170.
Blood Lactate-Pyruvate Relationship in Various Physiologic and Pathologic States. Grace A. Goldsmith. -p. 182.
Relationships of Peripheral Venous Pressures to Pulmonary Tuberculosis. A. Paley and M. M. Alexander. -p. 189.
Pain Reaction Thresholds in Psychoneurotic Patients. R. F. Schilling and M. J. Musser. -p. 195.
*Vascular Approach to Treatment of Rheumatoid Arthritis: Preliminary Report. R. J. Boucek and E. W. Lowman. -p. 198.
Dissecting Aneurysms: Presentation of 10 Case Reports and Correlation of Clinical and Pathological Findings. A. S. Warren and A. L. McQuown. -p. 209.
Thrombo-Embolism Problem. C. K. Kirby. -p. 220.
Visual Hallucinations. H. P. Wagener. -p. 226.

Rutin Therapy for Increased Capillary Fragility.- Levitt and associates studied the effects of rutin on the capillary fragility and retinopathy of diabetic patients to ascertain whether improvement in one was accompanied by changes in the other. Twelve patients with diabetic retinal hemorrhages and greatly increased capillary fragility were studied. Patients were saturated with ascorbic acid, 100 mg. three times a day for one month prior to treatment. They were then given rutin, 20 mg. three times a day, for two months; the dose was increased to 40 mg. three times a day for another month. Considerable improvement in the capillary fragility of the skin was found in 3 patients, and moderate improvement in 1. In 2 patients the changes accompanied a reduction of hypertension. Only five fundi (4 patients) of twenty-three improved; in two of the five, retinal hemorrhages cleared up completely. This improvement cannot be directly attributed to rutin. Diabetic retinitis progressed rapidly in 1 patient while under treatment. In 2 patients retinal lesions improved without a change in the increased capillary fragility of the skin, and in others capillary resistance of the skin increased without retinal improvement.

Vascular Approach to Rheumatoid Arthritis.— Boucek and Lowman point out that the literature contains many references to the abnormal vascular pattern of rheumatoid arthritis. On this basis patients with acute involvement of joints were treated by constant packing of both the involved joints and the surrounding soft tissue immediately on admission to the hospital, using hot moist foments. This is continued for seventy-two hours or more until acute edema and pain are alleviated. Packing is similar in technic to that described by Kenny. Following this the patient is subjected to the spinal flushing procedure of Speransky, which consists in doing first a lumbar puncture and then aspirating and reinjecting spinal fluid. After the headache from spinal pumping has disappeared, the patient begins a course of typhoid vaccine treatment and autohemotherapy. This consists usually of six fever sessions induced twice weekly for three weeks. At the same time that triple typhoid vaccine is given intravenously, 10 cc. of the patient's blood withdrawn from the arm is reinjected into the gluteal muscles. A violent chill with an elevation in temperature to 102 to 104 F. sustained for four to six hours is the effect desired. Between these fever treatments the patient is given nicotinic acid orally twice a day. Physical therapy is utilized as indicated. Twenty-seven patients were subjected to these measures. The majority of those with rheumatoid arthritis appeared to be benefited.

Annals of Western Medicine & Surgery, Los Angeles
2:47-92 (Feb.) 1948

*Clinical Evaluation of Effect of Antireticular Cytotoxic Serum on Healing of Fractures:--Preliminary Report. V. P. Thompson, F. W. Ilfeld, J. F. Grube and others. -p. 47.
Propylthiouracil Replaces Thiouracil. F. E. Harding. -p. 57.
Pericarditis. P. D. White. -p. 64.
Present Status of Digitalis in Therapy of Myocardial Infarction. J. M. Askey. -p. 66.
Physical and Physiologic Signs of Prematurity. A. H. Parmelee. -p. 71.

Effect of Antireticular Cytotoxic Serum on Fractures.—Since Soviet investigators had claimed that delayed union and nonunion were among the conditions favorably influenced by antireticular cytotoxic serum, Thompson and his co-workers studied effects of this serum on the healing of fractures. Alternate patients admitted with fractures of humerus, femur or tibia, were treated with antireticular cytotoxic serum or with normal goat or rabbit serum. Fifty-three patients were treated with antireticular cytotoxic serum and 40 with normal serum. A third group of 79 consecutive fractures taken from recent files served as untreated controls. The data indicate that fractures treated with antireticular cytotoxic serum manifest roentgenographic evidence of improved healing statistically significant as compared with the control series of patients. Clinical observations were in conformity with the roentgenographic evaluation. The number of patients with delayed union of fractures who were treated with antireticular cytotoxic serum was small and without controls, so that a definite conclusion could not be reached. Here, too, the trend was favorable. The authors will continue the study.

Blood, New York
3:129-230 (Feb.) 1948

*Schoenlein-Henoch Syndrome of Vascular Purpura. E. Davis. -p. 129.
Hyperprothrombinemia Induced by Vitamin K in Human Subjects with Normal Liver Function. P. N. Unger and S. Shapiro. -p. 137.
Modification of Waugh-Ruddick Test for Increased Coagulability of Blood, and its Application to Study of Postoperative Cases. S. B. Silverman. -p. 147.

In Vitro Study of Bone Marrow. III. Erythropoiesis in Vitro of Sternal Marrow from Cases of Pernicious Anemia and Lymphatic Leukosis under Therapy. J. Clemmesen, T. Espersen and C. M. Plum. -p. 155.
Studies on Bone Marrow in Vitro. III. Effect of Anoxia and Hyperoxia on Explanted Bone Marrow. A. Rosin and M. Rachmilewitz. -p. 165.
Electron Microscope Studies of Blood Cells. J. W. Rebuck and Helen L. Woods. -p. 175.
Aplastic Anemia; Secondary to Gold Therapy. W. J. Fitz-Patrick and S. O. Schwartz. -p. 192.
Spinous Process Puncture. A Simple Clinical Approach for Obtaining Bone Marrow. J. P. Loge. -p. 198.

Schoenlein-Henoch Syndrome.-Davis reports 44 patients between the ages of 4 and 71 years with Schoenlein-Henoch syndrome. This syndrome is defined as a condition in which nontraumatic hemorrhage with or without edema may occur in the skin, subcutaneous tissue, joints, viscera or in any combination of them. The blood platelets are normally abundant. The condition was about three times as common in women as in men, but in children sexes were about equally affected. One third of the patients had only one attack, and a few had numerous attacks. Each attack lasted for a few weeks. Recurrences covered periods varying from a few months to fifty years. In most patients they ceased within five years of onset. No familial instances were encountered. Of the 44 patients, 38 showed spontaneous ecchymoses or petechiae or both. Most had purpura of the skin only during attacks, but a few had ecchymoses between attacks. Localized edema occurred on the backs of hands, around the eyes, face, neck, lips, legs, arms and penis. Joints particularly involved were those of fingers, wrists, knees, elbows and ankles. Gastrointestinal pain or hemorrhage was pronounced in 12 patients, and 3 patients had hematuria. Values for blood counts, platelet counts, bleeding and coagulation times, clot retraction and prothrombin time were normal, but occasionally polymorphonuclear leukocytosis was seen. The capillary resistance test was positive in only 11 patients. Treatment was essentially symptomatic. The causes of the syndrome are varied, but streptococcic infection is important, and anaphylactoid causes are infrequent. Prognosis is good. The 4 patients with renal involvement recovered. Schoenlein-Henoch purpura and purpura simplex overlap, but in contrast with the latter Schoenlein-Henoch purpura is not familial and is common in men and children.

Canadian Medical Association Journal, Montreal
58:115-226 (Feb.) 1948.-Partial Index

Radiation Treatment of Carcinoma of Corpus Uteri. Ethlyn Trapp and Margaret Hardie. -p. 115.
Further Studies of Gelfoam in Kidney Wounds. Effect of Urinary Wetting. S. A. MacDonald and W. H. Mathews. -p. 118.
•Nasal Hemorrhage and Its Treatment. J. K. M. Dickie. -p. 121.
Bronchography in Pulmonary Disease. D. S. Gorrell. -p. 126.
Vesical Diverticulum. N. E. Berry and C. Schneiderman. -p. 129.
Recent Advances in Dermatology and Syphilology. L. A. Brunsting. -p. 133.
Simultaneous Vagotomy and Partial Gastrectomy for Intractable Peptic Ulcer. C. Gardner. -p. 137.
Treatment of Angiomata. O. Dufresne. -p. 139.
Nupercaine Spinal Anesthesia in Obstetrics: Report of 100 Cases. Jean T. Hugill and C. Gillespie. -p. 146.
Functional Uterine Bleeding. J. L. MacArthur. -p. 149.
Challenge of Colitis. D. E. Rodger. -p. 153.
Anesthesia for Chest Surgery. J. A. Blezard. -p. 156.
Fibrositis as Factor in Differential Diagnosis of Visceral Pain. I. J. Patton and J. A. Williamson. -p. 162.
Water's Extra-Peritoneal Cesarean Section. R. T. Weaver, D. L. Adamson and F. L. Johnson. -p. 168.
Scoliosis. C. A. Ryan. -p. 170.
Insanity as Criminal Defence: Psychiatric Viewpoint. G. H. Stevenson. -p. 174.
Skin as Supporting Graft in Repair of Hernia. W. T. West and E. S. Hicks. -p. 178.
Malignancy of Vulva. J. A. Brown. -p. 181.

Treatment of Nasal Hemorrhage.-Dickie shows that there is no one method of arresting nasal hemorrhage which is applicable in every case. In the milder cases local cauterization will suffice, while in severe cases more drastic action must be taken. Use of the rubber tampon is the author's favorite method and is successful in most instances. The postnasal pack, when properly applied, will usually arrest the bleeding provided that it is not coming from the ethmoid arteries. In fractures through the ethmoid with uncontrolled hemorrhage from the nose it would probably be better to obliterate the anterior ethmoid artery early. In fractures it is obviously undesirable to keep nasal packing in too long for fear of sepsis. In severe bleeding from the sphenopalatine, ligation of the external carotid is easy and safe and avoids much of the discomfort of packing.

Florida Medical Association Journal, Jacksonville
34: 437-490 (Feb.) 1948.

Surgical Approach to Treatment of Certain Heart Diseases. E. M. Isberg. -p. 383.
Traumatic Injuries of Urinary System. A. J. Butt. -p. 387.
Undulant Fever: Report of 2 Cases. Miriam M. Drane-p. 393.
Importance of Predisposing and Contributory Factors in an Allergic Evaluation. N. Zivitz. -p. 447.
Paralysis of Serratus Anterior Muscle with Winged Scapula During Puerperium. A. W. Diddle. -p. 450.
Finding Tuberculosis in Florida. C. M. Sharp. -p. 452.

Journal of Bacteriology, Baltimore
55:139-286 (Feb.) 1948. Partial Index

Induced Resistance of Staphylococcus Aureus to Various Antibiotics. J. W. Klimek, C. J. Cavallito and J. H. Bailey. -p. 139.
•Relation Between Induced Resistance to Penicillin and Oxygen Utilization. W. D. Bellamy and J. W. Klimek. -p. 147.
Properties of Penicillin-Resistant Staphylococci. W. D. Bellamy and J. W. Klimek. -p. 153.
Amino Acid Metabolism of Penicillin-Resistant Staphylococci. E. F. Gale and A. W. Rodwell. -p. 161.
Nutrition of Protozoa: III. Improved Procedure for Separating Human Blood Serum into Two Fractions Essential for Sustained Growth of Trichomonas Vaginalis. H. Sprince. -p. 169.
Reversal of Antibiotic Action. J. H. Bailey and C. J. Cavallito. -p. 175.
Production of 2,3-Butylene Glycol by Aerobacter Aerogenes 199. B. H. Olson and M. J. Johnson. -p. 209.
Identification of Streptomycin on Paper Strip Chromatograms. R. E. Horne Jr. and A. L. Pollard. -p. 231.
Screening Methods for Determining Antibiotic Activity of Higher Plants. H. J. Carlson and Harriet G. Douglas. -p. 235.
•Bacitracin: Methods of Production, Concentration and Partial Purification, with Summary of Chemical Properties of Crude Bacitracin. H. S. Anker, Balbina A. Johnson, J. Goldberg and F. L. Meleney. -p. 249.
Effect of Several Compounds on Inhibition of Bacterial Growth by Sulfaguanidine, Sulfamerazine and Sulfasuxidine. W. E. Clapper and Ikuya T. Kurita. -p. 277.

Induced Resistance to Penicillin and Oxygen Utilization.--Since the mode of action of antibiotics may be determined by physiologic and metabolic studies, rather than by morphologic studies, Bellamy and Klimek decided to determine more completely the physiologic changes brought about by induced resistance to penicillin. They obtained a penicillin-resistant variant of Staphylococcus aureus, which grows more slowly than the sensitive parent culture. This resistant variant has lost the ability to grow anaerobically. Strains of Streptococcus faecalis, Streptococcus mastitidis and Clostridium welchii when treated in a similar manner failed to develop significant resistance to penicillin. These data suggest that organisms dependent on anaerobic processes for their growth will not develop appreciable resistance to penicillin.

Bacitracin.--Anker and his associates report progress on the new antibiotic bacitracin from the point of view of assay, mediums for production, harvesting, concentration, purification and chemical properties. A tentative unit has been defined. An *l*-glutamic acid synthetic medium and a soybean digest medium have been proposed from the point of view of simplicity and uniformity on the one hand and high yields on the other. The optimun time for harvesting was found to be after 72 hours of incubation at 37 C. The antibiotic can be extracted from the harvest by *n*-butanol and concentrated by steam distillation in vacuo. Pigmented impurities may be removed by magnesium oxide. The active principle may be precipitated without loss of potency by salicylic acid. Crude bacitracin is highly soluble, and such solutions are stable at zero to 5 C. for eight months to one year. It may be lyophilized, and in this dried state, in vacuum vials, it remains stable at room temperature.

Journal of Pharmacology & Exper. Therap., Baltimore

92: 103-206 (Feb.) 1948

Tetraethylammonium Chloride ($[C_2H_5]_4$ NCL). Acute and Chronic Toxicity in Experimental Animals. O. M. Gruhzit, R. A. Fisken and B. J. Cooper. -p. 103.
Comparative Pharmacology of N-Alkylarterenols. D. F. Marsh, M. H. Pelletier and C. A. Ross. -p. 108.
Influence of BAL on Toxicity and Chemotherapeutic Activity of Mapharsen. N. Ercoli and W. Wilson. -p. 121.
Curariform Activity of Quaternary Ammonium Iodides Derived from Cinchona Alkaloids. D. F. Marsh and M. H. Pelletier. -p. 127.
Diuretic Action of Formoguanamine in Normal Persons. W. L. Lipschitz and E. Stokey. -p. 131.
Observations on Pharmacology of Isomers of Hexachlorocyclohexane. B. P. McNamara and S. Krop.-p. 140.
Treatment of Acute Poisoning Produced by Gamma Hexachlorocyclohexane. B. McNamara and S. Krop. -p. 147.
Effect of Calcium on Cardiovascular Stimulation Produced by Acetylcholine. B. McNamara, S. Krop and Elizabeth A. McKay. -p. 153.
Inhibition of Cholinesterase Activity of Human Blood Plasma and Erythrocyte Stromata by Alkylated Phosphorus Compounds. R. W. Brauer. -p. 162.
Pharmacology of Hexaethyl Tetraphosphate. C. Dayrit, and C. H. Manry and M. H. Seevers. -p. 173.

New England Journal of Medicine, Boston

238:205-240 (Feb. 12) 1948

Pneumonia at the Philadelphia General Hospital, 1936-1946. H. L. Israel. R. C. Mitterling and H. F. Flippin. -p. 205.
Principles of the Massachusetts Medical Society. E. S. Bagnall. -p. 213.
Who Cares for the Epileptic? W. G. Lennox, M. McBride and Gertrude Potter. -p. 215.
*Study of Virus Carriers from a Poliomyelitis Outbreak at a Boys' Camp. A. D. Rubenstein, J. P. Milnor, H. von Magnus and J. L. Melnick. -p. 218.
The "Nephrotic Syndrome." S. E. Bradley and C. J. Tyson. -p. 223.
Subacute and Chronic Cholecystitis, with Perforation. -p. 228.
Chronic Duodenal Ulcer, Perforation of Pyloric Stump and Generalized Peritonitis. -p. 230.

Study of Poliomyelitis Virus Carriers.—Rubenstein and his co-workers describe an outbreak of infantile paralysis in a Boy Scout camp attended by boys between the ages of 12 and 18 years. Although the camp was divided into three groups, the occurrence of clinical cases was confined to only one of the groups and the studies on the carrier rate were similarly confined to this group. Of the 31 members, in 5 there developed frank poliomyelitis, with 4 bulbar cases, 1 of which terminated fatally. Of the 18 healthy members studied in this group, 5 were revealed to be intestinal carriers of the virus, and 1 of these also harbored the virus in his throat. Estimates of the total infection rate in this group were roughly 43 per cent, with a ratio of cases to carriers of about 1:2. Of the 5 carriers, 3 excreted the virus in the stools for at least three or four weeks. In the single carrier in whom the virus was isolated from both the oropharynx and the intestinal tract, virus was isolated from the stools for a period of about one month; it could not be found in the throat after the first week. In 1 of the clinical cases, virus was isolated from both the oropharynx and the stools one day before the onset of symptoms. Of the 5 carriers who returned to their homes, only 2 had siblings there, who were exposed to the carriers (1 of whom had virus in both the throat and stools), but neither subsequently became carriers of the virus. The strain of poliomyelitis virus isolated during the outbreak did not appear to the related to the Lansing and Y-SK strains by serologic tests, nor could it be adapted to rodents even after many trials.

Northwest Medicine, Seattle

47: 1-84 (Jan.) 1948

Modern Concepts of Immunologic Basis of Clinical Allergy. H. Miller. -p. 22.
Histamine in Treatment of Allergic Diseases: Report of 126 Cases. A. A. Krueger. -p. 27.
The Child as Patient. C. Sweet. -p. 29.
Public Health Aspects of Diarrhea of the Newborn. W. R. Giedt. -p. 35.
Epidemic Infantile Diarrhea. D. A. Lagozzino. -p. 40.

47:85-160 (Feb.) 1948

Acute Pancreatitis. J. D. Collins. -p. 105.
Neoplasms of Pancreas. H. A. Anderson. -p. 106.
Surgery of Pancreas. B. P. Mullen. -p. 108.
Strabismus. H. L. Goss. -p. 111.
Treatment of Glaucoma. C. E. Benson. -p. 112.
Resection of Chest Wall Tumors: Report of 2 Cases. J. K. Poppe and R. Berg. -p. 119.
Primary Carcinoma of Male Urethra: Case Report. L. J. Feves and J. R. Broun. -p. 122.

Philippine Journal of Surgery, Manila

2:173-220 (Sept.-Oct.) 1947

Developmental Anomalies of Thyroid Gland. P.M. Recio.—p. 173.
*Intravenous Dextrose--Lugol's Solution in Preoperative and Postoperative Medication of Toxic Goiter, J. Estrada and P.T. Nery. —p. 182
Spinal Cord Injuries, Their Treatment and Results. A.T. Zavalla and P.A. Morales.—p. 187.
American Gynecology in Teaching and Practice. S.Y. Maceda Jr.—p. 195.
Increased Incidence of Prolapse of Uterus as Probable Effect of War. Flora B. Bayan.—p. 201.

Strong Solution of Iodine Mixed with Dextrose for Goiter.—Estrada and Nery point out that although the use of thiouracil has eliminated thyroid crises, it has its drawbacks and has created new problems. Aside from the possibility of producing agranulocytosis, its use requires a long preoperative treatment and it produces a highly vascular and friable organ that makes hemostasis difficult and uncertain. The authors decided to go back to iodine, but to administer it in a modified form. They administer 2 cc. strong solution of iodine (Lugol's solution) in 1,000 cc. of isotonic or hypertonic dextrose solution in the form of continuous venoclysis. They have used this medication in 25 patients, most of whom had diffuse toxic goiter or primary hyperparathyroidism. In 17 cases it was used postoperatively and in the other 8 cases it was used both before and after operation. The results were most encouraging in that thyroid crises either were prevented or occurred without nervous manifestations and without fatality.

Physiological Reviews, Baltimore

28:1-138 (Jan.) 1948

Internal Secretions and Toxemia of Late Pregnancy. G. V. S. Smith and O. W. Smith. -p. 1.
Local Action of Sex Hormones. H. Speert. -p. 23.
Pteroylglutamic Acid and Related Compounds. T. H. Jukes and E. L. R. Stokstad. -p. 51.
Conditioning Factors in Nutritional Disease. B. H. Ershoff. -p. 107.

Proc. Soc. Exper. Biol. & Med., Utica, N. Y.

66:493-662 (Dec.) 1947. Partial Index

Recovery of Virus from Throats of Poliomyelitis Patients. H. E. Pearson and G. C. Brown. -p. 503.
Pharmacologic Characteristics of Neohetramine, New Antihistaminic Drug. J. F. Reinhard and J. V. Scudi. -p. 512.
Cataracts Resulting from Deficiency of Phenylalanine in Rat. L. L. Bowles, V. P. Sydenstricker, W. K. Hall and H. L. Schmidt Jr. -p. 585.
*Teratogenetic and Lethal Effects of Influenza A and Mumps Viruses on Early Chick Embryos. V. Hamburger and K. Habel. -p. 608.

Teratogenic Effects of Influenza and Mumps Viruses on Chick Embryos.—The discovery that the rubella virus passes through the placenta and causes a specific pattern of localized malformations in the human embryo induced Hamburger and Habel to analyze the effects of viruses as teratogenetic agents under the controllable conditions of animal experiments. The chick embryo suggested itself as a suitable embryonic material, since it is known that the tissues and the extraembryonic membranes of the chick embryo are a favorable medium for culture of a number of viruses. They found that influenza A (PR 8) has teratogenetic effects on the early chick embryo. It produces a specific syndrome, comprising microcephalia and micrencephalia, twist of the axis and impairment of the growth of the amnion. Furthermore, the virus is lethal for early embryos within three days after infection. The mumps virus is likewise lethal for early embryos within five days after infection. It does not produce specific abnormalities but seems to raise the incidence of malformations of the types which occur occasionally in uninfected chick embryos. These results place influenza A virus in line with rubella virus as a teratogenetic agent. Furthermore, the observations on infections due to influenza A in chick embryos confirm those on rubella in human beings in that only infections of early embryos result in abnormalities.

Radiology, Syracuse, N. Y.

50:147-282 (Feb.) 1948

*Significance of Giant Folicular Lymphadenopathy (Brill-Symmers Disease). E.M. Uhlmann.—p. 147.
Diaphragm: Roentgen Study in Three Dimensions. S. Brown and A. Fine.—p. 157.
Development of Betatron for Electron Therapy with Introduction on Therapeutic Principles of Fast Electrons. L. S. Skaggs, G.M. Almy, D.W. Kerst and L.H. Lanzl.—p. 167.
Differential Diagnosis of Retrocardiac Shadows. S.S. Nemec.—p. 174.
Visible Bronchial Tree. Roentgen Sign in Pneumonic and Other Pulmonary Consolidations. F.G. Fleischner.—p. 184.
Endocrine Factors in Pelvic Tumors, with Discussion of Papanicolaou Smear Method for Diagnosis. A.E. Rakoff.—p. 190.
Myelography in Intervertebral Disk Protrusion: Horizontal Beam Examination with Patient Prone. D.L. Bartelink.—p. 202.
Subsequent Report on Roentgen Therapy in Carotid Sinus Syndrome. C.A. Stevenson and R.D. Moreton.—p. 207.
Angiography of Thoracic Aorta and Coronary Vessels with Direct Injection of Opaque Solution into Aorta. J.M. Hoyos and C. Gomez del Campo.—p. 211.

Giant Follicular Lymphadenopathy.--Uhlmann says that the condition known as giant follicular lymphadenopathy and associated with the names of Brill and Symmers bears a strong resemblance to Hodgkin's disease and in most instances is diagnosed as such. Giant follicular lymphadenopathy is characterized by either localized or generalized enlargement of the superficial lymph nodes, often in conjunction with splenomegaly. The first enlargement seems frequently to be in the lymph nodes of the neck, but swelling of the lymph nodes may occur also in the supraclavicular fossa, the axilla, the groin or the abdomen, or may be generalized. The involved nodes are usually soft; seldom do they become hard. Their size varies. The general condition of the patient is usually not greatly influenced. Microscopic examination of the lymph nodes reveals that the structure is changed but not completely destroyed, and the pathologist usually designates the process as chronic lymphadenitis or lymphoid hyperplasia. Often the follicles are filled with large hypochromatic or even achromatic nuclei, also called "shadow cells." In some instances the peripheral zone of small lymphocytes is absent, while in others the follicles may be made up exclusively of small lymphocytes. The author reports 22 cases of giant follicular lymphadenopathy that were observed at the Tumor Clinic of Michael Reese Hospital in Chicago since 1941. While small amounts of radiation are sufficient in most instances to produce the disappearance of involved lymph nodes, this does not constitute cure of the disease. Large amounts of radiation, such as are commonly used in the treatment of malignant lesions, suppress the symptoms for many years. The author believes that giant follicular lymphadenopathy should be treated from the beginning as potentially malignant with intensive doses which may control the symptoms and prevent the development of Hodgkin's disease, leukemia and sarcoma.

Surgery, St. Louis

23:1-160 (Jan.) 1948

Arterial Blood Supply of Common and Hepatic Bile Ducts with Reference to Problems of Common Duct Injury and Repair Based on Series of 23 Dissections. A. L. Shapiro and G. L. Robillard. -p. 1.
Unusual Innervation of Intrinsic Muscles of Hand by Median and Ulnar Nerve. E. E. Cliffton. -p. 12.
Tantalum Gauze in Repair of Hernias Complicated by Tissue Deficiency: Preliminary Report. T. D. Throckmorton. -p. 32.
Pulmonary Embolism. Correlation of Clinical and Autopsy Studies. R. R. Crutcher, and R. A. Daniel Jr. -p. 47.
Tattooing with Mercury Sulfide for Intractable Anal Pruritus: Brief Reference to Vulval Pruritus and Evaluation of Results. R. Turell. -p. 63.
Cerebral Hemorrhage Following Repair of Common Carotid-Internal Jugular Arteriovenous Fistula, A. O. Singleton and A. O. Singleton Jr. -p. 75
Lobectomy for Pulmonary Cysts in Fifteen-Day-Old Infant with Recovery. W. E. Burnett and H. T. Caswell, -p. 84.

Tennessee State Medical Assn. Journal, Nashville

41:1-38 (Jan.) 1948

Plastic Surgery of Face with Especial Reference to Nasal Hump. L. W. Nabers. -p. 1.
Management of Cardiac Emergencies. B. M. Overholt. -p. 6.
The Why of Pus and Blood in Urine. G. R. Livermore. -p. 11.
Injuries to Colon and Closure of Colostomies. C. C. Trabue. -p. 14.
Fruitful Marriage. J. C. Ayres. -p. 21.

41:39-76 (Feb.) 1948

Treatment of Phlebothrombosis and Thrombophlebitis. H. Wilson. -p. 39.
Retiring President's Address. J. C. Burch. -p. 43.
Inaugural Address. W. W. Wilkerson Jr. -p. 45.
Evaluation of X-Ray Diagnosis in Ophthalmology, Rhinology and Otolaryngology. D. H. Anthony and D. F. Fisher. -p. 46.
Physician and School Health. V. O. Foster. -p. 57.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London
32:1-64 (Jan.) 1948

Two Unusual Sclerocorneal Neoplasms. A. Loewenstein and J. Foster.—p. 1.

Intra-Ocular Foreign Bodies: An Account of Military Cases from the Burma-Assam Front. E. J. Somerset and K. Sen.—p. 13.

*Solar Retinitis. E. Rosen.—p. 23.

Results Obtained by Total Conjunctival Hooding of Cornea for Serpiginous Ulcer. A. Kettesy.—p. 36.

Local Sulfonamide Therapy of Dendritic Ulcer. H. L. Hughes.—p. 43.

Treatment of Perforated Corneal Ulcer by Autoplastic Scleral Transplantation. S. Larsson.—p. 54.

Solar Retinitis.—Reviewing literature on solar retinitis, Rosen says that most authors stress the edema, clouding and pigmentation which occur in the macula with little emphasis on the final *macular picture. Some observers have mentioned* macular holes. In the past year, the author observed such easily overlooked small macular holes in quite a number of patients during routine eye examination. Although he was careful not to ask leading questions, he obtained a history of "sun-gazing" or a related act in all the patients. The histories of 23 of these patients are given, and a table lists many of the methods and some of the protective procedures followed by these patients. The author cites a report by Smith on military personnel stationed in a tropical country. These case reports seem to bridge the gap between the many descriptions of the acute edema following eclipse blindness and the ultimate small macular holes found many years later. The condition is far from rare and the problem is largely one of prevention of "sun-gazing."

British Medical Journal, London
1:35-86 (Jan. 10) 1948

Anemia Associated with Trauma and Sepsis. Janet Vaughan.—p. 35.

Effect of Food Supplements on Poorly Fed Workers in Brussels in January, 1945. G. A. Smart, T. F. Macrae, P. A. Bastenie and P. E. Gregoire.—p. 40.

Viability of Strangulated Bowel: Interim Report of Surgical Subcommittee of Clinical Research Committee of Public Health Department of London County Council.—p. 43.

Eosinopenia Caused by Adrenaline Infusion and by Insulin Hypoglycemia. Z. Z. Godlowski.—p. 46.

Convulsive Properties of Thiopentone. R. L. Wynne.—p. 48.

Granulosa-Cell Tumor of Ovary as Acute Abdominal Emergency. A. C. Brewer.—p. 49.

1:87-134 (Jan. 17) 1948

Streptomycin: Valuable Anti-Tuberculosis Agent. W. H. Feldman and H. C. Hinshaw.—p. 87.

*Cancer of Stomach in Addison's Anemia. W. A. Bourne.—p. 92.

Complications of Mumps. D. Laurence and D. McGavin.—p. 94.

Fatal Air Embolism During Mastectomy. C. L. Hewer and H. J. Coombs.—p. 97.

Hypertrophic Pyloric Stenosis in Adult. A. Hobson.—p. 99.

Congenital Hypertrophic Pyloric Stenosis: Report of 4 Cases in Brothers. A. A. H. Gailey.—p. 100.

Cancer of Stomach in Addison's Anemia.—Bourne points out that among some clinicians there is a feeling that patients with pernicious anemia are more liable to gastric carcinoma than normal persons of the same age group. During the past two years the author has studied 15 of his patients with pernicious anemia by means of roentgenography and gastroscopy in the hope of detecting carcinoma of the stomach at an early stage. He detected this disease in 3 patients, whose case histories are given. In these cases the carcinomatous area was in the lower third of the stomach, where radiology demonstrated narrowing even in the 2 cases which were at an early stage. The lower part of the stomach is not usually abnormal in pernicious anemia. An abnormal antral mucosa, especially when associated with a narrow antral canal, may predispose to cancer. It is recognized that in the prepyloric area cancer is particularly liable to develop. Patients with pernicious anemia who exhibit an abnormal mucosa there should be viewed with as much suspicion as hyperchlorhydric patients with prepyloric ulcers. There is reason to believe, also, that simple neoplasms of the stomach are unduly frequent in pernicious anemia. Carcinoma may appear in any gastric area. The author concludes that periodic roentgenologic and gastroscopic studies are strongly indicated in all cases of Addison's anemia in remission or relapse.

Journal of Endocrinology, London
5:183-222 (Nov.) 1947. Partial Index

Hormonal Properties of Perhydrodiethylstilboestrol. G. Brownlee and A. F. Green.—p. 183.

Assay of Thyroidal Activity by Closed Vessel Technic. A. U. Smith, C. W. Emmens and A. S. Parkes.—p. 186.

Lancet, London
1:49-88 (Jan. 10) 1948

Psychologic Aspects of Sanatorium Management. G.S. Todd and E. Wittkower.—p. 49.

Excision of Elbow Joint. W.H. Kirkaldy-Willis.—p. 53.

Significance of Palatal Movements in Diphtheria. R.M. Maher.—p. 57.

*Clinical Extracorporeal Dialysis of Blood with Artificial Kidney. N. Alwall, L. Norvitt and A.M. Steins.—p. 60.

*Sensitization of Penicillin-Resistant Bacteria. A. Voureka.—p. 62.

Thrombocytopenic Purpura with Thyrotoxicosis. G.F. Roberts.—p. 65.

Recurrent Bullous Eruption of Feet: Report of Case. S.P. Hall-Smith and F. O'N. Daunt.—p. 66.

Dialysis of Blood with Artificial Kidney.—Alwall and his collaborators point out that several workers have tried to construct an apparatus for the dialysis of a patient's blood outside of the body. They describe and stress the advantages of Alwall's dialyzer, or artificial kidney. After successful preliminary tests with a solution of urea, followed by dialysis of blood in tests on animals, the dialyzer was used to treat 8 patients with uremia. The histories of 5 of these patients are given. A table shows the amount of nonprotein nitrogen eliminated in each patient by dialysis with the artificial kidney. The case reports indicate that there was improvement, but in some patients it was only temporary and they died later.

Sensitization of Penicillin-Resistant Bacteria.—Voureka reports experiments which show that some strains of penicillin-resistant staphylococci and streptococci can readily be made sensitive by growing them in mixed culture with other organisms, whether or not they are sensitive to penicillin. The same change can be induced if the bacterial association occurs in the refrigerator, where growth does not take place. Some bacterial autolysates can also effect this change. The acquired sensitivity lasts a long time. It has been assumed that naturally resistant strains retain their resistance permanently in the body; but from the experiments which are cited it seems clear that when some of such strains grow in association with other bacteria—a condition which often happens in the body—they may lose their resistance.

1: 89-124 (Jan. 17) 1948

Pneumonias Associated with Epidemic Respiratory Infections. J. G. Scadding.—p. 89.
Treatment of Arthritis by Intraarticular Injection. D. M. Baker and M. S. Chayen.—p. 93.
Virulence of Gravis Strains of Corynebacterium Diphtheriae. J. W. McLeod and D. T. Robinson.—p. 97 .
•Phalangeal Metastases in Bronchogenic Carcinoma: Report of 3 Cases. G. M. Colson and A. Willcox.—p. 100 .
•Vitamin E in Angina Pectoris. D. H. Makinson, S. Oleesky and R. V. Stone.—p. 102.
•Recurrent Agranulocytosis: Report of Case. G. M. G. Barton.—p. 103.

Phalangeal Metastases in Bronochogenic Carcinoma.—Colson and Willcox say that carcinoma of the bronchus is notorious for the frequency and diversity of its metastases,which Ask-Upmark attributed to the easy access of the growth to the pulmonary veins and thence to the systemic arteries. This paper concerns metastases in the terminal phalanges in fingers and toes. Of the 3 cases reported, the first concerned a woman aged 65 who had a primary carcinoma of the bronchus and widespread metastases, which included deposits in three of the terminal phalanges of the fingers. The second was a tabetic man in whom the first signs of malignant disease were the appearance of metastases in a phalanx and a metatarsal. The third was in a man with signs suggesting a bronchial carcinoma and a metastasis in the left great toe. All 3 phalangeal metastases closely resembled clinically an inflammation; they were initially assumed to be due to a paronychia or whitlow in cases 1 and 2 and an infected bunion in case 3. The radiologic changes were essentially similar in all cases, and aspiration biopsy proved helpful in the diagnosis.

Vitamin E in *Angina* Pectoris.—Makinson and his co-workers say that it has been suggested (Vogelsang and Shute, 1946) that vitamin E relieves the pain and improves the exercise tolerance of patients with angina pectoris. However, the published work on this subject is not critical, nor are the observations adequately controlled. The authors therefore decided on a clinical trial. Twenty-two patients with typical angina of effort were treated with vitamin E, phenobarbital, aminophylline and calcium lactate, each drug being given for three weeks, after which the patients were asked to compare the effects of the drugs. From this small but clinically significant series it is concluded that *vitamin* E *is not of* any therapeutic value in the routine treatment of angina pectoris.

Recurrent Agranulocytosis.—Barton reports the case of a man, aged 79, who had six attacks of agranulocytosis over a period of eighteen months. The attacks were accompanied by ulceration of the throat. The man had lived on a restricted diet and had taken acetylsalicylic acid and "allonal," which contains pyramidone. He used benzene in his work.

1: 125-164 (Jan. 24) 1948

Media of Health Education. C. Bibby.—p. 125.
•Chemotherapy and Pharmacology of Aerosporin: Selective Gram-Negative Antibiotic. G. Brownlee and S. R. M. Bushby.—p. 127.
•Treatment of Pertussis with Aerosporin. P. N. Swift.—p. 133.
Fractures of Mandible with Edema of Neck and Tongue. Early Treatment. N. W. A. Holland.—p. 135.
Perforation of Colon in Dysentery: Two Cases of Recovery After Operation. J. A. W. Bingham.—p. 139.
Recto-Urethral Fistula: Report of Case. R. K. Magee.—p. 140.
Trichiniasis Presenting with Foot-Drop and Facial Palsy. Maureen MacAndrew and E. Davis —p. 141.

Chemotherapy and Pharmacology of Aerosporin.—Brownlee and Bushby report aerosporin as an antibiotic produced by an aerobic spore-bearing bacillus identified as Bacillus aerosporus, which is probably identical with Bacillus polymyxa. This report is mainly concerned with the effectiveness of aerosporin in experimental infections with gram-negative bacteria. Aerosporin is more discriminating in its action than is streptomycin. It has no action on the tubercle bacillus, but against those gram-negative pathogens against which it is active it is from ten to several hundred times more active than streptomycin. In experimental infections in animals aerosporin gave complete protection against Hemophilus pertussis with elimination of the infection, whereas streptomycin did not protect. Similar effects were demonstrated in experimental *infections* with *Salmonella typhosa, Hemophilus* bronchisepticus and Escherichia coli. Aerosporin is not absorbed from the intestine. Given parenterally it disappears from the blood stream quickly; hence maintenance doses at four hour intervals are necessary. Aerosporin is bactericidal. Resistant strains are produced with difficulty The blood aerosporin level corresponding to the minimal lethal intravenous dose (L.D.50) is at least seventy five times greater than the average therapeutic blood level. Aerosporin is nonhemolytic and has about the same toxicity to leukocytes as penicillin. Concentrates of aerosporin are more or less contaminated with an antidiuretic principle and a substance which damages renal tubules. Purified material is free from the second factor, and the first has not been shown to act in man. In an addendum the authors point out that the report by Stansly and others on polymyxin reached Britain after their report on aerosporin had been prepared for publication. Polymyxin is produced by the organism which produces aerosporin and appears to have an identical antibacterial spectrum but only a fraction of the intrinsic efficiency of aerosporin. Whether polymyxin is impure aerosporin or is a different molecule remains to be discovered.

Aerosporin in Pertussis.—Swift treated an unselected series of 10 children with pertussis, aged 1 month to 2½ years, with aerosporin. Dosage was 0.4 mg. intramuscularly every four hours for mild infections and 0.8 mg. at four hour or three hour intervals for severe infections continuously for five days. All children manifested a response in the first forty-eight hours; the measure of ultimate benefit seemed to depend on the duration of symptoms before the start of treatment rather than on the severity of the disease or the patient's age. Early cases of pertussis, treated before secondary infection has taken place, may respond to aerosporin alone; whereas in late cases a combination of aerosporin and a sulfonamide drug may be more effective. The mild toxic effects were associated with the presence of impurities in the aerosporin.

Proceedings of Royal Society of Medicine, London

41:1-72 (Jan.) 1948. Partial Index

Pes Planus or Instability of Longitudinal Arch. G. Perkins.—p. 31.
Acute Anterior Poliomyelitis in 1947 with Special Reference to London. A. Daley.—p. 52.
Some Atypical Primary Tuberculous Lesions. Margaret MacPherson.—p. 60.
Considerations on Treatment of Detachment of Retina. H. Arruga.—p. 68.

Acta Medica Scandinavica, Stockholm

129:311-414 (Dec. 30) 1947. Partial Index

Studies on Blood Clotting: IV. Blood Clotting and Pancreas. E. Hecht. —p. 311.
*Treatment of Acute Glomerulonephritis with High Protein Diet. V. Mortensen. —p. 321.
Hereditary Granulation Anomaly of Leukocytes (Alder). G. H. W. Jordans. —p. 348.
Bacterial Flora of Fetid Infections: Report of 3 Cases. S. D. Henriksen. —p. 352.
Myelosclerosis: Case with Non-Myeloid Splenomegaly, and Attempt at Finding Out Pathogenesis by Means of Comparison with Results of Animal Experiments. H. C. Engell. —p. 371.

High Protein Diet in Glomerulonephritis.—Mortensen presents observations on 44 patients with acute glomerulonephritis, chiefly of scarlatinal origin. The patients were classified in two groups of 22 patients each, one receiving a low, the other a high protein diet. The two diets were largely identical, except that the 250 Gm. of oatmeal porridge with sugar in the low protein diet was replaced by 250 Gm. of lean meat in the high protein diet. The prognosis is generally taken to be better in scarlatinal nephritis than in other forms of acute nephritis. In this group all patients except 1 of those on the low protein diet recovered. The duration of the nephritis was the same in the two groups. The albuminuria appeared to have subsided more rapidly in the group of patients given the high protein diet. Besides being more agreeable, the high protein diet also improved the general condition of patients.

Annales Paediatrici, Basel

169:381-440 (Dec.) 1947

*Additional Observations Concerning Problems of Congenital Malaria. A. Eckstein.—p. 381
Prothrombin in Infants after External Application of Salicylic Acid. P. Selander and B. Berneus.—p. 404.
Chronic Polyarthritis (Still's Disease) in Infancy. A. Tho.—p. 407.
*Chemotherapy of Infantile Diarrheas. J. Švejcar.—p. 417.

Congenital Malaria.—Eckstein reports 4 cases of congenital malaria in infants who were born in Ankara during the cool, relatively cold, season in the course of which fresh malaria cases have never been observed previously. The first attacks of malaria in these infants were observed on the sixth, twentieth, twenty-ninth and thirty-fourth day of life, but the history of the cases makes it likely that the first symptoms were manifested already on the sixth, sixteenth, third and second day of life, respectively, when the cases were not yet diagnosed. All the infants were born in a hospital. Two were brought immediately to an infant home, while the two others were brought to the private homes of well-to-do parents. A postnatal infection can be definitely excluded; thus 14 cases of congenital malaria reported previously by the author are increased to 18. In addition to the occurrence of malaria in infants, inmates of an infants' home in Ankara are described. Taking into account their date of birth, the first appearance of signs of malaria (observation of parasites in the blood along with the other manifestations characteristic of this age) and the regional climatic conditions, one cannot but assume that infantile malaria was congenital in at least 10 instances. The infants were transferred to the home as a rule immediately after birth or during their first months of life, and were under regular medical control. The climate of Ankara prevents the appearance of anopheles and thus the spread of malaria during the months of January/May and October/December. Only those infants were considered as suffering from congenital malaria who were born during the months mentioned and had their first attack during the same period. In these infants the earliest manifestations of malaria occurred on the third, fourth, tenth, thirteenth and sixteenth day after birth. It is emphasized that there is no "definitely fixed incubation period" for malaria and that the first attack may be delayed. This proves correct likewise for congenital malaria according to the degree of mild to massive intrauterine infection. In order to be able to assess the first clinical symptoms, special knowledge of the peculiarities of malaria in infants is required.

Chemotherapy of Infantile Diarrhea.—At the first Children's Clinic in Prague, Czechoslovakia, Svejcar treated 217 infants up to 1 year of age who had diarrhea with succinylsulfathiazole or with sulfaguanidine. Twenty-six of these infants were premature and 26 newborn up to 4 weeks of age. Of infants above this age 55 had diarrhea of enteral origin, 25 with toxic symptoms; 97 had diarrhea of parenteral origin, 37 with toxic symptoms and 5 with recurrences; the remaining infants had infectious colitis. Thirteen of the treated infants died, so that the mortality rate of the whole series was 5.9 per cent: two were newborn infants, 4 were premature infants, 1 had toxic diarrhea of enteral origin and 6 had toxic diarrhea of parenteral origin. Succinylsulfathiazole and sulfaguanidine were given in doses of 2.5 Gm., half a tablet (0.25 Gm.) ten times daily, on the first day of treatment. Half this dose was usually given for a period of five days regardless of the age of the infants. In addition daily doses of 40,000 units of penicillin divided into eight intramuscular injections were given to newborn and premature infants. To full term infants penicillin was given only in cases of severe parenteral infections or in cases with severe toxic symptoms in which parenteral infection was likely. Stools improved rapidly and rehydration was also rapid, so that intravenous infusions were required infrequently; in those cases in which they had to be employed their effect was lasting. Dietetic treatment is of minor importance; it is limited to a short rehydration diet followed by quick realimentation with buttermilk. Thereby the danger of previously prescribed prolonged starvation diets is avoided. It is concluded that the combined use of sulfonamide drugs and penicillin has more influence on the course not only of the diarrhea but of the parenteral disease than penicillin alone. Most important in the prophylaxis of diarrheal disease are the prevention of contamination of foods by the use of dried sterile milk and the protection of infants from parenteral infections.

Gastroenterologia, Basel

72:361-420 (No. 6) 1947

Surgical Treatment of Gastric and Duodenal Ulcer and of Gastric Carcinoma. E. Melchior. —p. 361.
*Citrin in Treatment of Ulcerative Colitis. Z. Mařatka. —p. 372.
Chronic Constipation Usually a Wrong Diagnosis. H. Ohnell. —p. 383.

Citrin in Treatment of Ulcerative Colitis.—Mařatka investigated the efficacy of citrin (vitamin P) in the treatment of 33 cases of ulcerative colitis. He found that there is a great difference between the mild (hemorrhagic) and the severe (suppurative and ulcerative) forms. Treatment with citrin was found effective in the initial, hemorrhagic stage of the disease, but it was ineffective in the severe forms.

Klinische Wochenschrift, Heidelberg
24/25:865-896 (Nov. 15) 1947. Partial Index

Influence of Level of Protein Supply on Activity of Oxidation Ferments in the Organs. K. Lang.—p. 868.
Pyroracemic Acid Content of Blood After Administration of Amino Acid. K. Oberdisse.—p. 872.
•Bioptic Picture of Epidemic Hepatitis (Laparoscopic and Microscopic Observations). H. Kalk and F. Büchner.—p. 874.
•New Colloid Reaction for Diagnosis and Evaluation of Lesions of Liver Parenchyma. H. Neumann.—p. 878.

Bioptic Picture of Epidemic Hepatitis.—Kalk and Büchner performed six hundred punctures of the liver under direct vision by means of the laparoscope in patients with epidemic hepatitis. In the early stages of the disease a red discoloration of the liver was revealed on macroscopic examination. The rigidity of the entire organ depended only on the tense filling of the liver within its capsule; after pushing through the capsule the parenchymal tissue was soft and friable. With the icterus at its height the gallbladder was empty and remained so up to the forty-fifth day after the first appearance of the icterus. In addition the gallbladder had lost its tonus and was flaccid or wrinkled. The spleen was enlarged considerably. In the later stages of the disease the liver was dark brown and the gallbladder was filled tensely; it was grayish green and there was pronounced hyperemia of the serous membrane. The administration of choleretics and cholekinetics as well as duodenal irrigation with oil and magnesium sulfate was suggested to prevent stagnation of the contents of the gallbladder. Changes in the periportal fields were predominant in the microscopic picture of early cases. Disseminated single cell necroses may appear first on the periphery of the hepatic lobules and later on in their central areas. Homogeneous ramified effusions in the biliary capillaries were observed during the first days. Swelling, mitotic increase, molting and rounding of the capillary endothelium occurred in the hepatic lobules during the second week of the disease. Hepatic lobules were interspersed with small groups of cells loaded with disintegration pigments. Amitotic epithelial cell segmentation occurred during the third week, beginning to rebuild the destroyed epithelium of the liver, which restoration may be completed by the budding of the small biliary ducts. In mild cases the hepatic lobules may be restored completely in several weeks; additional weeks may be required for the periportal changes to subside. The term late nodules is suggested for the nodular conglomerations of proliferated endothelia which may still be present in the lobules. Collagen fibrils may develop between the hepatic epithelia in rare cases. A serous inflammation does not play any part in the course of epidemic hepatitis, and that applies to the early as well as to the late stages of the disease. The frequent proliferation of the endothelium is to be considered as a second, independent effect of the causative agent in the lobules rather than as a mere sequela of the necrosis of the epithelium. Late nodules occur even after a complete clinical recovery. This may explain the tendency to late recurrences. There is nothing to suggest a possible developement of cirrhosis of the liver, but there were infrequent cases of recovery after acute atrophy of the liver

New Colloid Reaction.—Neumann tested the serum of 92 patients with various diseases of the liver (30 with catarrhal jaundice and epidemic hepatitis; 16 with atrophic cirrhosis; 24 with cardiac cirrhosis, and 22 with acute atrophy of the liver, metastasis of the liver, acute occlusion of biliary ducts or acute cholangitis) by means of a modified Riebeling hydrochloric acid-"collargol" reaction. The principle of this reaction consists in a protective effect of the albuminous bodies of the serum against precipitation by the hydrochloric acid. The pathologic hydrochloric acid-"collargol" (colloidal silver preparation) reaction differs from the common colloid reaction by a two phase course which is characterized by a first and second protective zone. The serum of patients with parenchymatous lesions gave a decisively positive reaction. The reaction was still positive after clinical symptoms had subsided. This suggests the possibility of the evaluation of latent damage in addition to the diagnostic value of the reaction. One case of postarsphenamine jaundice in a man aged 36 is reported, in which all symptoms disappeared within seven weeks although the hydrochloric acid-"collargol" reaction remained positive. Arsphenamine therapy was continued, resulting in a second attack of jaundice after the second injection. Further accidents did not result from arsphenamine therapy after the hydrochloric acid-"collargol" reaction had become negative. The hydrochloric acid-"collargol" reaction proved to be superior to the Takata-Ara and to the Weltmann reaction.

Wiener klinische Wochenschrift, Vienna
59:853-868 (Dec. 31) 1947

Comparative Study on Children of Cities and of Rural Districts with Regard to the Effect of Deficient Nutrition. W. Auerswald and H. Bornschein.—p. 854.
Development and Present State of Medical Research in Great Britain. N. Howard-Jones. —p. 857.
•Treatment of Poliomyelitis with Fresh Convalescent Serum. H. Czickeli and R. Brauner. —p. 859.
Potato Treatment in Cardiac Dropsy. G. Seiller.—p. 864.

Fresh Convalescent Serum in Poliomyelitis.—Czickeli and Brauner report an outbreak of poliomyelitis attacking 152 persons, 72 male and 80 female, in Knittelfeld, a small town in Styria, Austria, in 1947. Thirty-eight patients were children less than 14 years of age and 114 were over 14, the oldest being 75. Twenty-three presented paralysis; 18 manifested intestinal symptoms; 2 had polioencephalitic symptoms, and 109 had a meningitic type of the disease. A familial disposition was suggested by the occurrence of the disease in 16 members of a family of 23 persons. Lumbar puncture proved to be the only reliable method of diagnosis. In 6 cases dissociation was observed between the number of cells and albumin. Müller's triad, consisting of hyperesthesia, sweating and leukopenia, is of no practical importance. Stiff neck of various degree could be demonstrated in the majority of the meningeal cases. In addition there was hyperreflexia in more than one third of the cases. Two hundred to 400 cc. of blood was taken from older children and adults at the end of the third or at the beginning of the fourth week of the disease. Blood was refrigerated twenty-four to thirty-six hours for coagulation; it was then centrifuged and a 0.5 per cent carbolic acid-serum solution was prepared. This convalescent serum was administered to 70 patients; there were no untoward reactions. The serum was heated up to 56 C. (132.8 F.), and this inactivated serum was administered to 47 additional patients. Of the 117 patients to whom the serum was administered, 1 died from Landry's paralysis and 2 manifested paresis. The serum was not administered to 35 patients; 17 of them already were paralyzed on admission; of the remaining 18 patients, 1 had paralysis and died and 2 had paresis. Further trials with convalescent serum are suggested.

Book Notices

Histopathologic Technic. By R.D. Lillie, A.B., M.D., Medical Director, U.S. Public Health Service, Washington, D.C. Cloth. Price, $4.75. Pp. 300, with 1 illustration. The Blakiston Co., 1012 Walnut St., Philadelphia 5, 1948.

Manuals of histologic technic often resemble old pharmacopeias or cook books in that they are compendiums of huge numbers of empiric recipes often differing by only minute quantities of one or several ingredients. The vast majority of the recipes are rarely tried, and many formulas have been retained out of inertia, piety or ignorance of the role of the ingredients. The present manual represents a partial break with this tradition. It is an attempt to remove some of the uncertain elements of the art of staining and to make of it a more exact craft by the use of buffered solutions and accurately delineated dyes. Some improvement is also attained in this manual by tabular arrangement of variant procedures which clarifies the differences. The table on page 22 for the conversion of prices of solvents in avoirdupois units to current prices per liter seems superfluous.

The book should be useful to technicians and beginners in the preparation of histologic material. The initial section on microscopy consists of somewhat sketchy comments on selected aspects of the microscope. It is difficult to see the scientific basis of the recommendation that in the selection of a microscope "manufacturer's plant be in the same country as the user." Details on the selection of objectives and use of Abbe test plate, choice of oculars and substage are given. A method for centering the condenser is given but no instructions for precision illumination. The experience of the author and his colleagues is extensively reported with several valuable comments. Some statements seem inadequately supported or of doubtful generality such as that albumin fixative functions as a surface tension depressant rather than an adhesive (page 48) and "Glycogen was not preserved in one series of tests in which acetone was tried as the fixing agent" (page 30).

In the chapter on stains and staining (page 54) no mention is made of Schultz's Farbstofftabellen. The uninitiated might profit by some explanation of the chemistry of the periodic acid method and other histochemical tests. Only one reference is given to the literature on the technic of autoradiography. Tables of selected buffers are given. It is not apparent why $NaH_2PO_4H_2O$ was substituted for the more usual KH_2PO_4 of the Sorensen mixtures.

Recent Advances in Medicine: Clinical Laboratory Therapeutic. By G. E. Beaumont, M.A., M.D., F.R.C.P., Physician to the Middlesex Hospital, London, and E. C. Dodds, M.V.O., D.Sc., Ph.D., M.D., Courtauld Professor of Biochemistry in the University of London, London. Twelfth edition. Fabrikoid. Price, $6. Pp. 422, with 42 illustrations. The Blakiston Co., 1012 Walnut St., Philadelphia 5, 1947.

Since 1924 volumes have appeared at frequent intervals to summarize progress in medical science. This book differs from the yearbooks in that it has collective reviews supplemented by adequate bibliographies rather than collected abstracts. It reflects excellently the progress in medical science since the last previous edition in 1943; however, the literature reviewed does not extend much beyond 1945, although there are occasional references to articles published in 1946. Among the most useful of the chapters is that related to infective hepatitis and other forms of jaundice.

Cardiopatias congenitas de la infancia. Por el Dr. Agustin Castellanos y Gonzalez, profesor agregado de la Catedra de patologia y clinica infantil de la Universidad de La Habana. Con la colaboracion del Dr. L.A. Cabrera. Fabrikoid. Price, $9. Pp. 406, with 83 illustrations. Manuel V. Fresneda, Neptuno' 561, La Habana, 1948.

The recent growing interest in congenital heart disease makes this book by Castellanos welcome indeed, particularly since his pioneer work in angiocardiography has played an important role in the development of the newer technic so useful in the study and diagnosis of congenital anomalies. Every cardiologist would do well to read this book, which represents the mature thinking of a major contributor to the field. The book is divided into three parts and is adequately illustrated. The first part deals with the embryology of the heart, the fetal circulation, the changes that occur in the circulation following birth, the peculiarities of the cardiovascular apparatus of the child and a survey of the various methods for examining the heart of the child. As expected there is a rather thorough development of the roentgen technic. The second part deals with the syndromes encountered in congenital heart disease. The third part is a systematic description of the various types of cardiac anomalies. The style is simple, and the author includes much of his own work and shows a thorough familiarity with the literature. This monograph is highly recommended.

Die Klinik der energetisch-dynamischen Herzinsuffizienz. Von Dr. Robert Hegglin, Privatdozent an der Universität Zürich, Zürich. Sonderausgabe von Fasc. II der Bibliotheca cardiologica. Paper. Price, 19 Swiss francs. Pp. 120, with 82 illustrations. S. Karger, Holbeinstrasse 22, Basel, 1947.

The rather fanciful term metabolic-dynamic heart failure is used to describe a lengthening of electrical systole and a concomitant shortening of mechanical systole (except in asphyxia, in which both are shortened, but the mechanical systole much more than the electrical). The occurrence of this phenomenon is described in a variety of clinical conditions; viz., diabetic coma, insulin shock, hepatic coma, dehydration, hypochloremia, addisonian crisis, porphyria, severe infections, barbiturate poisoning and hyperthyroidism. The premature occurrence of the second heart sound is ascribed to primary myocardial weakness, the result of a metabolic disturbance. Clinically the condition is is characterized by a premature second heart sound, the absence of venous congestion, a change in heart size, a small pulse, a lowered blood pressure and a tendency to fainting. The changes in electrical and mechanical systole are used to differentiate this state from peripheral vascular collapse. Usually the changes in systole are reversible providing the underlying metabolic disturbances are corrected. The author discusses management of such cases, in part on a speculative basis. Some of the author's statements may appear provocative; his method of determining the duration of mechanical systole may be questioned; nevertheless an interesting problem for the cardiologist is presented.

Peace by Thinking. By Elmer E. Ledbetter. Fabrikoid. Price $3.50. Pp. 486. S.J. Bloch Publishing Co., 600 Woodward at Congress, Detroit 26, 1947.

The author of this book received his early training as a lawyer, then served successfully as a business executive in various industries. Throughout that period he carried on the private study of philosophy and the social sciences. At the age of 66, still active in business as founder and head of his own oil company, he now publishes this thought-provoking philosophic volume.

So wide is the range of thinking shown here that it is difficult to attempt to assess its accuracy and validity. The first premise is that "man's mentality is big enough and good enough, but he is not using it correctly." To use our mentality correctly we must understand *(a)* that we have an "intuitive mind which is objectively blind" and *(b)* that it is necessary for them to function together. Thinking only with the objective mind may make mere survival possible for a time, but thinking with the intuitive mind is also necessary if successful living is to be attained. Successful living is defined "as the kind of job done by that unbroken evolutionary strain which rose from the single celled protozoa to the estate of man." Unsuccessful living "is the kind of job done by any of the hordes of extinct species, such as the Megatherium, Mastadon, Dinosaur or Dodo." This, then, is the author's "cosmic law of mentality."

The fact that present society is hovering on the brink of catastrophic disaster as the result of the atomic bomb, bacterial warfare and other weapons of modern war is evidence that we have failed to combine intuitive thinking with our objective thinking. Such thinking, which breaks the "cosmic law of mentality," eventuates in conduct which in turn breaks the "cosmic law of conduct" (which the author explains in three related propositions) and can result only in "unsuccessful living."

A Textbook of Bacteriology. By *Thurman B. Rice*, A.M., M.D., Professor of Bacteriology and Public Health, the Indiana University School of Medicine, Indianapolis, Ind. Fourth edition. Cloth. Price, $6.50. Pp. 603, with 127 illustrations. W. B. Saunders Co., W. Washington Sq., Philadelphia 5, 1947.

This text was written to serve as a practical rather than a theoretic textbook. The subject material is covered in an elementary and superficial way. Many of the chapters are out of date, as for example, chapter 23, entitled "The Paratyphoid Group." Approximately a page in fine print at the end of appendix A is devoted to the subject of bacterial warfare. This textbook contains many points of practical interest which should appeal to the student at the subprofessional level. The lack of reference material is a serious omission from the professional point of view.

Public Health Measures in the Control of Diabetes: A Study of Practical Approaches Through Health Education. By Mary Rowe Moore, M.Ed. A Thesis Submitted to the Graduate Faculty of the Teachers College of The University of Cincinnati in Partial Fulfilment of the Requirements for the Degree of Master of Education. Paper. Pp. 44. Cincinnati. 1947.

This is a paper-bound monograph submitted by the author in partial fulfilment of the requirements for the degree of master of education. It is an extensively documented presentation containing a study of diabetes from the statistical and etiologic points of view. The purpose and procedure of the study of diabetes are outlined in connection with a review of the related literature. Procedure in the study was first to review available literature and second to study the history and functions of the Cincinnati Council on Diabetes. The history and nature of diabetes are studied, including the various eras of diabetes and the history of the disease since the advance of insulin. There are recommendations and suggestions for further study. Among proposals which look toward the better control of diabetes are better definition and history of the disease and stress on the positive aspects of practical methods of control and adjustment, teaching aids and a simple vocabulary to explain technical terms. More planned programs for lay associations interested in diabetes include regular scheduled meetings, open forums, employment opportunities and a diabetic newspaper or magazine for diabetic persons. Stress is laid on camp life for young diabetic patients and on the need for a film of occupational studies. Better contacts with the practicing physicians are advocated, and so is a survey of chronic illness in the community. This is a good piece of work effectively reported. Its greatest contribution is to health educators, who observe the rise of mortality due to diabetes and who would like to start doing something about it.

Health Instruction Yearbook 1947. Compiled by Oliver E. Byrd, Ed.D., M.D., F.A.P.H.A., Professor of Health Education, and Director, Department of Hygiene, School of Education, Stanford University, Stanford University, Calif. Foreword by Clair E. Turner, D.Sc., Dr. P.H. Cloth, Price, $3. Pp. 325. Stanford University Press, Stanford University, Calif.; Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, 1947.

This book, reviewed in three previous issues of THE JOURNAL, is a compilation of selected brief material from the literature in public health. It is not a 1947 yearbook because it was published before the end of 1947, the preface being dated Aug. 1, 1947.

Tratamiento dd las leucemias con alkilaminas. Por Oscar Urteaga B., jefe del Departamento de patologia de la Facultad de medicina en el Hospital "2 de Mayo," Lima, Peru. Tesis para optar el grado de doctor en medicina. Paper. Pp. 163, with 120 illustrations. Editora medica peruana S.A., Azangaro 906, Lima, Peru, 1947.

This clinical monograph reports the experiences of the author in the use of nitrogen mustard therapy. Thirteen cases of various leukemias and a seminoma are presented. In 7 cases correlation is developed between the clinical, hematologic and pathologic changes following the use of this drug. The methods of therapy and the toxic manifestations observed are in accord with earlier reports on this subject. Clinical improvements reported are a reduction in the splenomegaly, hepatomegaly, adenopathy and a general well-being of the patients.

The author describes the hematologic changes in leukemia which developed during therapy as (1) a process of maturation of the leukocytes which is followed by a quantitative reduction, (2) a period of leukopenia followed by spontaneous rise to normal value, (3) a development of normal hemogram and myelogram and (4) complete regeneration of the hemopoietic system. The author believes that the methyl bis beta-chloroethylamine hydrochloride has a selective action on the myeloid and lymphatic cells and was not toxic to the erythroblastic series. This observation is not in keeping with reports by workers in the United States.

The author distinguishes in acute leukemia a sensitive type and a resistant type. In the latter there is a tendency toward the development of large cells with atypical nuclear patterns following therapy. The development of these cellular deformities has been described previously, but a correlation to clinical results is a new interpretation.

Autopsy material showed degenerative changes in the bronchial tract, gastrointestinal tract, liver, kidneys, epididymides, testes and hypophysis with necrosis of leukemic infiltrations.

The anemia in acute leukemia, prior to treatment, is hemolytic according to the author, as evidenced by erythrophagocytosis and reticulosinusoidal hyperplasia in the lymph nodes—suggestive of splenic tissue.

The clinical results in the cases of chronic leukemia indicate that the material will produce significant remission in the disease; however, the number of cases and the period of observation were too limited to attempt a conclusive statement. In acute leukemia no significant remission was produced with this drug. The monograph contains an extensive series of photomicrographs; however, it is unfortunate that the reproduction of these is not of sufficient technical quality to permit the reader to make interpretations. The general presentation and the organization are excellent

Pictorial Handbook of Fracture Treatment By Edward L. Compere, M.D., F.A.C.S., Associate Professor of Surgery, Northwestern University Medical School, Chicago, and Sam W. Banks, M.D., F.A.C.S., Associate in Surgery, Northwestern University Medical School Revised with the assistance of Clinton L. Compere, M.D., F.A.C.S., Associate in Surgery, Northwestern University Medical School Second edition Cloth Price, $5.50. Pp. 390 with 191 illustrations by Harold Laufman, M.D., F.A.C.S. The Year Book Publishers, Inc. 304 S Dearborn St Chicago 4, 1947.

The purpose of this book is clearly stated in the preface; it is designed to acquaint the general practitioner with the basic principles involved in the treatment of fractures. The opening chapters of the book elaborate on these general principles and the following chapters apply them to the fractures of specific bones. The treatment of various types of fractures of each bone is described: the authors have included reconstructive surgery for sequelae and unsatisfactory results from malunion or nonunion. They advise that the fractures requiring more complicated procedures be referred to a qualified orthopedic surgeon, but they do outline a brief description of each procedure so that the general practitioner can judge what may be necessary. In each case the treatment advised and described is the one found most satisfactory by the authors.

In this second edition some illustrations have been deleted and replaced with new ones and the total number has been increased by nineteen. Several chapters of the book have been completely rewritten, while the entire book has been reedited. The purpose of the authors has been achieved in presenting pictorially and concisely means of treatment for individual types of fractures which can be handled by the general practitioner.

Diabetic Guide. By Edwin B. Winnett, M.D., and A. G. Lueck, M.D. Loose-leaf. Leather. Price, $1.75. Pp. 114, with illustrations. American Lithographing and Printing Co., Des Moines, 1947.

The "Diabetic Guide" is for the physician rather than for the patient. A physician treating a patient familiar with this book would have difficulty, for the authors state too frequently what must and should be done. A physician may have difficulty in convincing a patient that he rather than the book is correct. The volume is handy in size and convenient to handle, but since so many diabetic persons have difficulty of vision, larger print would have been a great improvement. Such dogmatic assertions as "the best insurance against development of retinitis is good control of the diabetes" are confusing, for the foremost medical practitioners today feel that the association of retinitis and diabetes is far from confirmed. "Experience has demonstrated that mixtures ranging from 1.2 (1 unit of PZI [protamine zinc insulin] to 2 units of quick insulin) on up to 1.3 are the most satisfactory although ratios as low as 1:1 have been used with success." From this the layman would gather that the use of insulin mixture is fairly common and approved, but today the use of mixtures is still in the experimental stage and has been discarded by many men. There are many statements made in the book as facts that are still controversial among physicians and should be kept from the layman. "Globin insulin has been tried extensively in recent years; in general, it is less satisfactory than crystallive insulin, PZI (protamine zinc insulin) or a combination or a mixture of the two," is one of them. Only facts known and proved through the years should be told the man on the street, otherwise he is going to cause his physician trouble.

Nursing. By Lulu K. Wolf, R.N., B.S., M.P.H., Professor of Nursing, Vanderbilt University School of Nursing, Nashville, Tenn. Cloth. Price, $3.50 Pp. 534, with 203 illustrations. D. Appleton-Century Co., 35 W. 32d St., New York 1; 34 Bedford St., Strand, London, W. C. 2, 1947.

Here is a broad concept of nursing which includes many phases of the nursing field, a description of the practice of nursing, a history of nursing and a description of the responsibilities of those engaged in the profession. This new text written, as the author states in the preface, for the beginning nurse student, includes a brief description of all these phases. The principles of democratic philosophy are exemplified, as is the reconstructionists' philosophy of attaining democratic ideals.

Part I challenges the interest of the student at once by introducing her (or him) to professional nursing through a brief summary of nursing history and of nursing trends in the twentieth century. The student gains appreciation of the present status of nursing through a description of the studies which have guided the profession, and of other forces which have influenced the profession. A breadth of view and universality of outlook based on the assumption "that all should have equal opportunity for health" are presented in Chapters IV and V. The panoramic view of health problems presented by Miss Wolf will widen the student's prospective in contemplation of the kind of preparation she should seek. The student using this text will understand the nurse's role in bringing about needed changes in our social order, changes aimed at the goal of the democratic ideal welfare of all people, community betterment and individual development.

Part II of the text is concerned with the preparation and development of young nurses. It enlists their participation, at the outset of their educational experience in nursing, in carrying out the democratic philosophy. The description of principles and procedures is logically arranged and developed from the admission to the discharge of the patient from the hospital. The use made of the book, however, will depend chiefly on the competence and attitudes of the teacher. As the text stands, some may feel a need for a more clearcut emphasis on principles underlying nursing care and a need for more detail. Throughout, the emphasis is on health teaching and on consideration of the patient as an individual. The text illustrates the nurse's role as an interpreter of science and as a promoter of the welfare of the individual and of the social good. Written in a clear, direct manner, the text is easily understood.

Discrepancies in application of principles and failure to follow through in procedures are rarely noted. In these cases generalizations might be reinforced by specific suggestions for students at this stage of their educational process. The illustrations are purposeful and clear. There are well chosen references and a summary at the end of each chapter. The student will wish to add other references especially in health teaching. The author's greatest contribution is made in the integration of the social and health components in nursing.

Queries and Minor Notes

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

IMMUNIZATIONS

To the Editor:—What is the recommended routine for dosage, time of administration and time of booster dose, in immunizations against pertussis, diphtheria, tetanus and smallpox?

Harry W. Orris, M.D., Brooklyn.

Answer.—Usually it is recommended that inoculations for the prevention of pertussis should not be given until after the sixth month of life. It is often claimed that there is little antigenic response before that time.

Dosage depends on the vaccine selected. One pertussis vaccine contains 15 billion inactivated organisms per cubic centimeter, and injections of 1, 2 and 3 cc. are made at from four to six week intervals. The total amount of vaccine given contains 90 billion organisms. Another vaccine contains only 10 billion organisms to 1 cc., and the total dose is 55 billion. Protection when established may last for approximately two years; after that time, unless there are exceptional circumstances reimmunization against whooping cough is seldom undertaken. However, if it is desired, 1 cc. of pertussis vaccine could be injected about two years after the initial prophylactic treatments.

Immunization against diphtheria and tetanus can be undertaken at any time after the child is 6 months of age, although 9 months of age is a more appropriate time. If diphtheria and tetanus toxoids are combined and the alum-precipitated preparation is used, two injections of 1 cc. each with an interval of six weeks is now considered satisfactory. After immunization has been established, as little as 0.1 cc. of tetanus toxoid, alum precipitated, may be given as a booster dose once every two years or annually as desired. In case of injury, if more than six months have elapsed since inoculations were made for immunization against tetanus, 0.5 cc. of tetanus toxoid, alum precipitated, should be administered immediately following the injury.

Vaccination against smallpox is best performed according to the multiple pressure method. If the baby is in good health and has no dermatologic condition, he may be vaccinated between the ages of 3 and 6 months. Vaccination before the completion of the first year of life is commonly advised. Revaccination should be performed when the child enters school at about 6 years of age. A third vaccination may be undertaken when grammar school is completed.

COCCIDIOIDOMYCOSIS

To the Editor:—A roentgenogram of the chest of a student suggests growth of fungus in the lungs. Dr. Biggs of the Mississippi State Health Department did not consider it tuberculosis. The tuberculin reaction was negative. He recommends that skin tests for fungous infections be made, coccidioidomycosis among others. Where can material for skin tests be obtained? Please suggest other methods for diagnosis.

Virginia E. Lane, M.D., Columbus, Miss.

ANSWER.—The tuberculin test should be repeated and animal inoculations of sputum and gastric washings should be carried out; on the basis of probability alone, pulmonary disease of a chronic nature should be considered tuberculosis until proved otherwise.

Although the diagnosis of coccidioidomycosis properly rests on the demonstration of Coccidioides immitis in tissue and a characteristic growth on artificial mediums, the intradermal test may be of great assistance. Coccidioidin may be obtained from Dr. John F. Kessel, chief microbiologist, Los Angeles County General Hospital, Los Angeles 33. This antigen is prepared in dilutions of 1:100 and 1:1,000 in merthiolate sodium (1:10,000). For routine use the 1:100 dilution is used. When primary, systemic coccidioidomycosis is suspected (as in the case cited), it would be wiser to use 1:1,000 dilution first. One tenth of a cubic centimeter is injected intracutaneously and the reaction is read in forty-eight hours. Reading and interpretation of tests are carried out precisely as one does with the familiar intracutaneous tuberculin test. A negative test militates strongly against the diagnosis of coccidioidomycosis. As with the tuberculin test, a positive reaction indicates that the patient has in the past become sensitized to the antigen; every effort should be made to isolate the organism.

Other fungous diseases which might cause confusion in the case mentioned would be blastomycosis and histoplasmosis. The former is unlikely, since the pulmonary form is as a rule rapidly fatal. The histoplasmin skin test may be used as a diagnostic measure in histoplasmosis. Biopsy of regional lymph nodes or microscopic and cultural studies of sputum and gastric washings are worth while procedures in the diagnosis of fungous growth in the lungs. Further advice should be obtainable either from Tulane or from Louisiana State University Medical School.

WATER SILICATE DEPOSITS

To the Editor:—The head plumber of our sanatorium reports that the hot and cold water pipes are developing a heavy layer of silicate. We are using a water softener system provided by the Elgin Softener Corporation, Elgin, Ill., and are using their "AC treatment" with causticized sodium silicate solution to prevent corrosion of the pipes. Is there any danger in the use of this water?

Robert A. Hollands, M.D., Battle Creek, Mich.

ANSWER.—The building up of a heavy layer of silicate in the water pipes suggests that the softened water is being overtreated with the causticized silicate solution. A check should be made to determine whether the dosage of silicate recommended by the manufacturer is actually being applied to the water. The chemical feeding apparatus may be out of adjustment. When the proper dosage of causticized silicate is applied to a softened water it will cause a thin film of silicate to be deposited on the inside surface of the pipe and will protect the metal from corrosive action. There is no danger to health from the use of water containing silicates. Objectionable tastes are likely to develop in the water from overtreatment with the caustic solution.

SMALLPOX VACCINATION

To the Editor.—Vaccination of a boy aged 22 months against smallpox did not take. His mother states that she was vaccinated against smallpox when she was six months pregnant. Is it possible that the boy acquired temporary immunity through his mother's vaccination? When should the boy be revaccinated?

Frederick E. Ems, M.D., Petaluma, Calif.

ANSWER.—It should always be assumed that a successful vaccination can be obtained on any one who has never had a successful vaccination; the only exception to this rule might be a person who has had an attack of smallpox. It is extremely doubtful that the infant acquired temporary immunity because the mother was vaccinated during pregnancy. Moreover, it would be interesting to know whether the mother's vaccination was successful. Further attempts should be made to secure a successful vaccination on the baby and perhaps also on the mother. This could be done at any convenient time, but preferably during cool seasons rather than in the summer months.

Theoretically the only reliable method to determine immunity to smallpox would be to secure a reaction of immunity when a vaccination is attempted. When designating a vaccination as a reaction of immunity, one must be certain that the vaccine is potent. If the vaccine is potent there should always be one of three reactions: *(a)* a successful vaccination, *(b)* a vaccinoid or accelerated reaction or *(c)* a reaction of immunity. If there is no reaction whatever, it should signify that the vaccine is not potent or that some flaw has occurred in the technic.

WORMS

To the Editor:—The treatment of choice frequently mentioned for Ascaris lumbricoides is hexylresorcinol, and for oxyuriasis, gentian violet medicinal. These drugs are prescribed in a capsule form which is difficult to administer to a patient under 2 or 3 years of age. Please advise method of treatment for these helminths in children under this age.

Loy T. Swinehart, M.D., Boise, Idaho.

ANSWER.—Hexylresorcinol ("crystoids anthelmintic," Sharp & Dohme, Inc.) is the drug of choice for the treatment of ascariasis because of its low toxicity and great effectiveness. The gelatin-coated pills are made in 0.1 and 0.2 Gm. sizes. Children are given 0.1 Gm. per year of age up to 10 years of age. A light evening meal is eaten, and the following morning the pills are taken with water. No breakfast should be eaten, but regular meals may be resumed at noon. Care should be taken that the pills are not chewed, as hexylresorcinol will produce transient superficial burns of the oral mucosa. Children who experience *difficulty* in swallowing the pills can easily do so if the pill is held in the back of the throat with the forefinger until the next swallowing reflex carries it down. A magnesium sulfate purge should be given twenty-four hours after the hexylresorcinol to wash out the dead and injured worms. A single treatment cures 70 to 80 per cent of infected persons. Reexamination of the stool for eggs, and retreatment, if necessary, should be done two weeks after the first treatment.

The treatment of oxyuriasis (enterobiasis) in children consists of oral administration of enteric-coated gentian violet pills. The usual dose is 10 mg. per year of age daily for ten days. The total daily dose is divided into thirds and given an hour before each meal. Thus a child 3 years of age would receive a total of 30 mg. per day. As the pills contain 3/20 grain (9.6 mg.), one pill would be given before each meal for ten days. A child 2 years of age would receive a 9.6 mg. pill before breakfast and another before supper. These pills must not be chewed, as gentian violet is extremely nauseating. Young children who cannot swallow the pills present quite a problem, because of the necessity of repeated doses for ten days.

Although not as effective as gentian violet, *tetrachloroethylene in a single dose will cure* approximately 50 per cent of enterobius infections and, being a liquid, it has the advantage of ease of administration. A liquid evening meal should be eaten, and the following morning the tetrachloroethylene administered at the rate of 0.1 cc. per year of age. The drug should be given with a magnesium sulfate purge. Children who vomit this mixture may have better success with a magnesium citrate purge. Food should not be eaten until the purge has acted. Retreatment, if necessary, may be repeated at intervals of two weeks.

RABBITS FOR FRIEDMAN TEST

To the Editor:—What are the qualifications of rabbits for use in the Friedman test? How old should they be? What is the best breed? At what age must males and females be separated? Can the males and females be kept in proximity to one another although separated?

William Sonnier, M.D., Scott, La.

ANSWER.—Friedman and Lapham (*Am. J. Obst. Gynec.* 21:405-410 [March] 1931) said the following:

"Inasmuch as the period of gestation in the rabbit is from thirty to thirty-two days, one may be certain that adult females strictly isolated from males for this period of time will not be pregnant, and that their ovaries will not contain either of the structures which characterize a positive reaction. Yet, if a number of females are kept together, it is possible that one doe may be "hopped" by another in heat and enter a period of pseudopregnancy which would last for about twenty days. It is desirable, therefore, that the females be kept isolated not only from males, but from other females as well by placing them in individual cages. It is not a difficult matter to arrange with a *rabbit dealer to have a sufficient stock of females* kept isolated in just such fashion for the desired period.

"If by any chance this is found difficult to arrange, one may buy adult females indiscriminately on the market and immediately place them in separate cages. After an interval of three weeks one can easily determine by palpation which of the rabbits are pregnant. Those that are not pregnant at this time may be used immediately. In the event that some of the animals deliver young during this period of isolation, they may be used within twenty-four hours after parturition. Indeed, an animal that has just delivered a litter is a most desirable animal for the test.

"In case one has not had opportunity to isolate the rabbits for the desired period, and it is found necessary to perform a test, it is safe to use a rabbit that has been isolated in the laboratory for only eight or ten days. Even if the rabbit in question had had coitus just before it was obtained, the corpora lutea of pregnancy or pseudopregnancy would then be at least eight or ten days old, and could not be confused with the fresh corpora lutea or corpora hemorrhagica produced by the injections of an active urine.

"Briefly, then, one may safely use all rabbits that are not *demonstrably pregnant at the end of* three weeks of isolation. In time of stress it will not cause confusion to inject a rabbit that has been isolated for only ten days, since the autopsy will disclose either that the corpora lutea are fresh, having been produced by the injections, or that the injected animal was pregnant or pseudopregnant, in which case the result of the test might be discarded and another animal subjected to the injections.

"It is understood, of course, that once the rabbits have been isolated for a sufficient length of time, they may be used at any time afterward."

WATER SOFTENING

To the Editor:—When water has hardness of 250 to 300 parts per million what amount of the usual softening chemicals is necessary to reduce hardness to relatively soft water, say 50 parts per million, using 1,000,000 gallons as a basis of estimate? What is the approximate current cost per pound of the softening agent? I live in a town of about 4,000 population and as health officer I am urging the town to soften its water.

N. Thomas Ennett, M.D., Beaufort, N.C.

ANSWER.—Since data are not given regarding the chemical composition of the water except that it has a hardness of 250 to 300 parts per million, it will be assumed that the water has a total hardness *of 300 parts per million, of which 250 parts per* million is carbonate hardness and 50 parts per million is noncarbonate hardness. It is assumed that there is also 40 parts per million of magnesium present. Such water would require the use of lime and soda ash for softening followed by additions of carbon dioxide for stabilization and *aluminum sulfate for coagulation of suspended* matter. The total cost of these softening chemicals is estimated at approximately 5 cents per 1,000 gallons of water treated. A plant of 1,000,000 gallons per day capacity is usually required for a community of 4,000 persons. At present prices, construction of such a plant will cost from $100,000 to $150,000. The cost of labor, maintenance, power, depreciation and financing must be added to the cost of chemicals to obtain the actual cost of softening.

MUMPS

To the Editor:—I was called to see a man with a temperature of 104 F. There was evidence of septicemia; he also had an epididymitis on one side. He did not respond to the usual treatment of fluids, salicylates and sulfathiazole. He was hospitalized, and intramuscular penicillin therapy was efficacious; the temperature dropped to normal within two days. It was difficult to make a diagnosis in this case, but three weeks later the mumps developed in his wife. As this case seems unusual, are there any cases on record where the parotid glands are not affected and the complication mentioned occurs?

W. J. Klinck, M.D., Lennoxville, Quebec.

ANSWER.—The case mentioned is unusual, but not extremely rare. There are many instances in which mumps occurs without swelling of the parotid glands. The submaxillary glands alone may be involved. In France particularly, where the literature in respect to mumps is especially extensive, cases of orchitis have been reported in persons following their exposure to mumps, although there seemed to be no evidence of the parotid glands being involved. Lightwood states: "Although parotitis is usually present, it must not be assumed that it is either primary or essential." This same author asserts further, "There is no evidence that the infective process begins in the parotid glands" (Lightwood, R.: Myelitis from Mumps, *Brit. M. J.* 1:484 [March 30] 1946.

PAINLESS CHILDBIRTH

To the Editor:—What are the salient features in the Read method for painless childbirth? How successful has it been?

A.A. Skemp, M.D., La Crosse, Wis.

ANSWER.—The query undoubtedly refers to Grantley Dick Read's method. Read has written a book, "Childbirth With Fear" (New York, Harper and Bros., 1944) and also an article (*J. Obst. & Gynaec. Brit. Emp.* 53:55-61 [Feb.] 1946). Sawyer found the Read method highly successful (*Am. J. Obst. & Gynec.* 51:852-858 [Feb.] 1946). Abstracts of Read's and Sawyer's articles may be found in J.P. Greenhill's "Year Book of Obstetrics and Gynecology," Chicago, Year Book Publishers, 1946, pp. 160-163. Parts of these abstracts are as follows:

> Read concludes that fear is the chief pain-producing agent in otherwise normal labor, that one should infer not that a woman is calm because her labor is easy but that her labor can be easy if she remains emotionally calm. The core of this hypothesis, now become a wisely accepted theory, is the concept of a pain-fear-tension syndrome in labor. Fear produces tension in the circular muscle fibers of the uterus, through sympathetic nerve stimulation, which then opposes action of the longitudinal fibers, which have *autonomic* innervation. Pain from the increased tension in the lower uterine segment and the cervix intensifies fear, causing further tension, and so on into the exhausting agony of a relatively obstructed labor. This vicious circle is most vulnerable to attack at the "point of fear," and the most effective method of minimizing pain is the establishment of complete faith in the mind of the woman, so that her labor can proceed in a state of neuromuscular harmony. This condition of mind can be built up during *antepartum* care and fostered at term if the attendant comprehends and takes advantage of the emotional phenomena characteristic of normal labor and delivery. On the other hand, disruption of the normal course of labor through loss of emotional control (including self-control of the operator!) brings on the serious complication of obstructed labor, one of the main causes of maternal morbidity.
>
> Sawyer maintains that "if a woman is taught to have no fear, to understand the processes of labor and to relax her skeletal muscles, the cervix will relax and allow itself to be transformed along with the isthmus into the lower uterine segment. At the end of the first stage, the head is forced through the cervix and this causes pain. The woman should be taught to expect this moment. At the end of this time, the pain caused by the distention of the cervix can be relieved by bearing down. The second stage lasted for about one hour in primiparas and for one or two pains, until the head is distending the perineum, in multiparas. The woman should work with abdominal and respiratory muscles as far as possible and relax the perineum so the head can be maneuvered over it. An anesthetic should be offered at the end of the second stage. If an episiotomy is necessary, the perineum is infiltrated with 'novocain and the episiotomy done."

TRIGEMINAL NEURALGIA

To the Editor:—What is the most effective therapy now in use for the relief of trigeminal neuralgia? The patient is 87 years of age and had had several attacks during the past two years.

A. Eleanore Conover, M.D., Cornish, N.H.

ANSWER.—The most effective therapy of trigeminal neuralgia is surgical. Under local anesthesia, the gasserian ganglion can be approached through an incision in the temporal area. A trephine opening is made through the squamous portion of the temporal bone and is enlarged to expose the floor of the middle fossa. The dura mater is raised from the floor, thus exposing the middle meningeal artery as it enters the *calvarium* through the *foramen* spinosum and the mandibular division as it makes its departure through the foramen ovale. The mandibular branch is traced posteriorly and superiorly to the gasserian ganglion. The preganglionic sensory fibers between the ganglion and the brain stem are divided completely or partially as indicated. Since *these fibers are incapable of regeneration*, there can be no return of pain. Age alone is no contraindication to this surgical procedure.

OBSTIPATION

To the Editor:—A male patient aged 82 is in fairly good physical condition except for an extreme degree of constipation. Roentgen examination reveals an enlarged colon, which the patient believes to date from severe typhoid at about 15 years of age. He was ill several weeks and had never been constipated prior to this illness. Constipation is now so extreme that bowel movements do not respond to liquid petrolatum. Salts are too drastic, as are castor oil and cathartic pills. His appetite is good; and he is active for a man of his age. Enemas are almost without result. Kindly advise me what is considered the least harmful laxative in a case of this kind.

V. Berry, M.D., Okmulgee, Okla.

ANSWER.—It is assumed that cancer of the distal colon and rectum has been excluded. The condition that has been described is probably either an acquired megacolon or more likely a distended, atonic colon not infrequently seen in the older age group, particularly in patients who have indulged in laxatives and cathartics over a long period of time. Regardless of the origin, in this age group the treatment would be the same. A standard diet should be prescribed that contains rather large amounts (at least two or three dishes each) of cooked fruit and cooked vegetables daily. Spinach and prunes should be included in the diet each day. Head lettuce, celery and whole wheat bread also help to form bulk. If spontaneous evacuation fails to occur with this regimen, the utilization of enemas every three to five days should be temporarily added to the program. From 6 to 8 ounces (180 to 240 cc.) of liquid petrolatum, olive oil or cottonseed oil introduced in the rectum at bedtime and allowed to remain overnight is usually an effective medicament. Small tap water enemas may also be employed as a temporary measure. The further use of laxatives or cathartics is unwarranted and is mentioned only to be condemned.

TATTOO

To the Editor:—Several years ago a query dealt with methods used in the removal of tattoos. Since the end of the war many former servicemen are anxious to have tattoo marks removed. Have there been any new methods developed? Can any places be mentioned specifically which engage in satisfactory methods of removing tattoos?

M.D., Ohio.

ANSWER.—There are many methods used in the removal of tattoos, but the best method is to tattoo thoroughly 40 per cent tannic acid into the lesion with electric tattooing needles until the skin presents a rubbery appearance. Then apply 50 per cent silver nitrate solution to the area, thus forming a hard black adherent crust. The treated area is bandaged and the crust is allowed to fall off naturally. It usually takes two treatments for a tattoo to be removed. Most dermatologists do this type of work.

CRETINISM

To the Editor:—What is the best present method of treatment for a cretin, first seen at the age of 4 months?

B. W. Coan, M.D., Galesburg, Ill.

ANSWER.—Few hospitals have facilities for carrying out basal metabolism tests on infants. It is therefore necessary to gage the dose of thyroid in early life by clinical changes in the patient. During the first year of life the dose of desiccated thyroid required is 0.1 grain (6 mg.) daily of the U.S.P. product. The dose is gradually increased to about 1 grain (0.06 Gm.) daily during adolescence. It is important to begin treatment as soon as the diagnosis is made and to give thyroid continuously for the rest of the patient's life. It is important not to give too much thyroid, because the drug produces palpitation, tachycardia and nervousness and may lead the parents to discontinue the child's treatment, with resultant hypothyroidism.

PSORIASIS

To the Editor:—Is there a hormone therapy available for the successful treatment of psoriasis? The patient, aged 24, with lesions for the past eight years, has had rather extensive topical treatment. She states that the lesions become more pronounced just before and during her menstrual periods.

M.D., Pennsylvania.

ANSWER.—There is some evidence to indicate a hormonal relationship to psoriasis, but it is still unsettled what the relationship is and which glands are involved. The thyroid, the pituitary, the pancreas and particularly the adrenals have all been considered at some time as important in psoriasis. Unfortunately, however, the treatment directed at these has not produced uniformly successful results. Recently Dr. Lawrence Frank (*New York State J. Med.* 47:1790 [Aug. 15] 1947) in a small group of cases attempted to stimulate the adrenal glands indirectly through the action of diethylstilbestrol on the pituitary gland; his results also were not uniform, although he considered the attempt as not unsuccessful. Patients in whom psoriasis had been present only a short time responded well, but such patients ordinarily respond well to treatment with the usual topical measures. Frank had the impression that even his patients with chronic psoriasis were benefited by the treatment, which consisted of a combination of diethylstilbestrol and topical measures. In general, however, therapy with hormones is not used either regularly or routinely for the treatment of psoriasis.

RECURRENT ULCER OF THE MOUTH

To the Editor:—The answer on page 433 of THE JOURNAL for February 7 on the subject "Recurrent Ulcers of the Mouth" fails to mention two other effective forms of therapy. Repeated vaccination with smallpox vaccine was first recommended by F.R. Schmidt (Vaccination for Herpes, *Arch. Dermat. & Syph.* 32:105, 1935). At least ten vaccinations are given on a different area of the skin at seven to ten day intervals. The entire course of vaccinations should be given even though no "take" is secured. Vaccination therapy should not be started during the acute stage of the lesions. It is not unusual for the patient to experience an exacerbation of the lesions following the initial vaccination. This form of therapy is quite effective. Estrogen ointment locally applied, approximately 25,000 rat units a week with 1,000 units per gram (0.05 Gm.) of ointment has also given satisfactory results in some patients.

Lester W. Burket, D.D.S., M.D., Philadelphia 4.

SICK PETS

To the Editor:—The formula proposed in THE JOURNAL, January 24, page 289, "veterinary nembutal," would cost $45 at $5 per ounce (28.35 Gm.) for pentobarbital sodium. Prepared by Abbott Laboratories, this formula is stable in solution but is not always stable when prepared by the pharmacist. The recommended dose, 65 mg. per kilogram of body weight, is lethal to most cats and dogs, but as a few will survive, this cannot be considered humane and the formula of choice. However, if it is used, a bilateral pneumothorax should be produced while the animal is anesthetized in order to assure lethal outcome. Additionally, the most humane method of administration is intravenously or intraperitoneally. When such a course has been decided on, the following medicaments are preferable for disposition of sick and injured pets:

Dogs.—(1) 10 cc. of 10 per cent potassium chloride by intravenous injection. (2) 20 cc. of 95 per cent ethyl alcohol intravenously, followed by 20 to 40 cc. of air embolus until respiration and heart action cease. (3) 30 mg. of strychnine by the intravenous route. (4) 10 cc. of 20 per cent magnesium sulfate per 5 pounds (2.3 Kg.) of animal weight intravenously. NOTE: These agents produce immediate death without convulsions when given directly into the vascular system. After the first intravenous injection, which produces anesthesia, if subsequent injections are needed they may be given by the intracardiac method. Ether and potassium cyanide are considered undesirable and inhumane, as they tend to produce convulsive deaths.

Cats.—As cats are much more difficult to handle, injections into the vascular system are contraindicated. With these animals the use of chloroform (1 ounce) or ethyl chloride (½ ounce, 14 Gm.) in a tightly closed container produces a quick and painless death.

Larger Animals.—The horse dies instantly and painlessly without convulsions when given 1 grain (0.06 Gm.) strychnine intravenously. This method may be used for the disposition of horses and other large animals on farms. The use of veterinary pentobarbital in the larger animals is not only much more costly but, as previously noted, the solution may become unstable and therefore give poor, or negligible results. From long practice the formulas here given are considered to be by all means the most efficient and humane. Whenever possible, decision for such action and the handling of the case should be based on recommendations of an experienced veterinarian.

C.C. Pfeiffer, M.D., Chicago 12.

RECURRENT ULCER OF THE MOUTH

To the Editor:—On page 433 of THE JOURNAL, February 7, the answer to the query regarding recurrent ulcers of the mouth takes up a great many improbable explanations but rather lightly passes over the most probable diagnosis; i.e., aphthous ulcers, which are now generally considered to be a variant of herpes simplex of the recurrent type. Repeated vaccination as for smallpox will frequently put a stop to the recurrent attacks or at least ameliorate them. Intradermal injection of the contents of the capillary tube of vaccine once daily for four or five days is the most effective technic, but if too much difficulty is encountered in transferring the vaccine from the capillary tube to a tuberculin syringe (in 0.1 cc. of isotonic sodium chloride solution) repeated scarification may be substituted. If the patient is likely to get a "take," the first vaccination should be followed by an appropriate waiting period, so that the possibility of multiple takes will be avoided.

A. Fletcher Hall, M. D., Santa Monica, Calif

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A TEST FOR ADRENAL CORTICAL INSUFFICIENCY

The Response to Pituitary Andrenocorticotropic Hormone

George W. Thorn, M. D.
Peter H. Forsham, M. D.
F. T. Garnet Prunty, M. D.
and
A. Gorman Hills, M. D.
Boston

The recent preparation of a purified pituitary adrenocorticotropic hormone in sufficient quantity for use in human subjects[1] has provided an opportunity to stimulate directly the human adrenal cortex.[2] It appeared likely that, in patients suffering from primary adrenal cortical insufficiency, the normal response to this specific stimulus would fail to occur. This expectation has been substantiated by clinical studies.[3] The development of a simple test for adrenal cortical insufficiency based on the failure of patients with Addison's disease to secrete cortical hormones in response to the pituitary adrenocorticotropic hormone has been the aim of this study.

Among the numerous metabolic[3] and hematologic[4] changes which follow administration of the hormone in subjects with an intact adrenal cortex, two have been selected as the basis for a clinical test for adrenal cortical reserve because of their simplicity of determination and magnitude of change: (1) a fall in circulating eosinophils, measured by direct enumeration in order to attain the necessary accuracy, and (2) an increase in urinary excretion of uric acid conveniently expressed as a change in uric acid-creatinine ratio. This obviates the necessity for accurate collections of urine.

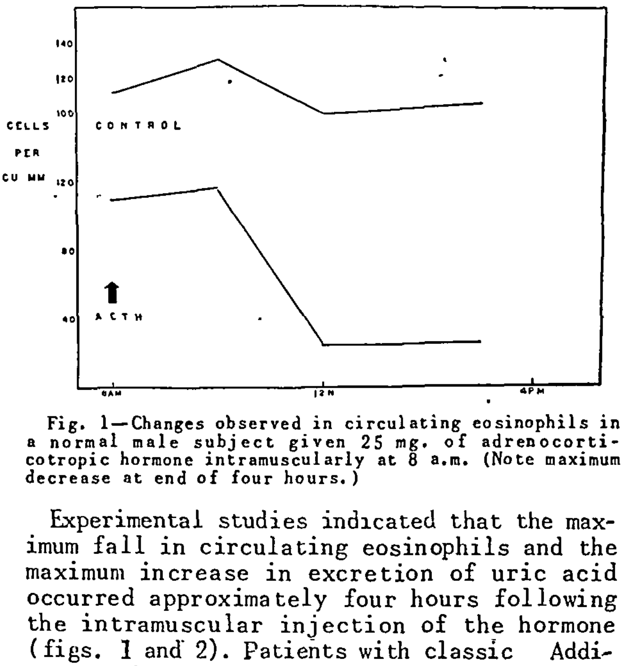

Fig. 1—Changes observed in circulating eosinophils in a normal male subject given 25 mg. of adrenocorticotropic hormone intramuscularly at 8 a.m. (Note maximum decrease at end of four hours.)

Experimental studies indicated that the maximum fall in circulating eosinophils and the maximum increase in excretion of uric acid occurred approximately four hours following the intramuscular injection of the hormone (figs. 1 and 2). Patients with classic Addison's disease failed to show these changes after administration of the hormone. On the basis of these differences a test for adrenal cortical insufficiency has been standardized.

PROCEDURE FOR THE TEST

No food is given after 8 p.m. on the day preceding the test; water may be had as de-

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From the Department of Medicine, Harvard Medical School and the Medical Clinic, Peter Bent Brigham Hospital, Boston. Rockefeller Travelling Fellow (Dr. Prunty).

This study was aided in part by a grant from the Committee on Research in Endocrinology, National Research Council.

[1] The purified hog pituitary adrenocorticotropic hormone used in this study was provided by Dr. John R. Mote of the Armour Laboratories, Chicago. Intravenous administration of 2 to 4 micrograms into a hypophysectomized rat provoked a decided decrease in the ascorbic acid content of the adrenals. Electrophorectic analysis revealed the presence of more than one component. The material contains the equivalent of 0 12 unit of oxytocic activity per milligram; growth-promoting. gonadotropic and thyrotropic factors are not present in significant amounts.

[2] *(a)* Browne, J.S.L.: The Effect of Adrenocorticotropic Hormone on the Excretion of Cortin-Like Substances on 17-Ketosteroids and on Carbohydrate Tolerance and Nitrogen Balance, in Conference on Metabolic Aspects of Convalescence, New York, June 11-12, 1943, Josiah Macy Jr. Foundation Report, p. 88. *(b)* Thorn, G.W.; Forsham, P.H.; Prunty, F.T.G., and Hills, A.G.: Clinical Studies in Addison s Disease, Ann. New York Acad. Sc., to be published. *(c)* Thorn, G.W.; Prunty, F.T.G., and Forsham, P.H.: Changes in Urinary Steroid Excretion and Correlated metabolic effects during prolonged administration of Adrenocorticotrophic Hormone in Man, Science 105: 528, 1947. *(d)* Mason, H.L.; Power, M.H.; Rynearson, E.H.; Ciaramelli, L.C.; Li, C.H., and Evans, H.M.: Results of Administration of Anterior Pituitary Adrenocorticotrophic Hormone to a Normal Human Being, J. Biol. Chem. 169: 223, 1947.

[3] Forsham, P.H.; Thorn, G.W.; Prunty, F.T.G., and Hills, A.G.: Clinical Studies with Pituitary Adrenocorticotropic, J. Clin. Endocrinol. 8: 15, 1948. to be published.

[4] Hills, A.G.; Forsham, P.H., and Finch, C.A.: Changes in Circulating Leukocytes Induced by Pituitary Adrenocorticotropic Hormone (ACTH) in Man, Blood, to be published.

the uric acid-creatinine ratio rose 103 per cent. The fasting uric acid-creatinine ratio was 0.81 during convalescence in contrast to the value of 1.3 derived during the height of the fever. These tests suggested that the adrenal cortex had apparently regained much of its reserve.

TABLE 2—*Mean Fasting Urinary Uric Acid-Creatinine Ratio in a Group of Sixty Persons with Normal Renal Function*

Group	Mean Fasting Uric Acid–Creatinine Ratio					
	Males		Females		Mean	Mean Deviation
	No.	Ratio	No.	Ratio		
Normal	7	0.43	4	0.59	0.50	0.17
Miscellaneous diseases not involving the adrenal cortex primarily	12	0.54	14	0.68	0.63	0.15
Addison's disease	11	0.49	12	0.59	0.54	+0.15

At times a failure of the urinary uric acid-creatinine ratio to rise may be due to renal failure rather than adrenal insufficiency. Experimental evidence[2c] indicates that the adrenocorticotropic hormone induces an increased renal clearance as well as an increased production of uric acid. Thus, impaired renal clearance of uric acid may prove to be the factor which limits or prevents a rise in uric acid—creatinine ratio. In rare instances (for example, in cases of gout or leukemia) the physiologic limit of excretion of uric acid already has been reached before the administration of the hormone. In these circumstances only a minimal rise in uric acid—creatinine ratio will occur even though adrenal response is normal. In either case, however, this type of response will be accompanied with a fall in eosinophils and a rise in the level of uric acid in the serum.

M.McD., a women aged 53, with uncontrolled hyperthyroidism, had a basal metabolic rate of + 60 per cent and appeared to be unable to increase uric acid clearance. The results of the usual renal function tests were normal. When given the adrenocorticotropic hormone test she showed a fall in eosinophils of 85 per cent. The uric acid–creatinine ratio increased only 34 per cent from an initial value of 0.72 (high normal). There was, however, a significant rise in serum uric acid (fig. 4). The patient thus appeared to have adequate adrenal cortical reserve, as judged by a decrease in circulating eosinophils and a significant rise in the level of uric acid in the serum. Indeed, six weeks later, when the patient's basal metabolic rate had been reduced to + 12 per cent, her response to another adrenocorticotropic hormone test was entirely normal. Eosinophils fell 85 per cent; uric acid—creatinine ratio rose 91 per cent, and the serum uric acid did not change.

COMMENT

The two indexes of adrenal cortical function which are determined in this test depend presumably on the activity of only one group of cortical hormones, the steroids oxygenated at the C-11 and C-17 positions. This is demonstrated by the fact that such a steroid administered to either normal subjects or patients with Addison's disease causes a rise in the uric acid-creatinine ratio and a fall in circulating eosinophils (table 3); whereas desoxycorticosteronem which lacks the oxygen at the C-11 position, produces neither. The oxysteroids are known to be concerned with the regulation of carbohydrate, fat and protein metabolism. Strictly speaking, the test measures adrenal cortical reserve function only with respect to these factors. Adrenocorticotropic hormone has also been found to stimulate the secretion of the androgenic and electrolyte-regulating factors of the human adrenal cortex as well,[2c] but the measurement of these changes is complicated, and they do not lend themselves readily to use as a clinical test.

The simplicity of the present test permits its application not only to patients presenting signs and symptoms of primary adrenal cortical insufficiency but also to patients in various stages of adrenal exhaustion following a variety of stresses. In patients with adrenal insufficiency secondary to anterior pituitary deficiency a satisfactory response to adrenocorticotropic hormone is anticipated when the adrenal cortex has not undergone permanent atrophy; whereas patients with primary failure of both glands fail to react. The test should prove useful in obtaining an approximate estimate of the "carbohydrate-regulating" capacity of a patient with Addison's disease and will serve as a means of gaging the desirability of supplementary adrenal cortical extract therapy.

TABLE 3.—*Effect of Adrenocorticotropic Hormone, Desoxycorticosterone and Compound F on Eosinophils and Excretion of Uric Acid*

	Number of Cases	Treatment	Percentage Fall in Eosinophils	Percentage Rise in Uric Acid-Creatinine Ratio
Normal subjects	8	25 mg. ACTH [*]	78	102
Normal subjects	2	30 mg. DCG. [†]	-4	24
Persons with Addisonian disease	16	25 mg. ACTH	0	22
Persons with Addisonian disease	3	20 mg. Compound F[‡]	71	57

[*] Adrenocorticotropic Hormone

[†] Dr. E. Oppenheimer of Ciba Pharmaceutical Products, Inc., supplied the water-soluble desoxycorticosterone glucoside.

[‡] Compound F, 17-hydroxycorticosterone, was supplied by Dr. M. H. Kuizenga, of the UpJohn Company, Kalamazoo, Mich.

The dual character of the test (blood count and renal excretion) and the parenteral administration of hormone provide a highly specific response and offer some opportunity to bypass disorders of renal function which have limited the usefulness of other tests. As a screening test it supplements, but does not necessarily correlate with, the salt[8] and water[9] tests which estimate the desoxycorticosterone-like activity of the adrenal

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10. Robinson, F.J.; Power, M.H., and Kepler, E.J.: The Two New Procedures to Assist in Recognition and Exclusion of Addison's Disease: Preliminary Report, Proc. Staff. Meet. Mayo Clin. 16: 577, 1941.

cortex and the 17-ketosteroid determinations[10] which measure its androgenic activity. The test appears to correlate best with the excretion of 11-hydroxysteriods as estimated by chemical means. [11]

SUMMARY

Two striking and easily determined changes (a decrease in circulating eosinophils and a rise in excretion of uric acid) consistently follow the administration of a single dose of 25 mg. of purified pituitary adrenocorticotropic hormone to normal subjects and patients with diseases not involving the adrenal cortex. It is suggested that a decrease of 50 per cent or more in the urinary uric acid—creatinine ratio indicates adequate adrenal cortical reserve. The test as outlined appears to be a measure of the adrenal reserve of hormones regulating carbohydrate, fat and protein metabolism. The use of this test in the diagnosis of adrenal insufficiency is discussed.

DIPHTHERIA IMMUNIZATION

Use of an Alum-Precipitated Mixture of Pertussis Vaccine and Diphtheria Toxoid

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There has been a downward trend in United States mortality from diphtheria and pertussis, but current reports show that several thousand young children continue to die every year from these diseases. Many deaths from these diseases will be prevented when effective prophylactic agents are extensively used. Such agents will be used more extensively when demonstrated improvements are made which increase their protective efficiency, decrease the number of reactions and simplify their method of administration.

To these ends considerable progress has been made in recent years. Diphtheria prophylactic agents have progressively improved from the old toxin-antitoxin mixtures to fluid toxoid and, now, alum-precipitated diphtheria toxoid. In 1938 Harrison and his associates [1] introduced alum-precipitated pertussis vaccine and it became evident that the method for immunizing children might be simplified through mixing precipitated pertussis and diphtheria antigens for simultaneous administration. In 1940 Schutze concluded from animal experiments that the admixture of alum-precipitated toxoid and pertussis vaccine does not impair the antigenic potency of either product.[2] In 1938 to 1940 Volk and Bunney [3] found that two doses of alum-precipitated diphtheria toxoid, when given to children 8 months of age and older with a three-week interval between doses, were the simplest and most effective procedure for immunization against diphtheria. Simultaneously in 1938 to 1941 Bell [4] found that two doses of alum-precipitated pertussis vaccine, when given to children 2 months to 2 years of age with a four-week interval between doses, conferred substantial protection against pertussis. Successful immunization at this young age was later confirmed by Sako and his associates.[5] From 1941 to date many reports [6] have appeared which are favorable to the use of an alum-precipitated mixture of these antigens; however, reports covering well controlled trials in the general population are scanty. This is unfortunate because clinical trial and experience constitute the ultimate test of the value of any prophylactic agent.

A clinical trial of a prophylactic agent presents many difficulties and may easily be fraught with errors unless properly planned and carried out. There are many known and unknown attributes which influence immunologic phenomena, and unless a clinical trial takes all these influences into account, one can never be certain that a particular phenomenon was the result of a particular treatment given. This study of an alum-precipitated mixture of pertussis vaccine and diphtheria toxoid utilizes a method for evaluating the immunity conferred by this product which takes account of all known and unknown attributes which might influence immunity to these diseases. The data are too extensive for immediate analysis and inclusion in a single report; hence this report is limited to the aspects of the study which relate to diphtheria immunization. This report outlines the objectives and fundamental criteria which were predetermined as essential to account for all attributes which might influence diphtheria immunity. It describes the preparation of the antigens used and the procedures used to fulfill the fundamental criteria, and it makes an analytic check (tables 1, 2 and 3) on the effectiveness with which the criteria were fulfilled. The report identifies all known attributes which influenced diphtheria immunity in this study and takes account of these and unknown influences in evaluating the effects of the study product given.

OBJECTIVES

In 1941 a fully controlled epidemiologic trial of an alum-precipitated mixture of

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10. Callow, N.H.; Callow, R.K., and Emmens, C.W.: 17-Ketosteroid Androgen and Estrogen Excretion in Urine of Cases of Gonadal and Adrenal Cortical Deficiency, J. Endocrinol. 2:88, 1940

11. Talbot, N.B.; Saltzman, A.H.; Wixon, R.L., and Wolfe, J.K.: Colorimetric Assay of Urinary Corticosteroid-Like Substances, J. Biol. Chem. 160:535, 1945.

Due to lack of space, the many persons who contributed to this study cannot all be mentioned in this initial report. Their particular contributions will be described in later more detailed reports. Dr. J. P. Leake conducted the study during part of the war years and Public Health Nurses Anne Hodges, Ruth Sargent and Edna McCaleb made the routine visits and recorded the basic observations of the study.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

From the Division of Infectious Diseases, National Institute of Health, Bethesda, Md.

Medical Director J. P. Leake conducted this study in the author's absence during part of the years 1943 to 1945.

1. Harrison, W. T., Franklin, J. P., and Bell, J. A. Pub. Health Rep. **53**: 793, 1938.

2. Schutze, H. Lancet, 1940, **2**: 192, 1940.

3. Volk, V. K., and Bunney, W. E.: (*a*) Am. J. Pub. Health **29**: 197, 1938; (*b*) (supp.) **30**: 42, 1940.

4. Bell, J. A. Pub. Health Rep. **56**: 1535, 1941.

5. Sako, W.; Treuting, W. L.; Witt, D. B., and Nichamin, S. J.: Early Immunization Against Pertussis with Alum-Precipitated Vaccine, J. A. M. A. **127**: 379, 1945.

6. (*a*) Simon, H. and Craster, C. V.: J. M. Soc. New Jersey, **38**:461, 1941. (*b*) Kendrick, P. L.: J. Bact., **42**: 294, 1941; Am. J. Pub. Health, **32**: 615, 1942. (*c*) Am. J. Hyg., **38**: 193, 1943. (*c*) Daughtry-Denmark, L. Whooping Cough Vaccine, Am. J. Dis. Child. **63**: 453 (March) 1942. (*d*) Sauer, L. W., and Tucker, W. H. Proc. Inst. M. Chicago, **15**: 148, 1944. Sauer, L. W.; Tucker, W. H., and Markley, E.: Immunity Responses to Mixtures of Diphtheria Toxoid and Pertussis Vaccine, J. A. M. A., **125**: 949, 1944. (*e*) Miller, J. J., Jr.; Humber, J. B., and Downie, J. O.: J. Pediat. **24**: 281, 1944.

diphtheria toxoid and pertussis vaccine was undertaken in Norfolk, Va. The trial was carried out in a manner to show what could be expected through routine use of this product in young children of the community. The main objectives were to answer the four questions: (*a*) Will two doses of an alum-precipitated mixture of diphtheria toxoid and pertussis vaccine protect young children against diphtheria as well as ordinary alum-precipitated diphtheria toxoid? (*b*) Will the mixture give substantial protection against clinical pertussis? (*c*) Will the mixture protect against both diphtheria and pertussis when given to children 2 to 5 months of age? (*d*) Will the mixture cause more local or general reactions than ordinary alum-precipitated diphtheria toxoid?

Table 1.—*A Comparison of the Number of Births and Families in the Study Area with the Number of Study Children and Families by Sex, Color and Family Size.*

		White		Negro		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
Children	Sex						
Number of reported births in study area Jan. 1941 through April 1943	M	4,228		1,645		5,873	
	F	3,614		1,487		5,101	
	Total	7,842		3,132		10,974	
Number and percentage entering study	M	299	7.1	348	21.2	647	11.0
	F	292	8.1	299	20.1	591	11.6
	Total	591	7.5	647	20.7	1,238	11.3
Families	Size						
Estimated no. families in area with children < 10 years old	1 child	4,956		1,804		6,762	
	> 1 child	2,643		2,017		4,660	
	Total	7,599		3,821		11,420	
Number and percentage entering study	1 child	287	5.8	240	13.3	527	7.8
	> 1 child	279	10.6	358	17.7	637	13.7
	Total	566	7.4	598	15.7	1,164	10.2

FUNDAMENTAL CRITERIA FOR STUDY

To answer the foregoing questions on diphtheria immunity, it was predetermined that the following fundamental criteria would be essential for an adequate and fully controlled clinical trial of the mixed product. The criteria are listed as outlined in 1941 and all have been meticulously adhered to throughout the study.

(*a*) An alum-precipitated mixed or test product and an alum-precipitated unmixed or control product must be prepared so that each dose of each product contains the same quantity of alum-precipitated diphtheria toxoid from the same lot of crude toxoid. The test and control products must be prepared so that each will be identical in all respects except that each dose of the alum-precipitated diphtheria toxoid in the mixed product will contain 10,000,000,000 killed Hemophilus pertussis organisms.

(*b*) A study group of children must be preselected so as to be an adequate and representative sample of young children in a sizable United States community who are routinely available for voluntary immunizations. This is essential so that the results of the study may safely be projected to reflect the results expected from general use of the study products.

(*c*) A predetermined strictly random sampling procedure, based on a simple attribute entirely unrelated to immunologic phenomena, must be used to divide the study children into a test and a control group. This is essential to insure that all known and unknown attributes which might influence the occurrence of diphtheria or pertussis immunity (aside from the study products given) would be distributed between the two groups as equally as possible within the range of chance sampling variation.

(*d*) No person other than the visiting nurse observers and the physicians conducting the study should know that a study of pertussis vaccine is involved, and neither the nurses nor the physicians should know which child belonged to the test or control group, or which child received which study product, or whether any one child received the same product as any other child. This is essential to neutralize any possible human bias on the part of observers or informants in the recognition of immunologic phenomena. This is also essential to maintenance of the test and control groups as strictly random samples of the combined groups throughout the period of observation. When no one knows that pertussis vaccine has been given to any of the study children, no disproportionate treatment can be given to either of the random groups and all known and unknown attributes will have a nearly equal influence on each group; e.g., a nearly equal proportion of each group will receive pertussis vaccine by private physicians, and a nearly equal proportion of each group will depend on immunization rather than shielding their child from exposures to pertussis and other diseases.

(*c*) An intensive effort must be made to see that two doses of the test or control product are given to each study child as selected by the predetermined sampling process, that the products be given with a four-week interval between doses to children in the age band 2 to 23 months and that the products be given without inquiry or regard to a prior history of pertussis or pertussis vaccination. All children who receive at least one dose of the study product must be placed under uniform and routine monthly observation as long as they remain in the study area by one of the two specially trained public health nurses.[7]

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[7] Public Health Nurses Anne Hodges and Ruth Sargent carried out the previous study[4] and were the mainstays of the present study through the period covered by this report. Most of the Schick tests were carried out by Public Health Nurse Edna McCaleb under my supervision and that of Dr. J. P. Leake, who read and interpreted the Schick reactions in all children having any reaction whatsoever.

(*f*) A controlled Schick test is to be used as an index of diphtheria immunity, and a single lot of Schick toxin is to be used throughout the study, providing tests on animals indicate its potency is maintained. An intensive effort must be made to give Schick tests to all children remaining under observation one year after receiving the study products and simultaneously to give Schick tests to the mothers of such children. All disease diagnoses must be made, and all Schick reactions read and classified by me or by Dr. J. P. Leake.

dose value of 6 and an L+ value of 0.30 unit per dose.[8] Each dose of the mixed and unmixed product contained the same quanity of diphtheria toxoid and differed only in that each dose of the mixed product contained 10,000,000,000 killed H. pertussis organisms.

STUDY PROCEDURE

The study is being conducted in cooperation with the Norfolk City Union of the King's Daughters Visiting Nurse Association and with the assistance of the state and local health departments and physicians. The study area is in Virginia and comprises the cities of Norfolk and South Norfolk and the Tanners Creek District of Norfolk County. The population of the entire area is estimated at 250,000, of which 69 per cent are white and 31 per cent Negro. The study area was divided into fourteen geographic subdivisions in an effort to group people according to their usual associations at schools, churches, theaters and shopping centers. Each geographic section contained one King's Daughters Well Baby Health Station, and diphtheria immunization was urged for all infants 2 to 23 months old who attended these stations from January 1942 to July 1943. Using the current birth certificates in Norfolk, the Health

Table 2.—*A Comparison of Children Born in the Odd with Those Born in the Even Months According to Specified Attributes*

Attributes	Month of Birth of Child Odd	Even	Total	Percentage Odd
Total no. of children entering study	646	592	1,238	52.2
Male	337	310	647	52.1
Female	309	282	591	52.3
Health section at entry 4-6, 9-11	146	128	274	53.3
Health section at entry 1, 12, 14	166	151	317	52.4
Total white	312	279	591	52.8
Health section at entry 2,3,13	105	112	217	48.4
Health section at entry 7,8	229	201	430	53.3
Total Negro	334	313	647	51.6
1st dose injected Jan-June 1942	337	324	661	51.0
1st dose injected July 1942-June 1943	309	268	577	53.6
1st dose age 2-4 months	281	256	537	52.3
1st dose age 5-23 months	365	336	701	52.1
Others age <10 in household at entry	366	345	711	51.5
No others age < 10 in household at entry	280	247	527	53.1
Mothers of children given Schick test	367	340	707	51.9
Lost from observation prior to Schick test	103	100	203	50.7
Observed and given Schick test	540	485	1,025	52.7
Rec'd 2 doses mixed product	461	11	472	97.7
Rec'd 2 doses unmixed product	13	410	423	3.1
Other (1 dose aa, 1 dose, etc.)	66	64	130	50

PREPARATION OF STUDY PRODUCTS

The study products used were prepared by Parke, Davis and Company according to my specifications. They were purchased in 1941 in a quantity sufficient for the entire study and stored until used at 4 to 7 C. A single lot of fluid diphtheria toxoid was used in the preparation of both the mixed and unmixed product. For the mixed product 2 parts of the toxoid were mixed with 1 part of a suspension containing 30,000,000,000 phase I H. pertussis organisms per cubic centimeter which were grown on Sauer's blood agar and killed with a 1:10,000 solution of "merthiolate." For the unmixed product 2 parts of the toxoid were mixed with 1 part isotonic solution of sodium chloride instead of the pertussis suspension. Separately the mixed and unmixed products were then precipitated by adding 4 per cent alum solution and the precipitates washed twice. The products were passed through a colloid machine in order to obtain a fine division of the alum precipitate and finally were subjected to the usual sterility and safety tests. Titrations of both the mixed and unmixed products indicated that there was slightly less than 0.1 per cent alum equivalent in each. The crude toxoid had a least fatal dose value of 9, and each dose of the mixed and unmixed products by calculation had a least fatal

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[8] Dr. D. R. Mathieson, under direction of Dr. Noble Ferry and the late Dr. L. T. Clark, all of Parke, Davis and Company laboratories, carried out a few laboratory tests with the mixed product. The results were: "A. 100 per cent of sixteen 270 Gm. guinea pigs survived six weeks when challenged in groups of 4 with 10, 20, 40 and 80 minimum lethal doses of Corynebacterium diphtheriae toxin, respectively. Three such guinea pigs out of 4 similarly survived 160 minimum lethal doses. All had previously received a 1 cc. subcutaneous dose of the mixed antigen. Five such guinea pigs used as controls received no previous antigen and all died within six weeks after receiving only 1 minimum lethal dose of the same diphtheria toxin. B. Eighteen guinea pigs inoculated with the mixed antigen and then sacrificed fourteen days after receiving 10 to 160 minimum lethal doses of diphtheria toxin showed not the slightest vestige of reaction to the toxin, whereas the 1 control guinea pig given only 1 minimum lethal dose died in four days showing pleural effusion and massive hemorrhages of the adrenals, subcutaneous tissue, and abdominal muscles at the site of inoculation."

Department sent letters to the mothers of all 2 to 12 month old children urging immunization against diphtheria and smallpox. Local health department personnel administered the study products, and neither they nor the recipients knew that pertussis vaccine was involved in the study. The mixed and unmixed products were in 20 dose identical vials, each of which was numbered and labeled only "A-P Diphtheria Toxoid." If a code combination of the digits of a vial number was odd, it was to be given to children born in an odd month; i.e., January, March, May, etc. If the code combination was even, it was to be given to children born in an even month, February, April, June, etc. Thus birth in an odd or even month was the basis for dividing the children into a random test group and a control group each of which would have a nearly equal distribution of all known and unknown attributes which might influence diphtheria or pertussis immunity. At the health station an identifying record card was prepared for each child, and the card turned over to the Public Health Service visiting nurses after the child had received two doses, or in any event after two months had elapsed since the first dose. The visiting nurses prepared household rosters and made routine monthly visits, and more frequent visits during the occurrence of communicable disease, to all study children and have continued such visits to date. Under my close supervision and that of Dr. Leake the nurses made a record of all known and suspected attributes which might influence diphtheria or pertussis immunity. No child has been dropped from the study unless he permanently moved away from the area or otherwise became non locatable. Neither the visiting nurses nor I knew which children received which product, or which child belonged to which group, or whether any child received the same product as any other child.

Table 3.— *A Time Comparison of Schick Test Results and Laboratory Tests for Potency of the Schick Toxin Used-Lot AS3*

		Clinic No.	No. Tested	No. +	% +	Test No.	No. of G. Pigs	Cc. Diluted Toxin Per Pig.	Avg. No. of Days Survived
	July					I	5	5	3.9
1942							5	5	4.4
	Sept.					II	5	5	3.4
	Jan.	I	220	29	13	III	5	5	3.4
	Feb- March								
	May	II	618	81	13	IV	5	5	4.2
	June								
1943									
	July					V	2	5	3.7
							2	7	3.8
	Aug-Sept.	III	279	39	14				
	Nov.	IV	201	32	16				
	Feb.	V	190	34	18				
1944									
	May-July	VI	207	26	13				
1945	Feb-May	VII	17	2	12				
1946									
1947	Jan.					VI	4	5	4.1
							1	5	9.5
Total		I-VII	1,732	243	14	I-VI	2	5	4.2
							2	7	3.8

From February 1943 to July 1944, six regular Schick testing clinics were held and an effort made to give the Schick test to all children who received the first dose of the study products twelve or more months previously. In February and again in May 1945, an effort was made to give the Schick test to the few remaining children who were under observation and who had not been tested previously at the regular clinics. All mothers who [illegible] at the time of the Schick test were invited to have a Schick test. A single lot of Schick toxin, stabilized with human serum,[9] was used throughout the study. It was tested for potency in guinea pigs at various intervals. All Schick reactions were read on the fourth or seventh day by me or by Dr. J. P. Leake. All were classified as either positive or negative, as a decision had to be made with respect to further immunization.[10]

TABLE 4.—*Results of Schick Tests in Children 1 Year After Receiving the Mixed and Unmixed Product According to Specified Attributes.*

	Product Received											
	Mixed (Odd)				Unmixed (Even)				Total			
Attributes	No.	No.	+%+	"p"*	No.	No.	+%+	"p"	No.	No.	+%+	"p"
1. Received one dose	42	8	19	.001	55	23	42	.000	97	31	32	.000
Received two doses	472	24	5		423	63	15		895	87	10	
2. Section 4-6, 9-10	106	3	3	.938	86	11	13	.250	192	14	7	.352
Section 1, 2, 14	97	2	2		83	16	19		180	18	10	
3. Section 2, 3, 13	90	7	8	.943	87	15	17	.312	177	22	12	.308
Section 7, 8	179	12	7		167	21	13		346	33	10	
4. Male	243	13	5	.787	229	36	16	.604	472	49	10	.481
Female	229	11	5		194	27	14		423	38	9	
5. Measles, chickenpox, mumps	117	4	3	.482	91	13	14	.854	208	17	8	.390
No measles, chickenpox, mumps	355	20	6		332	50	15		687	70	10	
6. W.C. vaccine outside study	86	2	2	.309	74	14	19	.284	160	16	10	.895
No W. C. vaccine outside study	386	22	6		349	49	14		735	71	10	
7. Mother Schick positive	57	1	2	.366	50	6	12	.485	107	7	7	.223
Mother Schick negative	282	16	6		244	42	17		526	58	11	
8. Given injection before July 1942	239	12	5	.952	224	32	14	.710	463	44	10	.820
Given injection after July 1942	233	12	5		199	31	16		432	43	10	
9. < 6 weeks between doses	334	14	4	.169	308	48	16	.514	642	62	10	.919
> 5 weeks between doses	138	10	7		115	15	13		253	25	10	
10. 2d dose to Schick < 11 mo.	191	12	6	.329	178	23	13	.331	369	35	10	.842
2d dose to Schick > 10 mo.	281	12	4		245	40	16		526	52	10	
11. Schick at < 18 mo. old	232	14	6		220	37	17		452	51	11	
Schick at > 17 mo. old	240	10	4	.356	203	26	13	.247	443	36	8	.111
12. 2d dose age 2-5 months	201	15	8		187	40	21		388	55	14	
2d dose age > 5 months	271	9	3	.070	236	23	10	.000	507	32	6	.000
13. Breast fed at 1st dose	220	16	7		205	36	18		425	52	12	
Not breast fed at 1st dose	231	8	4	.111	193	25	13	.202	424	33	8	.031
14. White	203	5	3		169	27	16		372	32	9	
Negro	269	19	7	.041	254	36	14	.610	523	55	11	.341
15. Others age < 10 in household	291	22	8		250	41	16		541	63	12	
No others age < 10 in household	181	2	1	.004	173	22	13	.296	354	24	7	.016

* "p" equals the probability of occurrence of this distribution by chance.

EFFECTIVENESS WITH WHICH CRITERIA WERE CARRIED OUT

Table 1 was prepared to check the effectiveness with which the method pursued in obtaining the study children provided a study group which was an adequate and representative sample of all young children in the area who are routinely available for voluntary immunization. The method of selection must be relied on to establish representativeness, but a few crude checks are available. If the study group is representative it would be expected to have a disproportionately large number of children from large families, to have a disproportionately large number of Negro children, and to have no disproportion by sex.[11] Table 1 compares the study group with estimates prepared from vital statistics reports on color, sex and family size. It shows that the expectations were fulfilled. This crude but confirmatory check permits the belief that the study group is adequate in size and representative to the extent that the results from the use of the study products may be projected to portray that which would result from their routine use in the study area.

Table 2 was prepared to check the effectiveness with which the sampling procedure was carried out to divide the study children into a comparable test and control group The predetermined and meticulously executed random sampling procedure based on an odd or even month of birth (an attribute entirely unrelated to diphtheria or pertussis immunity) should divide the study children into a test and a control group so that each group will have a nearly equal distribution of all known and unknown attributes which might influence the occurrence of diphtheria or pertussis immunity aside from the influence of the study products given. This can be checked by observing whether all known and suspected attributes are equally distributed within reasonable limits of chance sampling variation. It must be pointed out, however, that only a check can be made and that the meticulous execution of an adequate and predetermined sampling procedure is the all important factor. In the absence of such a procedure there can be no assurance that a disproportionate distribution of an unknown attribute may not have occurred and significantly influenced the results in an unknown manner and to an unknown extent.

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[9] The Schick toxin and the heated control material used were prepared by Dr Geoffrey Edsall at the Antitoxin and Vaccine Laboratory of the Massachusetts Department of Health (Edsall, G., and Wyman, L.: Am. J. Pub. Health *34*: 365, 1944). In October 1942 he sent to the National Institute of Health a quantity of the diluted material sufficient for the entire study. It was promptly placed in the refrigerator, where the temperature was kept between 4 and 7 C. A quantity sufficient only for each clinic was transported to Norfolk in ice and kept on ice until the day of use.

[10] Many of the Schick reactions were observed on the second, fourth and seventh day. Observation consisted of measuring and recording the transverse and longitudinal diameters of each zone of reaction at the test and control site and noting the presence of redness, edema, wrinkling and desquamation Reactions were classified according to the area of clear definite redness on the fourth to seventh day following injection. The area was computed by assuming it equivalent to a circle with a diameter equal to the mean of the vertical and transverse measurements. If the area of redness at the test site exceeded the area of redness (if any) at the control site by the area of a circle 10 mm. in diameter, the reaction was classified positive; otherwise the reaction was classified negative The reaction was classified negative in the few instances in which definite evidence existed that the maximum local reaction at the test site occurred within forty-eight hours after injection and the nature of the reaction was similar to that at the control site. The reaction was classified as positive in a few instances (particularly in the Negro where discolorations are less evident than in the white skin) in which, because of the intensity and duration of the reaction, the original observer (J.A.B. or J.P.L.) judged it to be positive even though the measured area of redness was slightly less than has been set forth. All reactions were observed and classified without knowledge as to what immunizations the child may have received.

[11] These are the characteristics expected in groups of children who respond to routine public pleas for immunization and constitute the mass of children generally immunized.

Table 2 shows that 52.2 per cent of the total 1,238 children who entered the study were born in an odd month. It lists a few known and suspected attributes which might influence diphtheria or pertussis immunity in this study. (Others may be observed in table 4.) It will be noted that in all attributes except those relating to the study products given, close to 52 per cent of the children were born in an odd month. It is also pertinent to note that some 97 per cent of the children receiving two doses of the same product received the product intended. Twenty-four children, 13 odd and 11 even, received two doses of the wrong product because they gave the wrong birth date at both visits to the clinic for injection. They are hereafter tabulated according to the product received. Thirty-three children, 24 odd and 9 even, received one dose of each product. A few of these gave the wrong birth date at one clinic, but the disproportion was due entirely to the fact that in the early part of the study the persons giving the study products thought that the number zero on a vial was an odd number. This was promptly corrected, and although these 33 children have been carried under observation, they are not counted in tabulations comparing the study products. In table 4 it is pertinent to note that of the small percentage of children who received pertussis vaccine prior to Schick test from sources outside the study 53.8 per cent were born in an odd month. This confirms the statement that none of the parents knew that pertussis vaccine was involved in the study. It is obvious that the procedures used in this study gave two groups of children, one of which received two doses of the mixed and one of which received two doses of the unmixed product, and each of which had a nearly equal distribution of all known and suspected attributes which might influence diphtheria or pertussis immunity in these children. Aside from the study products given, no one of these attributes deviated beyond what might be expected through chance sampling variation, thus confirming that the sampling procedure was effectively carried out and insuring that all unknown attributes are similarly distributed between the two groups.

Table 3 was prepared to check whether the single lot of Schick toxin used throughout the Schick testing period remained of uniform potency. In each of the seven groups of mothers and children given Schick tests at various time intervals there was no significant variation in the percentage of positive reactions. In the laboratory tests all animals used died and had pathologic changes demonstrating death from diphtheria toxin. There was no significant variation in the average survival time at the different dates on which the toxin was tested. Thus it is concluded that the Schick toxin used remained remarkably uniform in potency throughout its long period of use.

RESULTS

Table 4 was prepared to identify attributes which may have influenced the Schick reaction. It lists all known and suspected attributes which might influence diphtheria immunity and shows for each the results of Schick tests performed one year after immunization. It shows the number of children tested according to the product received and the number and percentage who were Schick positive; i.e., who failed to be immunized. The "P" is the calculated probability of a difference in the number of Schick reactors as great or greater than observed occurring through chance sampling variation of independent attributes. Yates modification of Chi square was used in computing the "P" on all fourfold tables having less than 10 persons in any cell. In attribute 1, 32 per cent of the children who received only one dose of a known product were Schick positive as compared with 10 per cent who received two doses. This difference is consistent and significant both in the children receiving the mixed and in those receiving the unmixed product. On account of this finding the remainder of table 4 includes only children who received two doses of the same known product. It will be noted that children receiving the unmixed product had about three times as many Schick positive reactions as those receiving the mixed product, and this difference is consistent and fairly uniform throughout all attributes tested. It will be noted that attributes 2 to 11 inclusive were not significantly associated with the Schick reaction in this experience.[12] In attribute 12, age at time of injection, it is significant that children who received both their doses before they were 6 months of age had a higher proportion of Schick positive reactions than those who received at least one of their doses when they were 6 months of age or over. It will be noted that there is an association of questionable significance between the Schick reaction and the remaining attributes 13, 14 and 15. In summary of table 4 it appears that the Schick reaction is definitely correlated with the type of study product received, the number of doses received and the age at time of injection. There appears to be a correlation of questionable significance between the Schick reaction and the attributes concerning breast feeding at time of first dose, race and the presence or absence of other children in the household less than 10 years of age. There appears to be no correlation between the Schick reaction and any of the other attributes observed.

The significant correlations observed in table 4 do not suffice to answer the questions propounded on diphtheria immunity. For example, it is obvious that the group of children given injections at the earlier age must include a large proportion of children who were still feeding at the breast, and it must be determined whether age at time of injection or breast feeding or both were responsible for the correlations. Other similar but perhaps not so obvious relationships may exist between the various attributes listed in table 4. Thus it is necessary to examine further all the correlations observed in order to answer the questions propounded on diphtheria immunity. This involves a multitude of tabulations, far too many for publication, and hence only table 5 is presented to exemplify the procedure used.

Table 5 was prepared to determine whether the questionable correlation between the Schick reaction and breast feeding at time of first dose was due to breast feeding or to the result of interrelationship with other attributes. It shows the results of the Schick test according to breast feeding at first dose among the 849 children who received two doses of the study product and on whom a history of breast feeding was obtained. The total group of 849 children are subdivided according to the age at time of injection, the presence or absence of other children less than 10 years of age in their household, and the study product received. In each subdivision the number of children tested and the observed number of Schick positive reactions is recorded and the "T," the theoretically expected number of positive reactions, is computed. The computation is based on the assumption that breast feeding exerted no influence on the Schick reaction, and the "T" is derived by applying the percentage positive in the total of each subdivision to the number of children tested. By summation it is found that among the 425 children who were still feeding at the breast at first dose 52 Schick positive reactions were observed and 50 Schick positive reactions were expected after adjusting for the influence of other attributes. Thus it is concluded that breast feeding did not significantly influence the Schick reaction in this experience. A table was prepared and treated precisely in the same manner as table 5 except that race was substituted for breast feeding. The computed "P" was .688, and it is concluded that race did not significantly influence the Schick reaction in this experience.

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[12] Some of these attributes are known to be correlated with the Schick reaction in the general population; e.g., no. 11, age at time of Schick test. This study was designed to minimize the influence of attributes not pertinent to the questions propounded. For the vast majority of children the age spread at time of the Schick test was less than fourteen months, and thus no significant age correlation was to be expected.

Table 5.-- *Results of Schick Test by Duration of Breast Feeding After Adjusting for Influence of Other Attributes*

Product Rec'd	No. other children in hhold	Age at Last dose, months	Breast Feeding at First Dose						Total		
			Breast Fed			Not Breast Fed					
			No.	No.+	"T" +	No.	No.+	"T" +	No.	No.+	%+
Mixed	None	2-5	43	0	1.2	27	2	0.8	70	2	2.9
		>5	33	0	-	70	0	-	103	0	-
	1 or more	2-5	89	11	9.0	39	2	4.0	128	13	10.2
		>5	55	5	3.3	95	4	5.7	150	9	6.0
Unmixed	None	2-5	56	6	8.4	24	6	3.6	80	12	15.0
		>5	20	0	2.0	61	8	6.0	81	8	9.9
	1 or more	2-5	76	23	20.6	20	3	5.4	96	26	27.1
		>5	53	7	5.6	88	8	9.4	141	15	10.6
		Total	425	52	50.1	424	33	34.9	849	85	

Computation of Chi Square, Adjusted Experience

	Breast Fed		Not B. Fed		Total	Adjusted
	Observed	Theoretical	Observed	Theoretical		Chi Square = 0.1944 "p" = .659
Schick positive	52	50.1	33	34.9	85	Unadjusted
Schick negative	373	374.9	391	389.1	764	Chi Square =4.6700
Total	425		424		849	"P" = .031

Similar tables were prepared to determine whether the age at last dose, the presence of other children less than 10 years old in the household, the product received the number of doses received influenced the Schick reaction after adjusting for each of the other three attributes. The adjustment did not alter the significance of any of these attributes. Each was then checked against all other attributes listed in table 4, and the observed differences were remarkably consistent so far as the small numbers would permit comparison. Thus it is evident that only four of the attributes observed are significantly correlated with the Schick reaction in this study and that each of these four is independently significant after taking account of all other attributes: 1. Children receiving two doses of either product had disproportionately fewer Schick positive reactions than children receiving only one dose of the same product. 2. Children receiving their second dose of either product at 6 to 23 months of age had disproportionately fewer Schick positive reactions than children receiving their second dose of the same product at 2 to 5 months of age. 3. Children receiving the mixed product had disproportionately fewer Schick positive reactions than children receiving the unmixed product. After adjusting for the combined influence of significant attributes the ratio of the percentage of Schick positive reactions among children receiving the mixed as compared with those receiving the unmixed product was 1:3. 4. Children living in single child households had disproportionately fewer Schick positive reactions than children living in households with other children less than 10 years of age.[13]

To the foregoing observations an over-all consideration should be added. In the absence of artificial immunization few children 6 to 30 months of age are immune to diphtheria, whereas adults for the most part are immune. In this study a total of 1,025 children of median age 18 months were given Schick tests one year after they were given only one or two doses of the mixed or unmixed study products, and 90.6 per cent were found immune, whereas of the 707 mothers given Schick tests 82.3 per cent were found immune, as measured by the Schick test. Thus the over-all effort to immunize at a young age was highly successful. With respect to the age of immunization and the products given it should be noted that although children 2 to 5 months of age were not immunized as well as children 6 to 23 months of age, as indicated by the Schick test, the mixed product was so superior to the unmixed product that it appeared to be a better immunizing agent at the young age than the unmixed product at any age. Actually 8 per cent (15 out of 201) of the children who received both doses of the mixed product at 2 to 5 months of age had Schick positive reactions, as compared with 11 per cent (19 out of 175) of the children who received both doses of the unmixed product at 6 to 23 months of age.

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[13] This observation would appear to be incompatible with existing theories on the natural acquisition of diphtheria immunity. It is receiving further study.

SUMMARY AND CONCLUSIONS

A method has been described for designing and carrying out a fully controlled clinical trial of a prophylactic agent for immunizing young children in the general population against diphtheria.

The routine use of an alum-precipitated mixture of diphtheria toxoid and pertussis vaccine as prepared for this study and given in two doses with a four-week interval between doses to young children in Norfolk, Va., and a similar community, not only should result in a better protection against diphtheria, as measured by the Schick test, than that which would result from the similar use of ordinary unmixed alum-precipitated diphtheria toxoid but also should be effective for diphtheria immunization when given to infants 2 to 5 months of age.

The use of a Schick test performed one year after *immunization as an index of diphtheria* immunity revealed:

1. Children who received two doses of the unmixed alum-precipitated diphtheria toxoid had three times as many failures to immunize against diphtheria as children who received two doses of the alum-precipitated mixture of diphtheria toxoid and pertussis vaccine. Children who received only one dose of these products exhibited a similar difference.
2. Children who received only one dose had three times as many failures to immunize against diphtheria as children who received two doses. This was true no matter which product was given.
3. Children who received both doses at 2 to 5 months of age had twice as many failures to immunize against diphtheria as children who received at least one of their doses at 6 to 23 months of age. This was true no matter which product was given.
4. Children who received two doses of the mixed product before they were 6 months of age had fewer failures to immunize against diphtheria than children receiving the ordinary unmixed product at any age from 2 to 23 months.

ABSTRACT OF DISCUSSION

Dr. Harold B. Wood, Harrisburg, Pa.: These laborious investigations are worth while, and the investigators deserve thanks from everybody. In the immunization of children there is a question of to what extent Schick testing should be done. Frequently city or state organizations have certain amounts appropriated for such work. Is it worth while to give Schick tests to those children who have received their immunizing doses? I do not think so. Where the appropriation is limited, it is much better, to consider that a certain percentage are immunized already from their first series of doses, and use the rest of the money to immunize more children, rather than to go back and pick the Schick test for those children who have already received their immunizing doses. That is the problem we are up against frequently, and it is better, I believe, to carry on that plan. The new toxoid toxin-antitoxin which Dr. Ross explained seems to be an advantage because, if there is one thing we need in the Schick testing, it is a better way to determine definitely what is positive and what is negative. It is much easier to get children and their parents out for the immunizing doses than it is for the Schick retesting to determine the definite positive and what is negative. It is much easier to get children and their parents out for the im- much easier to get children and their parents out for the immunizing doses than it is for the Schick retesting to determine *the definite positive immunity granted; therefore, why bother* with that in general work? Of course, these remarks have no reference whatsoever to children in institutions which are under definite, lengthy control. Reprints of papers like these should always go into the library of the Hygienic Laboratory and also to the principal state authorities, if the authors are willing to send them.

Dr. Maxwell Stillerman, Great Neck, Long Island, N. Y.: What was the incidence of sterile abscess reactions in your series?

Dr. James P. Leake, Washington, D. C.: May I remark that my associates and I think the preferable term is "cyst" and not "sterile abscess." They are not sterile abscesses but little cysts, which tend to absorb themselves.

Dr. Joseph A. Bell, Bethesda, Md.: The mixed product as prepared and used in this study at 2 to 5 months of age was a better immunizing agent, that is, produced disproportionately fewer Schick positive reactions, than the unmixed product given at any age from 2 to 23 months. However, neither the mixed nor the unmixed product immunized as well when given at 2 to 5 months of age as when given at 6 to 23 months of age. Table 4, attribute 12, shows the number of Schick positive reactions by age at time of injection. There was no significant association between the mothers' and children's Schick reaction in this study. The mothers were given Schick tests not only to give evidence with respect to the potency of the Schick toxin but also because it was considered possible that some association between the mothers' and children's Schick reaction would occur. If the children had been given Schick tests when less than 6 months of age and if they had received no diphtheria toxoid prior to the Schick test, some association between the mothers' and children's Schick reaction might have been evident. In this study all the children received diphtheria toxoid one year prior to the Schick test. With respect to Dr. Stillerman's question, the local and general reactions resulting from the use of the mixed and unmixed products in this study were so few and insignificant that to date no tabulations of their occurrence have been made. The Health Department personnel who administered the study products were instructed to use a different needle for each injection and to inject the products deeply into the loose subcutaneous tissue. I do not know whether the lack of reactions was the result of the method of injection or the small number of H. pertussis organisms injected with the mixed product, or whether it was due to other factors.

Whales.—Since the period of gestation is stated to be just over ten months for blue whales and eleven and a half months for fin whales, and the addition of the suckling period of six or seven months gives a total of about eighteen month from conception before the calf can fend for itself, it is obvious that the legal size limit has been fixed too low to be effective in preserving the stock Hamilton, J. E., *Nature*, June 12, 1948.

CESAREAN HYSTERECTOMY AT THE CHICAGO LYING-IN HOSPITAL

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and
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The mortality for cesarean hysterectomy at this hospital was reported[1] in 1945 to be 1.04 per cent and for cesarean section to be 0.61 per cent. Ninety-six cesarean hysterectomies with 1 death were mentioned in the report, and the statement was made that hysterectomy is the operation of choice in infected or potentially infected patients. There have been reports from several clinics advocating extraperitoneal section instead of cesarean hysterectomy in the treatment of infected or potentially infected patients. Cosgrove and Waters,[2] reporting from the Margaret Hague Hospital, had the largest series of extraperitoneal sections and had excellent results in the type of case under discussion. They maintained that hysterectomy in such seriously ill patients is a formidable procedure and its immediate mortality must be high. They pointed out that of the 96 cesarean hysterectomies reported by Dieckmann not all were performed for infection but some were undoubtedly elective operations. This report is an analysis of our indications for the hysterectomies and of the complications and an explanation as to why the removal of the uterus, if properly carried out, will have the lowest mortality in infected patients.

A collective review by Dieckmann in 1945 of deaths after cesarean section showed that the average mortality in maternity hospitals was 1.46 per cent and that almost half of the deaths were due to infection, peritonitis being the chief cause of death. The average mortality for cesarean hysterectomy in four maternity hospitals was 4.3 per cent, with a range of 1 to 14 per cent. Cosgrove and Waters stated that 6 deaths following cesarean section for disproportion were due to peritonitis. Two years ago they reported[2] 483 extraperitoneal sections with 6 maternal deaths (5 due to infection), a mortality rate of 1.24 per cent. Since most of their operations were performed in infected or potentially infected patients (whom we would have delivered vaginally, if necessary by craniotomy, or by cesarean hysterectomy), this low mortality convinced us that this type of operation in the potentially infected patient is far superior to laparotrachelotomy and to difficult vaginal deliveries with their high fetal mortality and maternal injuries, but has not convinced us that it is safer than cesarean hysterectomy in infected patients.

One of us (W.J.D.) has seen autopsies after 8 cesarean sections, 3 after laparotrachelotomy and 5 after classic cesarean section, and in each instance the sutures were not holding and lochia and pus were draining into the abdominal cavity. We believe that in infected patients the abdomen is able to take care of the ordinary amount of spill, but if the postpartum uterus, which is an excellent nidus, is not removed it acts as a focus for continued dissemination of bacteria into the abdominal cavity and into the blood and lymphatic systems. However, if the entire uterus is not removed in the infected patient or at least down to within 2 cm. of the external os, not only is the safety of the operation lost but the added manipulation plus the remaining traumatized uterus adds to the danger. We are not concerned about the peritoneal contamination from buttonholing the peritoneum during an extraperitoneal section but are concerned with the damaged area of peritoneum, no matter how ligated, as being the place for infected uterine contents to gain access to the abdomen.

Cosgrove and Waters have questioned the value that we attribute to Baldwin's treatment of puerperal infection by early hysterectomy. Seventy-seven per cent of Baldwin's[3] patients had pus in the uterine wall or in the tissues around the uterus at the time of the operation, and we think that the mortality without the hysterectomy would have been close to 100 per cent. He had 30 per cent mortality in his first 67 cases, 18 per cent in his next 17 and no deaths in the following 6. We can recall autopsies in which the infection was localized in a small area in the puerperal uterus, in which, had it been removed early enough, the outcome might have been different. We can also recall patients who had a cesarean hysterectomy for infection, either potential or actual, who were extremely ill for weeks and who, we believe, would have died had the uterus not been removed.

DATA ON CESAREAN SECTION AND HYSTERECTOMY

We do not propose to make extensive citations from the literature; however, Harris'[4] study is especially pertinent. His report in 1922 of 64 cesarean hysterectomies performed at Johns Hopkins Hospital with 3 deaths, a mortality of 4.7 per cent, corrected 1.6 per cent, with no deaths from infection, demonstrates what could be done before the days of blood transfusions and antibiotics. The policy at Johns Hopkins Hospital was to remove the uterus in patients who were hopelessly deformed or mentally defective at the time of the third cesarean section or if there was

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Read before the Section on Obstetrics and Gynecology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N.J., June 13, 1947.
From the Department of Obstetrics and Gynecology of the University of Chicago and the Chicago Lying-in Hospital.

[1] Dieckmann, W. J.: Am. J. Obst. & Gynec. 50:28, 1945.

[2] Cosgrove, S., and Waters, E.: Am. J. Obst. & Gynec. 52:237, 1946.

[3] Baldwin, J. F.: Tr. Am. Gynec. Soc. (1929) 42:96, 1930.

[4] Harris, J. W.: Bull. Johns Hopkins Hosp. 33:318, 1922.

evidence of infection. Of 27 patients who were operated on before or early in labor, histologic evidence of infection was found in only 1. There was clinical evidence of infection in 18 of the 28 patients who had been in labor for a long time or on whom attempts at induction or delivery had been made, and 23 of these uteri showed histologic evidence of infection. Harris concluded that cesarean hysterectomy is the operation of choice in patients who are potentially infected.

A review of the literature does make one wonder about the relatively low incidence, 0.2 to 2 per cent, of cesarean hysterectomy. For example, De Normandie[5] in his five year study of 11,030 cesarean sections in Massachusetts reported that there were only 147 hysterectomies, 1.3 per cent, with a mortality of 9.5 per cent.

Irving[6] in 1945 stated that in the preceding ten years at the Boston Lying-in Hospital there were only 32 cesarean hysterectomies.

Reis and De Costa[7] in a recent article reviewed the history of cesarean hysterectomy and in the United States collected 25,028 cesarean sections and only 636 hysterectomies, an incidence for the latter of 2.5 per cent and a mortality of 5.2 per cent. The incidence and mortality in their own series were 4.5 and 0 per cent, respectively. The morbidity was 39 per cent, which they stated was much less than what they found after cesarean section. Reis and De Costa attributed the reduced morbidity to the fact that hysterectomy removes the potentially infected thrombotic placental site and to the substitution of a short incision with opportunity for spontaneous drainage for the longer buried uterine incision.

TABLE 1.—*Cesarean Section and Hysterectomy at the Chicago Lying-In Hospital*

Years		Deliveries	Cesarean Section		Maternal Mortality		Cesarean Hysterectomy		Maternal Mortality	
			No.	%	No.	%	No.	%	No.	%
1918-1931	(12)	34,807	1,212	3.5	20	1.64	37	3.04	1	2.70
1931-1941	(10)	27,321	1,457	5.3	9	0.62	76	5.23	1	1.31
1941-1947	(5½)	19,628	987	5.0	1	0.10	77	7.8	0	0.0
1931-1947	(15½)	46,949	2,444	5.2	10	0.41	153	6.3	1	0.65
1918-1947	(27½)	81,756	3,654	4.5	30	0.82	190	5.2	2	1.05

We are excluding hysterectomies in cases in which the uterus ruptured before delivery. There have almost always been hemorrhage and shock, excessive spill of infected amniotic fluid and meconium into the abdominal cavity; torn arteries have retracted; extensive tissue spaces have been opened, and there are frequent injuries to bladder and ureter and occasional injuries to the sigmoid. Our mortality in these patients is 23 per cent. Patients with separations of the old scar found at the time of the cesarean section without any escape of uterine content, are included.

The data pertinent to cesarean section and hysterectomy on our service are listed in table 1. There were 168 operations since 1931, but only 153 were performed on patients who were thirty weeks or more pregnant. There was only 1 death. This constantly increasing use of cesarean hysterectomy may be due to the fact that the department is a combined one, the staff being experienced both in obstetrics and gynecology. The operation is performed with equal frequency in both private and clinic patients, with perhaps a slightly higher incidence in the former. If one believes, as we do, that elective cesarean hysterectomy has less mortality than elective cesarean section, and if one is properly appreciative of the uterine diseases that occur with increasing frequency after 35 years of age, it is obvious why we *favor hysterectomy in this group of* patients instead of tubal ligation.

METHOD

We have never regarded cesarean hysterectomy as a formidable procedure. It is more difficult than removal of the nonpregnant uterus, because of the size of the organ and because of the dilatation in the lower segment and cervix. Each resident who completes his training on our service is first assistant at a number of these operations and always performs several during his service.

One of us (W.J.D.) pointed out in his paper on cesarean section that this operation should not be used as a last resort. There is a proper time for the performance of safe cesarean section. This, too, is true for cesarean hysterectomy. It should not be performed in the moribund patient with the hope of saving her life.

If the indication for the hysterectomy is potential or actual infection of the uterus, it is necessary that spill be kept at a minimum, but most important is the complete removal of the uterine tissue. The transverse incision must be below the level of the internal os if there is no cervical effacement at, or within 2 cm. of, the external os if there is a lower uterine segment. The need for complete or almost complete removal of the uterus is evident from the figure. After labor the lower segment is 10 to 15 cm. in length, and if not removed it will have almost as great potentialities for infection, because of the operation, as the entire uterus. If the hysterectomy is performed to prevent future pregnancy in a woman of 30 or less, it is desirable to leave enough uterus in order that the patient will have regular, but extremely brief, and scanty menstrual periods. The transverse incision here is made at, or slightly above, the lower segment of the uterus, or 7 to 10 cm. from the external os, or, if there is no cervical effacement, 2 cm. above the internal os. The average weight of the term uterus is 997 Gm., with a range of 828 to 1,118 Gm. The cuff is closed in layers, interrupted surgical gut sutures being used if there is infection, and completely peritonized with the

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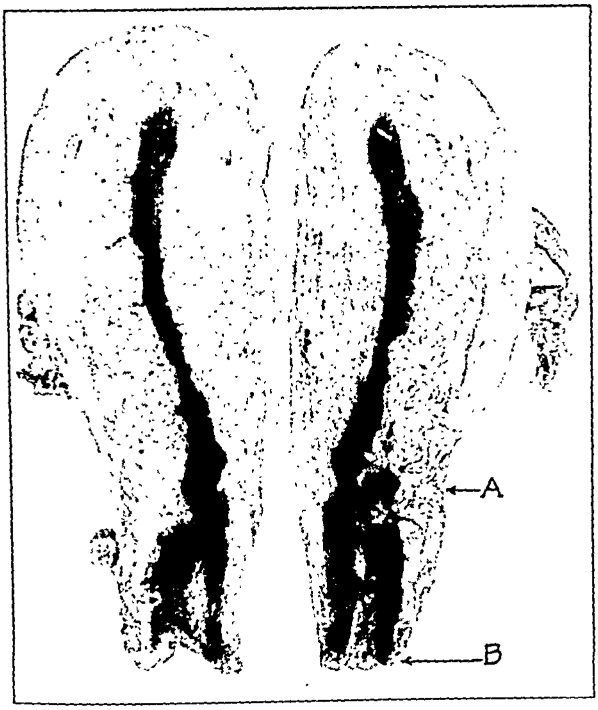
5. De Normandie, R. L.: New England J. Med. 227:533, 1942.
6. Irving, F. C.: Am. J. Obst. & Gynec. 50:660, 1945.
7. Reis, R. A., and De Costa, E. J.: Cesarean Hysterectomy, J.A.M.A. 134:775 (June 28) 1947.

bladder flap. No drainage is used. If there is potential or actual uterine infection, the patient is given nothing by mouth and is given fluids parenterally until the clinical course warrants the oral administration. The water and salt balance must be adjusted to insure a urine output of at least 1,000 cc. per twenty-four hours. The patient with clinical evidence of infection should be given adequate amounts of blood, the appropriate vitamins and sulfonamide compound and/or appropriate antibiotics, although our results to date without the latter drugs have been excellent. The noninfected patient should have the usual postcesarean routine.



Term uterus removed at autopsy twenty-four hours after delivery. It weighed 1,002 Gm. and was 24 cm. in length. The lower segment *A* to *B* measured 9 cm. *A* indicates beginning of contractile portion (corpus) of uterus, *B* the external os. In an infected or potentially infected uterus the transverse incision must be made at or within 2 cm. of *B*. If it is desirable for the patient to have menstrual periods the transverse incision must be made at or slightly above *A*.

INDICATIONS FOR CESAREAN HYSTERECTOMY

The indications for the hysterectomy are listed in table 2. Many of the indications for the cesarean section were repeat operations, but, if myomas were found in the uterus, our policy was to remove it instead of crushing and ligating the tubes. If the patient was 35 years or over and a multipara, we frequently prevented future pregnancies by hysterectomy. A Couvelaire uterus in a multipara, even if there was no bleeding, was always removed, but if it was in a primipara every attempt was made to save the uterus unless there was evidence of pronounced lack of muscle tone or hemorrhage. Elderly multiparas with placenta previa usually had the uterus removed instead of a tubal ligation. The high incidence of placenta accreta in the patients with previa is of interest. The uterus was removed in a number of cases after unsuccessful tubal ligation, primarily for the purpose of studying the tube which was still patent. By diseased organ we mean a uterus in which there are two or more cesarean scars. There were 5 patients in whom, at the time of the cesarean section, the membranes projected through the scar after the vesical peritoneum was reflected or the scar tissue was paper thin. Two patients had an extensive ventral hernia and, since tubal ligation was advisable, it was felt that the postpartum course would be smoother with a hysterectomy. Three patients at the time of the cesarean section had more than the usual hemorrhage from the uterus, which did not respond properly to injections of solution of posterior pituitary, massage and packing. Four patients had carcinoma of the cervix, which had been treated with radium in 3 (total hysterectomy in these) and by subtotal hysterectomy in 1, who subsequently received radium. The indications in the miscellaneous group were acute appendicitis and rupture, stenosis of the vagina, a carcinoma of the breast (castration), a myoma with sarcomatous degeneration and a psychiatric case.

TABLE 2.—*Indications for Hysterectomy*

Indication	Number
Myoma	44 plus*
Infection	19
Potential infection	14
Couvelaire uterus	
Multipara	6
Hemorrhage	6
Placenta previa	
Multipara	6*
Accreta	2
Placenta accreta	2
Tubal ligation failed	6
Diseased organ	11
Thin scar	5
To sterilize, 35 plus years	14
To sterilize; toxemia; 35 plus years	4
Ventral hernia	2
Uterine hemorrhage	3
Carcinoma of cervix	4†
Miscellaneous	5
Total	153

* Total hysterectomy was done in 1 case.

† Total hysterectomy was done in 3 cases.

A unilateral salpingo-oophorectomy was performed in 31 cases and a bilateral salpingo-oophorectomy in 8 cases.

The age and parity of our patients are given in table 3. Over two thirds of the patients were 30 years of age or older, and over two thirds had two or more children. If a tube and an ovary are left on the same side and care is taken not to interfere with the venous return from the ovary and tube, there is no menopause within two or three years, as has been reported, unless it would have occurred normally. We know that ovarian function has lasted for over ten years in some of these patients, provided that the operation was performed in patients less than 30 years of age.

The following abstracts give the indications for the hysterectomy in the 5 patients who were less than 25 years old:

A.K., aged 24 years, was a gravida IV, para II. The diseased organ—that is, two previous scars in the uterus—was the indication for the hysterectomy.

C.S., aged 24 years, gravida II, para I, had a total hysterectomy because of a diagnosis of adenocarcinoma of the cervix, which subsequently was changed to pronounced hyperplasia of the cervical mucosa due to pregnancy.

J.L., aged 24 years, gravida II, had a hysterectomy because at the time of the operation a complete separation of the old cesarean scar was found.

I.B., aged 24 years, gravida II, had had a previous cesarean section. The uterus was removed because the patient had had ruptured membranes for twenty-four hours and an unsterile vaginal examination in the clinic.

M.N., aged 19 years, gravida III, had had two previous cesarean sections. The membranes had been positively ruptured for one week and the patient had been in labor for seven hours. No sulfonamide drug or penicillin was used. The postoperative course was normal.

TABLE 3.—*Age and Parity (30 Weeks and More)*

Age in Years	Parity I	II	III	IV	V	VI	VII	VIII+	Total
15 - 19	-	-	1	-	-	-	-	-	1
20 - 24	-	2	2	-	-	-	-	-	4
25 - 29	1	8	2	2	3	1	-	-	17
30 - 34	5	9	8	4	8	-	1	1	36
35 - 39	17	11	9	5	5	8	4	9	68
40 - 44	11	4	1	3	3	1	1	1	25
45 - 49	-	-	-	-	-	-	-	2	2
Total	34	34	23	14	19	10	6	13	153

MORBIDITY AND DURATION OF FEVER

The morbidity and duration of fever are given in table 4. The potentially infected patients are those in labor and/or with ruptured membranes of more than twenty-four hours' duration. The following are our criteria for an infected patient, and in cases of cephalopelvic dystocia we would deliver either by craniotomy or, preferably, by cesarean hysterectomy: (1) labor and/or ruptured membranes of forty-eight hours or more associated with: (*a*) temperature of 38 C. (100.4 F.) or more, (*b*) chills, (*c*) positive blood culture and (*d*) bacteria in the amniotic fluid in large numbers; (2) repeated vaginal examinations with hands or unsterile gloves; (3) foul-smelling amniotic fluid; (4) labor after attempts at delivery; (5) when a bag, bougie or pack has been in the uterus; (6) more than twelve rectal or six vaginal examinations.

It is difficult to believe that in a period of fifteen and one-half years there were only 12 potentially infected and 21 infected patients out of a total of 153 in whom we deemed hysterectomy advisable. Irrespective of how carefully records are kept, they do not express the real indications to the degree experienced by the surgeon at the time of the operation. One of us (W.J.D.) has noticed this frequently in studying the indications for terminating pregnancy in patients with toxemia. He could recall just how serious the patient's condition was, and yet the record does not support his memory of the case. The morbidity is 50 per cent in the clean and potentially infected patients and 71 per cent in the infected. There is not much difference between the clean and the potentially infected. The interesting thing is the average short duration of the fever.

TABLE 4.—*Morbidity and Duration of Fever*

Type of Cases	Normal	38 - 38.9 C.*	39 - 39.9 C.†	40 C.+‡	Total
Clean Cases	59 - 49.0%	47 - 39.0%	10 - 8.0%	4 - 3.0%	120
Potentially Infected	6 - 50.0%	4 - 33.0%	2 - 17.0%	0	12
Infected	6 - 29.0%	10 - 48.0%	3 - 14.0%	2 - 9.0%	21
Total	71 - 46.0%	61 - 40.0%	15 - 10.8%	6 - 4.0%	153
Duration of Fever					
1 day		15 - 19. %	7 - 9 %	3 - 3 %	
2 days		17 - 21. %	4 - 5 %	1 - 1 %	
3 days		19 - 23. %	2 - 2 %		
4+ days		10 - 12. %	2 - 2 %	2 - 2 %	
Average - days		4.3-53.5 %	3.2-13.7%	2.8-3.9%	

* 100.4 to 102 F.
† 102.2 to 103.8 F.
‡ 104 F. or higher.

MAJOR COMPLICATIONS

We have listed the major complications in table 5. One patient who had Streptococcus viridans septicemia from acute endocarditis required a second cesarean section. A hysterectomy was performed in order that a potential implant site could be eliminated. The postoperative course was normal.

Two patients had paralytic ileus, presumably without peritonitis. Six patients had peritonitis, although the characteristic symptoms and signs of peritonitis were absent. One of us (W.J.D.) has taught for many years that the classic symptoms and signs of peritonitis—namely, pain, persistent vomiting and abdominal rigidity—are rarely, if ever, present in puerperal peritonitis.[8] The characteristic findings are some abdominal distention, little, if any, vomiting, an indefinite mass arising from the pelvis and varying elevations of the temperature with a pulse rate which is more rapid than the fever would warrant. Frequently there are signs of bronchopneumonia, especially at the bases of the lungs, due to the splinting of the diaphragm. These findings were also noted by Rivett[9] and his co-workers in

TABLE 5.—*Complications*

	No. of Cases
Septicemia	1
Peritonitis	6
Paralytic ileus	2
Pelvic thrombophlebitis	1
Pelvic abscess	1
Pulmonary embolism	1
Infection of respiratory tract	3
Hemorrhage from cervical stump	2
Infection of abdominal wound	3
Infection of urinary tract	3
Bladder injury	2*
Ligation, both ureters	2†

* There was one vesicovaginal fistula.
† Subsequent unilateral nephrectomy was done in each case.

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[8] Schwarz, O. H., and Dieckmann, W. J.: Am. J. Obst. & Gynec. 4:467, 1927.

[9] Rivett, L. C., Williams, L.; Colebrook, M. B., and Fry, R. M.: Proc. Roy. Soc. Med. 26:45, 1933.

1933, who stated that there was no clinical syndrome which could be stated as being diagnostic of puerperal peritonitis. Rigidity was hardly ever present and constipation rarely. In a group of 30 fatal cases in which the diagnosis was confirmed by autopsy, they noted distention in 22, tenderness in 13, rigidity in 4, diarrhea in 4 and vomiting in only 5. These observations have been confirmed on our service by either laparotomy or autopsy.

One patient had pelvic thrombophlebitis and one a pelvic abscess which was drained some six weeks after operation. A number of patients had slight infections of the respiratory tract, and 3 had serious infections. Hemorrhage from the cervical stump occurred in 2 patients on the tenth day; this was treated by clamping and removing the clamp in forty-eight hours. Neither patient required a transfusion. Injury to the bladder occurred in 2 patients, in 1 of whom a vesicovaginal fistula developed which required subsequent repair.

A serious complication was the ligation of both ureters in 2 patients. A total hysterectomy was perfromed in a case of placenta previa to obtain the entire specimen. The other patient had a carcinoma of the cervix, and a rather extensive resection of the parametria and vagina was made. However, in both instances the patient was given 500 cc. of 30 per cent dextrose, and when no urine appeared in the bladder within thirty minutes we felt that the diagnosis was definite. It was confirmed by inability on the part of the urologist to pass catheters in either ureter. The usual treatment in such cases is a nephrostomy. The abdomen was reopened, and, with the urologist passing ureteral catheters from below and the surgeon locating the point of obstruction through the abdomen, the constricting sutures were located and cut. In 1 patient a ureterovaginal fistula developed, which required a subsequent nephrectomy, and in the other case one ureter was implanted in the bladder wall and the other ureter was implanted in the skin, the kidney being removed subsequently.

There were 10 stillbirths and 8 neonatal deaths, a total uncorrected fetal mortality of 11.8 per cent, which is twice that for cesarean section and four times that for all types of delivery. Abruptio placentae, placenta previa and prolonged labor are all characterized by a high fetal mortality and comprise one third of the series.

The 1 patient who died, M.S., was 32 years old, gravida X, para VI and who weighed 108 Kg. She had had two previous deliveries by us; she had diabetes and chronic rheumatic heart disease, and late in pregnancy toxemia developed. She was at term on Oct. 29, 1937, and was not cooperative. She was admitted on October 3, at thirty-seven weeks' gestation, because her membranes ruptured. On October 4 the attending obstetrician advised observation and no induction; shortly thereafter the patient began having contractions. There had been two sterile vaginal examinations, and, because of twenty-one hours of labor with strong tumultuous pain for six hours, ruptured membranes for over twenty-three hours and an extremely large abdomen, a cesarean hysterectomy was performed. The baby weighed 5,170 Gm., and the placenta weighed 885 Gm., thus accounting for the huge size of the abdomen. On the second postoperative day the patient complained of abdominal distention, but was taking fluids by mouth. On the third there was increasing distention and she vomited once. Wangensteen drainage was instituted on the third. On the fourth day the patient was given water and the tube was removed. The tube was inserted on the fifth and later removed. The same procedures occurred on the sixth day. The tube was reinserted on the seventh, removed on the eighth and again reinserted on the ninth. The patient died on the tenth postoperative day. There was a difference of opinion, and one obstetrician would order the patient to have fluids and food by mouth and another one would discontinue them. Most of the staff thought that the patient at first had localized peritonitis and that had she been given the routine treatment for peritonitis the outcome might have been different. The fact that she lived ten days would seem to substantiate this belief.

The essential findings at the autopsy were as follows: When the peritoneal cavity was opened, the markedly distended domelike abdominal wall suddenly collapsed as a rush of gas was released. The abdominal cavity contained 2,200 cc. of a foul-smelling, turbid tan pus, which was found in all parts of the peritoneal cavity from the diaphragm to the pelvis, partly concealed in pockets between the viscera and the abdominal walls. After removal of the fluid, the peritoneal surfaces, both visceral and parietal, showed focal injection and were covered with a fibrinous or fibrinopurulent exudate. The omentum adhered to the region of the cecum by fibrous adhesions. The omentum was greatly thickened and inflamed, apparently through the entire fat layer. The stomach was distended with gas. The large bowel was greatly distended by gas and a semifluid content. Behind the region in the cervical stump was a transverse row of surgical gut sutures, peritonizing the cervical stump. The exudate was no thicker here than on other parts of the peritoneum. There also was pus in the lesser peritoneal cavity. Other findings were: bilateral ovarian hemorrhagic infarction, thrombosis of the right ovarian vein, pronounced dilatation of the cervical canal, active rheumatic myocarditis and clinical diabetes mellitus.

One of us (W.J.D.) has had seriously sick patients after cesarean section and after cesarean hysterectomy. He had 1 patient die after hysterectomy. This patient was brought into the hospital in 1926 with a myoma blocking the inlet and a nonpulsating cord which had been hanging through the introitus for three days. The uterus was removed without being opened. The pulse and temperature remained normal until the day of death, which occurred on the seventh postoperative day. Generalized peritonitis was found at autopsy.

CONCLUSIONS

Cesarean hysterectomy has absolute as well as relative indications. It is not a panacea for poor obstetrics. The incidence necessary for proper training in the technic is too low in most clinics.

It requires about the same amount of time for the experienced operator to perform cesarean hysterectomy as for laparotrachelotomy.

The blood loss is not increased and is usually reduced.

Hysterectomy after cesarean section in infected or potentially infected patients insures the lowest mortality, provided that the entire body or corpus and most of the cervix is removed. Peritonitis routine is necessary for forty-eight to ninety-six hours or until the patient's condition warrants oral fluids. During this period adequate supportive treatment is necessary and sufficient parenteral fluid must be given to insure a urinary output of at least 1,000 cc.

Cesarean hysterectomy in the treatment of the infected patient—whether the infection is due to cephalopelvic disproportion, to obstruction from tumors, fetal malposition, unsterile examinations or a faulty mechanism of labor—should have a mortality of less than 2 per cent.

If it is an elective operation, the mortality should be less than 1 per cent.

ABSTRACT OF DISCUSSION

DR. ARTHUR B. HUNT, Rochester, Minn.: Five alternatives present themselves when the problem of actual or potential infection in the presence of prolonged dystocia is considered. They are (1) the avoidance of getting into such a situation—that is, prophylaxis, (2) cesarean hysterectomy, (3) extraperitoneal cesarean section, (4) low cervical cesarean section, with full use of sulfonamide compounds and antibiotic substances, and (5) craniotomy. Dr. Dieckmann, in his 1945 communication on cesarean section, emphasized the importance of early decision in the disposition of patients with dystocia in obtaining a low mortality rate, and we cannot too greatly appreciate the importance of early decision in practice and in the training of postgraduate students. The value of cesarean hysterectomy is well outlined in his present communication. I would agree with Dr. Dieckmann that in the presence of actual infection such a procedure is the one of choice. We feel that cesarean hysterectomy is preferable to multiple myomectomy in the presence of fibroids and is at times for intractable hemorrhage. We have placed a rather heavy strain on both the low cervical cesarean section and the concomitant use of sulfonamide compounds and antibiotic materials in these cases, but to date with good results. The frequent ill advised use of antibiotic substances and the too general ready dependence on them can well be deplored, but this has little connection with the early intensive and persistently skilful use of such preparations when they are urgently needed. At the Mayo Clinic, we have done 310 cesarean sections in about 9,500 deliveries from Jan. 1, 1935 to June 1, 1947; the incidence of cesarean section has been 3.3 per cent. Twelve patients had cesarean hysterectomy, making an incidence of 3.9 per cent among the cases of cesarean section. Not included in this group is 1 instance of posthumous cesarean section, done after death from a brain abscess. There was no maternal mortality in the 310 cases. Surprisingly, only 1 patient was subjected to Porro cesarean section because of actual or potential infection, and this patient was operated on less than two months ago. We have frequently violated Dr. Dieckmann's rule by applying low cervical cesarean section with the use of antibiotic substances in many cases. In an even larger number, by these means, we eventually delivered normal live infants through the pelvis and left patients in good condition for further reproduction, whereas if we had performed cesarean hysterectomy we would, of course, have deprived them of the uterus. However, we would agree that in the presence of definite infection, which makes the risk seem high, cesarean hysterectomy is the operation of choice, since it affords a good prognosis for the fetus and, as Dr. Dieckmann has so wisely observed elsewhere, it is better to have a live woman without her uterus than a dead woman with it. One of his tables reveals a mortality rate of less than 0.1 per cent, there being only 1 maternal death in more than 1,050 cases of cesarean section of all types in a five and a half year period. These results speak for themselves and probably represent a bedrock level in maternal mortality associated with cesarean section.

DR. JAMES F. NORTON, Jersey City, N. J.: Dr. Dieckmann, you are in error when you credit us with 6 deaths, 5 of them from infection. Four of our 6 deaths were from infection, 1 was from hemorrhage and 1 was from spinal anesthesia. We have not had a death due to infection following extraperitoneal cesarean section since 1940, and it goes back almost to the 120 or 130 cases in this series of 753. You stated, and I think justly so, that we are all interested in doing what is best for the patient to reduce fetal and maternal mortality, and do it with a degree of safety. We believe definitely that we have, with the method we use, a method at our disposal which is quite safe, which is well within the surgical competence of any trained man, and you admit that you have difficulty getting material to teach cesarean hysterectomy to your group. In your statistical report you mentioned 2 bladder injuries. About a year ago I submitted a paper setting forth a paravesical extraperitoneal cesarean section technic, Lascoe approach, and I stressed then the ease of performance of the operation, the almost foolproof postoperative course. In the light of our subsequent experience, I have reason to believe only that what I said then was probably a gross understatement. This is definitely a different operation from that supervesical operation described by Waters. It is a paravesical extraperitoneal cesarean section, as I said, a modified Lascoe, but rather definitely modified.

DR. WILLIAM F. MENGERT, Dallas, Texas: From a theoretical point of view, it seems, since the portal of entry of puerperal infection is through the endometrium, that if the uterus is removed before there is a spreading infection one can do a great deal toward prevention of death from peritonitis. It does not make much difference what sort of hysterectomy is done if one needs to do one. My associates and I happen to do total hysterectomy, in the few cases which we do. It is my intention to support Dr. Dieckmann in this, but I nevertheless must comment on the incidence of cesarean section in his paper, not only there but also at Jersey City. It is difficult for me to believe that 1 in 25 women in Chicago and in Jersey City is unable to give birth to a baby by the vagina. Since at Parkland Hospital we tend to permit vaginal delivery and do relatively few cesarean sections, I have no such figures to present as you have heard here today, but I do want to present a case report in order to illustrate the fact that extraperitoneal cesarean section is not without danger. A young primigravida was admitted in an obstructed labor with cephalopelvic disproportion. After about forty-eight hours, when she had a temperature of 99.5 F. (this fever did not subside with the administration of fluids), we did a Waters extraperitoneal cesarean section. Both at operation and at autopsy it was demonstrated that the peritoneum had not been injured. It was intact at the time of operation. It was also intact at the time of autopsy. Nevertheless, this woman died with right-sided pyelonephritis and a localized peritonitis. She had all of the antibiotics and all of the sulfonamide drugs that we were able to give her. I should like to put on the record this fact, that it is possible for peritonitis to occur through an intact peritoneum.

DR. W. J. DIECKMANN, Chicago: Dr. Hunt spoke of the use of antibiotics and sulfonamide drugs in cases of prolonged labor. Since over two thirds of the cases of puerperal infection are due to bacteria which are not amenable to either substance, I do not believe that one is justified in taking chances with the patient's life. These drugs should be given and in cases with infection the uterus should be removed and bacteriologic and histologic studies made of the uterus to determine whether these drugs have been of any value. I know 2 cases in which craniotomy was performed on the living baby. In both instances the baby had been damaged either by prolonged labor or attempts at delivery. One must remember that after prolonged labor, even though the fetal heart sounds are within the normal range, it does not necessarily follow that the baby will be born alive or that it will, if born alive, be well. Dr. Norton questioned hysterectomy in patients less than 30. We felt that the hysterectomy was indicated in each case and, as long as an ovary and tube are left on the same side, the patient will not have her menopause for at least ten years and probably longer. We see no need to preserve the uterus when there is a chance that it may endanger the patient's life. Since the cervix in most of these cases has been normal during pregnancy we see no reason to remove the external os. We have used the extraperitoneal cesarean section in some elective and also in some borderline cases, but have not been able to deliver the baby within eight minutes, as suggested by Dr. Norton with his modifications. One operator had the case with a bilateral ligation of the ureters and also the case with vesical injury in which there was subsequently a vesicovaginal fistula. I am sorry if I have misquoted, giving 5 deaths from infection in place of 4. That was according to the information that I had. Dr. Mengert questioned the 4 per cent incidence of cesarean section. I know that we perform a few too many sections, and in all probability the group at Margaret Hague Maternity Hospital have the same experience. However, our mortality and morbidity are so low that we believe that we are justified in our practice. Our results are certainly better than they were fifteen years ago, when we were attempting to have a lower incidence. The number of maternal lacerations with extensive scar tissue in the vagina was definitely increased.

Dr. Garden and the Gardenia.—Those amateurs who were able successfully to apply the Linnaean principles of classification were encouraged by the great Swedish botanist to send to Upsala accounts of all flora and fauna believed to be "nondescript." Alexander Garden, a physician of Charleston, South Carolina, was numbered among the so-called "sons of Linnaeus." In 1760 Linnaeus named a certain genus of plants Gardenia in his honor, and in later years Garden sent his master so many specimens of various kinds that Linnaeus called him "the happy illustrator of Nature in his own region of Carolina."—Denny, Margaret, *The Scientific Monthly,* July 1948.

PATHOLOGIC NON-NEOPLASTIC INTRACRANIAL CALCIFICATION

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Ström[1] in 1919 conveniently divided intracranial calcification as revealed by roentgenograms into two groups: the physiologic and the pathologic. The former group includes structures such as the pineal gland, choroid plexus, falx cerebri and pacchionian bodies which normally may exhibit varying amounts of calcium. The pathologic group includes all tumors and certain non-neoplastic lesions. Many of the latter produce clinical signs which simulate those of a cerebral neoplasm, and in the differential diagnosis roentgenographic evidence can play a most important role. Not infrequently the roentgenologist not only can exclude the presence of a tumor but by virtue of the shape, extent and distribution of shadows of calcification can predict the nature of the disease and often the cause. The table shows a practical classification of these lesions for the roentgenologist. The pathologist may disagree with such a grouping because, microscopically, the method of deposition of calcium is similar in many of these lesions; nevertheless, the gross arrangement of the deposits of calcium as revealed by roentgenograms is typical for many.

VASCULAR LESIONS

The vascular intracranial lesions (non-neoplastic) that may be portrayed by calcification in the roentgenogram are arteriosclerosis, aneurysms, angiomatous malformations and hematomas.

Arteriosclerosis.—Arteriosclerosis involving especially the internal carotid artery is evident in about 1.8 per cent of all roentgenograms of the skull. The incidence varies naturally with age; it ranges from 4.2 per cent in the sixth decade to 10 per cent in the eighth decade. The degree of calcification varies from the simple calcified plaque seen edgewise or *en face* just lateral to the sella turcica to complete tubular calcification of the cavernous and intracranial portions of one or both internal carotid arteries. The simple arteriosclerotic artery does not usually rise above the interclinoid level in the cavernous sinus, and the constancy of this position is important in distinguishing arteriosclerotic calcification from calcified aneurysms and calcified suprasellar or parasellar tumors. Calcification of the interclinoid reflection of the dura may imitate focal plaque like calcification of the internal carotid artery. Calcification of the intracranial

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From the Section on Roentgenology, Mayo Clinic.

Read before the Section on Radiology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J. June 11, 1947.

[1] Strom S.: Ueber die Röntgendiagnostik intrakranieller Verkalkungen, Fortschr. a. d. Geb. d. Röntgenstrahlen 27:577-601, 1921.

portion of the internal carotid artery is less common than that of the cavernous portion. When present, it is usually associated with extensive calcification of the artery. Rarely, calcification extending to the contiguous portions of the middle cerebral, anterior cerebral or ophthalmic arteries may be observed. In certain cases, the postero-anterior projection and the Granger or optic canal position are useful in checking the relation of the calcified vessel to adjoining structures.

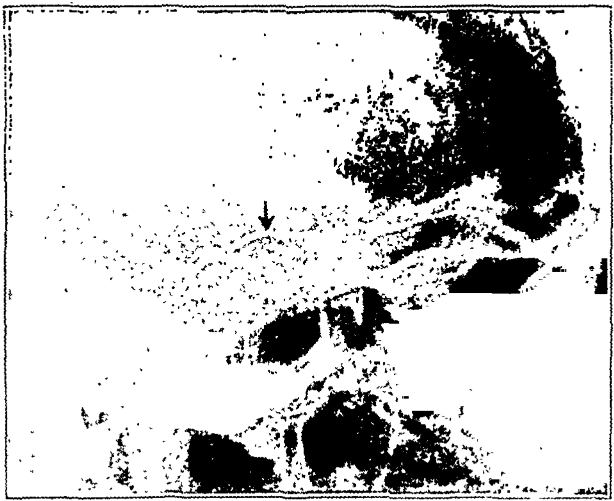

Fig. 1.--Intracranial aneurysm exhibiting *characteristic roentgenographic signs*: (1) curvilinear calcification in wall of aneurysm; (2) unilateral erosion of sella turcica; (3) localized erosion of anterior clinoid process contiguous to aneurysm.

Knapp[2] has suggested that, in cases in which the patients are elderly, pressure from a sclerotic and calcified internal carotid artery contiguous to the optic nerve may be a factor in producing a condition which will cause symptoms of glaucoma without tension, together with altitudinal visual defects, optic atrophy and cupping. Because of the rarity of this syndrome it would seem to be more easily explained by actual disease of the ophthalmic artery rather than by pressure from the internal carotid artery.

Aneurysm.—Although aneurysm of the internal carotid artery and related vessels has been of interest to the neurologist for a long time, its clinical importance has increased since the introduction of arteriography, which permits an accurate portrayal and precise localization of the lesion. In many cases localized roentgenographic changes, especially the presence of calcification, will permit the diagnosis of an aneurysm without the use of arteriography.

Calcification in an aneurysm of the internal carotid artery may vary from curvilinear plaques which outline a fusiform or saccular enlargement (fig. 1) to complete shell-like calcification which outlines the walls of a laminated clot or sac. The diameter of the shell-like calcification may vary from a few millimeters to several centimeters; the larger the lesion, the more irregularly rounded its contours become. Other important roentgenographic changes consist of unilateral erosion of the sella turcica, especially the adjoining anterior clinoid process, unilateral dilatation of the optic foramen and contiguous portion of the superior orbital fissure, and erosion of the margins of the carotid canal. Generalized enlargement of the sella turcica resulting from an aneurysm extending into the pituitary fossa may imitate the roentgenographic changes of pituitary tumor.

Calcification within the aneurysm was observed roentgenographically in 7 of 8 cases (87.5 per cent) reported by McKinney, Acree and Soltz.[3] These authors were the first to correlate the roentgenographic findings with the clinical phenomena of unruptured aneurysm of the intracranial portion of the internal carotid artery. The presence of unilateral exophthalmos and unilateral partial or complete involvement of the oculomotor and trigeminal nerves, and usually involvement of the optic, trochlear and abducent nerves, plus roentgenographic changes, constitutes conclusive evidence of such an aneurysm. Curvilinear deposits of calcium and unilateral bony changes about the sella turcica are the significant signs that distinguish aneurysms from pituitary and suprasellar lesions. Parasellar cholesteatomas or epidermoids which contain calcium more closely imitate the roentgenographic changes of aneurysm than does any other lesion that I have observed. Chromophobe tumors of the pituitary body which often are cystic and extrude laterally from the sella turcica as well as above may closely imitate the bony changes of aneurysm. Fortunately, those tumors rarely undergo calcification, but, when they do, it has been my experience that the calcification has been plaquelike and has simulated that which occurs in an aneurysm. In some instances in which the clinical data are not conclusive, the final diagnosis must rest on arteriography.

Angiomatous Malformation.—Angiomatous malformation may be classified as capillary (telangiectatic), venous and arteriovenous. These lesions are considered by most pathologists as developmental anomalies which may undergo subsequent change in size and character. They are primarily surface lesions of the cerebral hemisphere. They may be recognized as a simple enlargement of one or more vessels, or they may be more complicated and extend from the cerebral surface like an inverted cone with the apex contiguous to the lateral ventricle.

Roentgenologic interest in vascular lesions was stimulated by Weber[4] in 1928 when he reported a case of cerebral hemangioma associated with facial nevus and contralateral spastic hemiplegia. The roentgenogram of the skull revealed involvement of almost the entire left hemisphere by what was interpreted as calcareous deposits in the vessels of the meningeal angioma.

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[2] Knapp, A.: Association of Sclerosis of the Cerebral Basal Vessels with Optic Atrophy and Cupping: Report of Ten Cases, Arch. Ophth. 8: 637-648 (Nov.) 1932.

[3] McKinney, J. M.; Acree, T. and Soltz, S. E.: The Syndrome of the Unruptured Aneurysm of the Intracranial Portion of the Internal Carotid Artery, Bull. Neurol. Inst. New York 5: 247-277 (Aug.) 1936.

[4] Weber, F. P.: A Note on the Association of External Haemangiomatous Naevus of the Skin with Cerebral (Meningeal) Haemangioma, Especially Cases of Facial Vascular Naevus with Contralateral Hemiplegia, Proc. Roy. Soc. Med. 22: 431-440 (Dec. 13) 1928.

Weber[4] observed similar calcification in 8 of 21 other cases reviewed by him and concluded that the roentgenographic appearance was characteristic (fig. 2). Krabbe[5] in 1934 reported in detail the postmortem findings in a case similar to the cases reported by Weber.[4] He established proof that the calcification occurs in the second and third layers of the atrophic cortex and not in the pia mater, which may show abundant vascularity but no true angioma. The distribution of the masses of calcium in the cortical convolutions easily explains the tortuous nature of the roentgenographic shadows. Krabbe's observation has been confirmed by other observers, and the pathologic basis for such a roentgenographic finding seems firmly established. In addition, the calvarium overlying the affected hemisphere is thickened and asymmetric, as would be expected in the presence of cortical atrophy. Curiously enough, the vascular markings of the diploe and internal tables are not increased over the involved area. Similar findings have been observed in patients without associated nevus and there would appear to be many variants of this condition.

In cases of cerebral angioma, microscopic examination has disclosed calcification in the walls of the related blood vessels; however, the dominant roentgenographic finding in such cases is the calcification of the atrophic cerebral cortex.

Arteriovenous aneurysms, which usually arise from one of the major cerebral arteries or its branches, do not reveal roentgenographic evidence of associated calcification nearly as frequently as do angiomas. The significant roentgenographic changes consist of markedly increased vascularity of the overlying calvarium together with hypertrophic changes or thickening of the overlying bone.

Hematomas.—Although subdural hematomas, encountered rather commonly by neurosurgeons, do not present roentgenographic evidence of calcification as frequently as would be expected, when calcification is present, it may assume the form of faint strands or plaques of calcium about the lesion or of sheetlike masses of calcium about the lesion and in the contiguous meninges (fig 3). Formation of bone is not uncommon in the latter type of lesion and has been described by Schuller[6] as ossifying hematoma of the dura and has been considered by him to be the same condition as hemorrhagic pachymeningitis. It is possible that unilateral calcification of the meninges and falx cerebri of a young patient who has had a previous injury of the head but who does not have any deformity to suggest a localized hematoma may be a related condition.

Calcification within an intracerebral hematoma is usually revealed as a dense irregularly outlined mass which is from 1 to 5 cm. in diameter. Shadows of this type have been found so frequently in cases of old hemorrhage that their presence is of diagnostic significance. In my experience, they are more similar to the shadows of calcified intracranial tuberculoma than they are to the shadows of any other lesion.

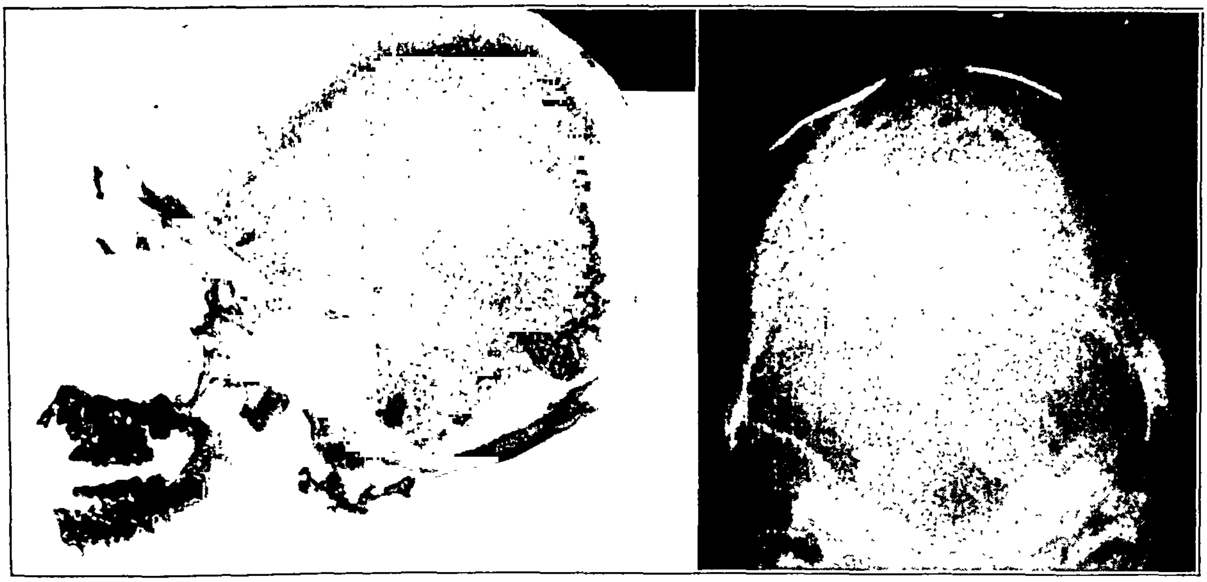

Fig. 2.— Calcification in second and third layers of cortex of atrophic right cerebral hemisphere associated with facial agioma (Sturge-Weber syndrome); asymmetry of skull and thickening of calvarium on right side resulting from atrophy of right cerebral hemisphere.

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[5] Krabbe, K. H.: Facial and Meningeal Angiomatosis Associated with Calcifications of the Brain Cortex: A Clinical and Anatomopathologic Contribution, Arch. Neurol. & Psychiat. 32:737-755 (Oct.) 1934.

[6] Schuller, A.: Haematoma durae matris ossificans, Fortschr. a. d. Geb. d. Röntgenstrahlen 51:119-124, 1935.

INFLAMMATORY LESIONS

Various authors have suggested that atypical and extensive calcification of the meninges may be the result of previous inflammatory disease of the meninges. However, in my experience, calcification and even ossification of the falx cerebri and meninges is so frequently observed in the absence of any history of inflammatory intracranial disease that it is doubtful if any significant relationship exists. Leary[7] and other authors have expressed the opinion that chronic hemorrhagic internal pachymeningitis, which has been of interest to pathologists for a long time, is of traumatic origin. Leary stated the belief that any inflammatory reaction that may be associated with such lesions is incidental or accidental.

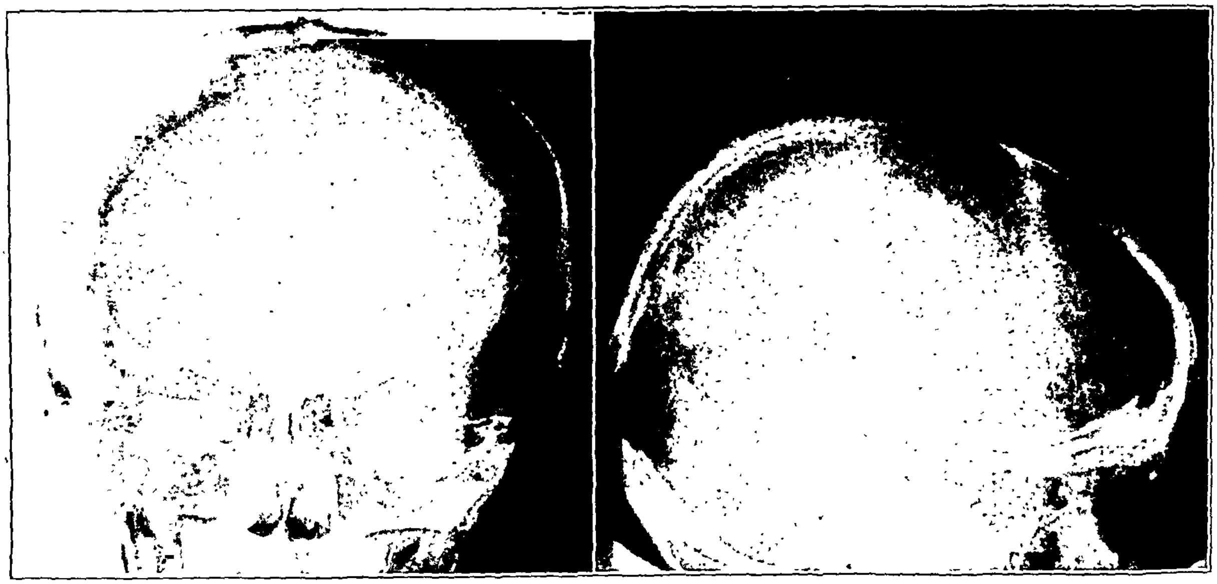

Fig. 3.—Subdural hematoma; plaquelike calcification in walls of hematoma and contiguous meninges.

Köhler[8] has stated that calcification in the reflection of the tentorium commonly known as the petroclinoid ligament is the result of chronic disease of the middle ear. In my experience there has been no relationship whatever between the two conditions. In the absence of associated encephalitis, intracranial calcification resulting from meningitis per se is indeed rare.

Calcification resulting from previous encephalitis may be observed in roentgenograms as multiple small dense areas distributed throughout the cerebrum and frequently in the basal ganglions (fig. 4). I have observed 2 instances in which miliary nodules of calcification occurred throughout the brain after epidemic polioencephalitis. In both of these cases the patients were children. Associated roentgenographic evidence of cerebral damage and degeneration is usually present as well.

Calcification of intracranial tuberculomas occurs in 1.3 per cent of cases according to Scott and Graves.[9] Evans and Courville,[10] in a more recent study, reported that such calcifi- occurs in 6.6 per cent of cases. Multiple lesions are much more frequent than solitary lesions and appear about as often in the cerebrum as in the cerebellum. Fifty per cent are observed in children in the first decade of life. Roentgenographically, the calcified nodules are revealed as discrete irregularly outlined dense masses of calcium, varying from 0.5 cm. to several centimeters in diameter (fig. 5). Pathologically, the calcification consists of myriads of coalescing calcospherities arranged in the form of a shell, which shrinks and fragments as the central portion of the lesion undergoes resorption. These changes account for the irregular roentgenographic contour. Associated formation of bone within the lesion is not uncommon. Evans and Courville have also described microscopic evidence of calcification in the walls of vessels in the central portion and at the margins of tuberculomas. Such calcification does not appear to play an important role in the roentgenographic appearance of the nodules.

Roentgenographic evidence of calcification within an old abscess of the brain has been mentioned by numerous observers. I have never encountered such calcification, and it would appear to be unusually rare.

PARASITIC DISEASE

The existence of toxoplasmic encephalomyelitis resulting from a protozoan parasite has been firmly established by the work of Wolf and Cowen[11] and their associates. The studies of Sabin[12] and of Callahan and his associates[13] suggest that this type of infection is more widespread than is generally realized. The roentgenographic changes described originally by Dyke and his co-workers[14] consist of multiple dense irregular nodules of calcification, often large in size, distributed throughout the cerebral cortex and basal ganglions. Not infrequently, curvilinear streaks of calcification may be observed in the basal ganglions (fig. 6). According to Sabin, 80 per cent of infants with the disease have hydrocephalus at birth or shortly thereafter, apparently the result of periventricular infiltration and ependymal necrosis.

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[7] Leary, T.: Subdural Hemorrhages, J. A. M. A. 103: 897-903 (Sept. 22) 1934.

[8] Köhler, A.: Roentgenology: The Borderlands of the Normal and Early Pathological in the Skiagram, ed. 2, translated by Arthur Turnbull, William Wood & Company, 1935.

[9] Scott, E., and Graves, G. O.: Tuberculoma of the Brain with a Report of Four Cases, Am. Rev. Tuberc. 27: 171-192 (Feb.) 1933.

[10] Evans, H. S., and Courville, C. B.: Calcification and Ossification in Tuberculoma of the Brain: Review of the Literature and Report of Three Cases, Arch. Surg. 36:637-659 (April) 1938.

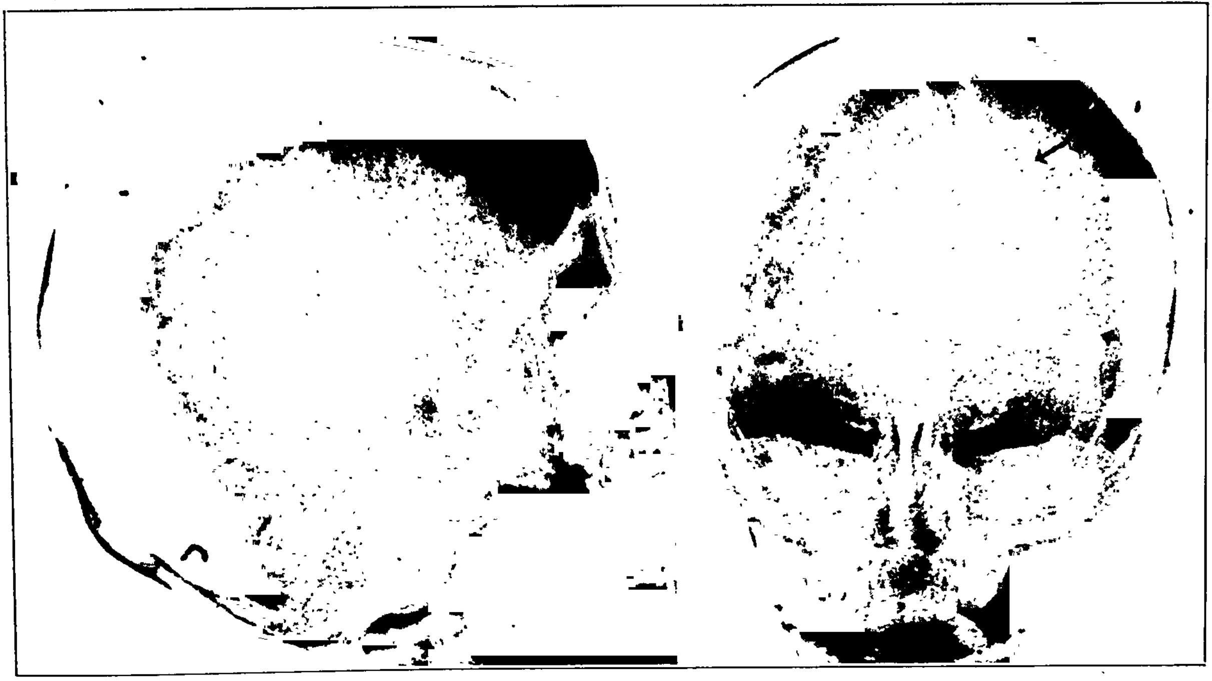

Fig. 4.—Fine diffuse granular calcification of brain subsequent to encephalitis of infancy. Toxoplasma reaction was negative.

Cysticercosis is not uncommon in foreign countries. With present means of transportation and more frequent intercontinental migration, infected persons will probably be observed with increasing frequency in this country. Roentgenographically, the lesion is revealed by the presence of multiple calcified encysted larvae in the muscles and the brain. The deposits of calcium in the muscles are fusiform in shape and vary from one to several millimeters in width and length. Within the brain, they are more globular or rounded instead of fusiform. In the majority of cases, the roentgenographic appearance is due to the deposition of calcium first within the fluid contents of the cyst and later in the degenerating remains of the parasite. Ultimately some calcium is deposited in the wall of the cyst. The scolex frequently is visible as an area of transparency unless it also has undergone calcification. In 32 of 284 cases reported by Dixon and Hargreaves,[15] roentgenologic examination revealed calcified cysts of the brain. In 2 cases, roentgenologic examination revealed the presence of calcified cerebral cysts when none could be demonstrated elsewhere in the body. The incubation period may vary from five months to twenty years, and according to MacArthur[16] the most dangerous period is from the sixth to the eighty year. Roentgenologic evidence of calcification of the cyst is rarely observed until five years after the time of infestation.

In trichinosis the calcified encysted trichinellae disseminated throughout the muscles and brain may be revealed in roentgenograms as small ovoid shadows of calcification about 1 to 2 mm. in size. Because of their small size they are not likely to be confounded with the larger shadows of cysticerci.

DEGENERATIVE LESIONS

In the presence of degenerative or atrophic lesions of the brain of congenital or developmental origin, deposits of calcium appear to

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[11] Wolf, A., and Cowen, D.: Granulomatous Encephalomeylitis Due to an Encephalitozoon (Encephalitozoic Encephalomyelitis), Bull. Neurol. Inst. New York 6:306-371 (Aug.) 1937.

[12] Sabin, A. B.: Toxoplasmic Encephalitis in Children, J. A. M. A. 116:801-807 (March 1) 1941.

[13] Callahan, W. P., Jr.; Russell, W. O., and Smith, M. G.: Human Toxoplasmosis, Medicine 25:343 (Dec.) 1946.

[14] Dyke, C. O.; Wolf, A.; Cowen, D.; Paige, B. H., and Caffey, J.: Toxoplasmic Encephalomyelitis: VIII. Significance of Roentgenographic Findings in the Diagnosis of Infantile or Congenital Toxoplasmosis, Am. J. Roentgenol. 47:830-844 (June) 1942.

[15] Dixon, H. B. F., and Hargreaves, W. H.: Cysticercosis (Taenia Solium): A Further Ten Years' Clinical Study, covering two hundred and eighty-four cases, Quart. J. Med. 13:107-121 (Oct.) 1944.

[16] MacArthur, W. P.: Cysticercosis as Seen in the British Army, with Special Reference to the Production of Epilepsy, Tr. Roy. Soc. Trop. Med. & Hyg. 27:343-357 (Dec. 14) 1933

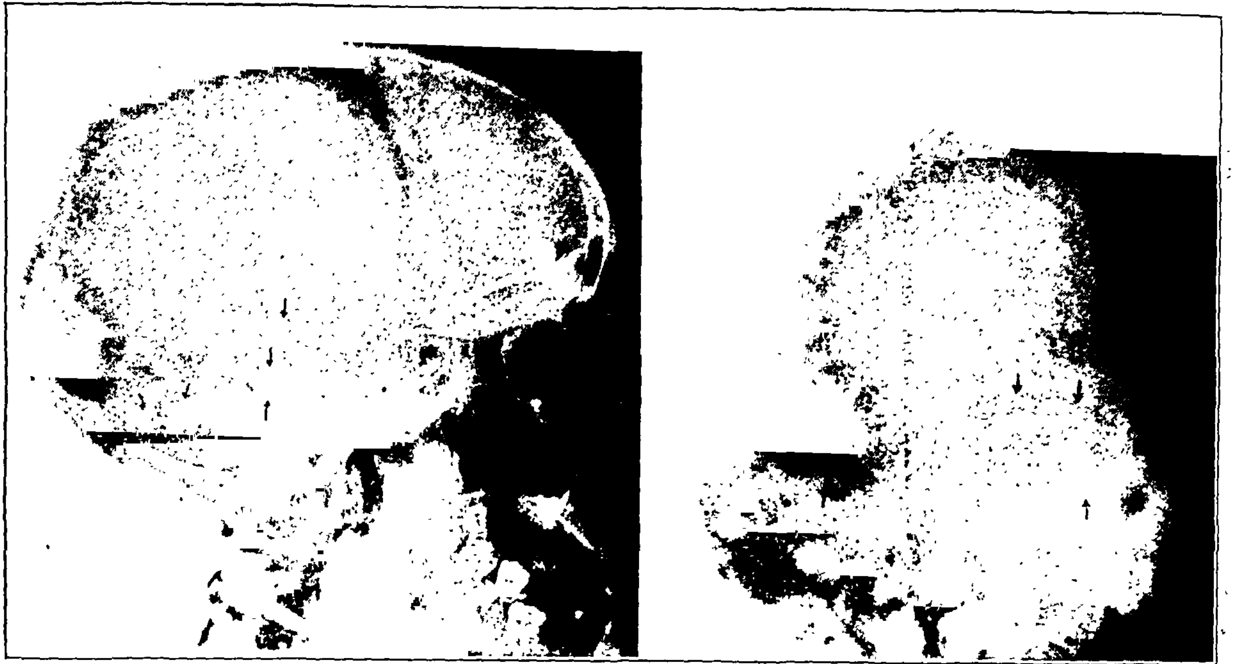

Fig. 5.—Multiple calcified tuberculomas of cerebellum and left temporal lobe.

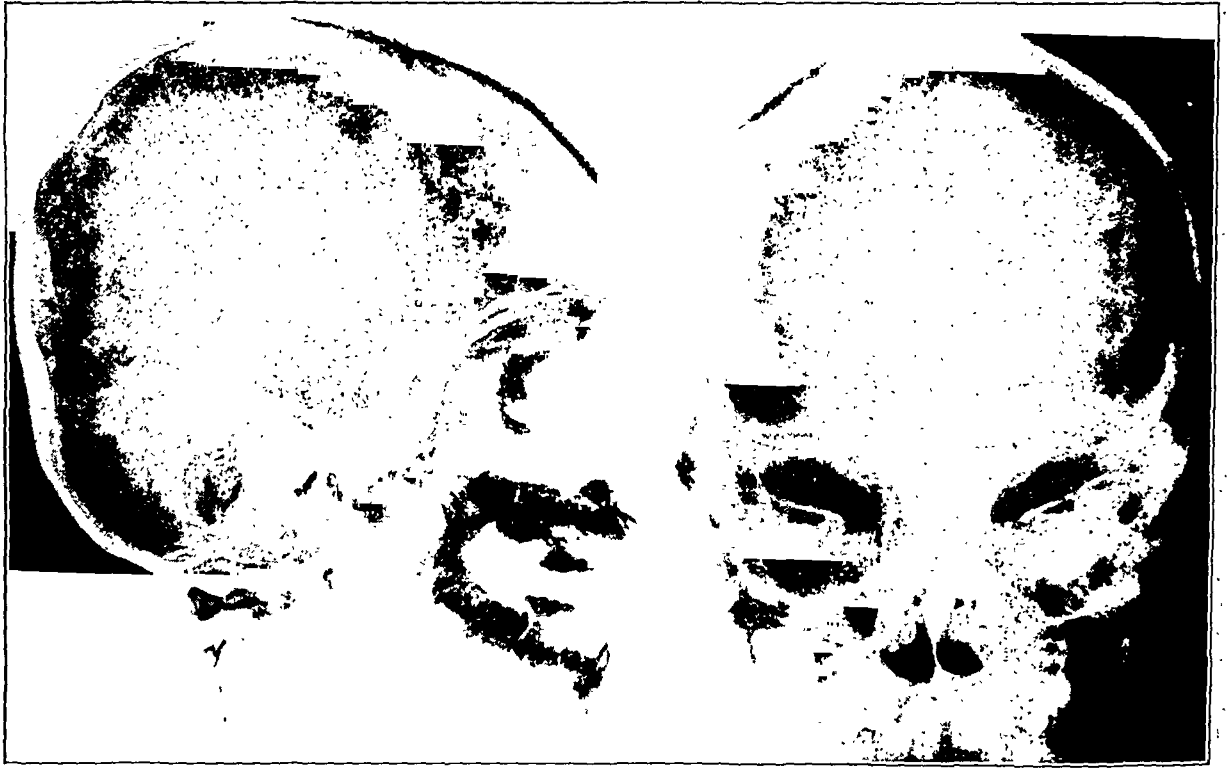

Fig. 6.—Toxoplasmosis. Multiple nodules of calcification in brain and basal ganglions. Curvilinear masses of calcium in the basal ganglions are often observed in this condition.

be laid down by the coalescence of perivascular colloid deposits in much the same manner as described by Krabbe in the presence of angioma. Roentgenographically the calcification is portrayed by a collection of irregular, convoluted shadows of increased density, corresponding to the shape of the atrophic convoluted cortex (fig. 7). Because these lesions are found in infants or small children, the overlying calvarium will reveal evidence of thickening and asymmetry owing to the atrophy of the underlying brain. If there should be an associated porencephalic cyst or collection of fluid, the overlying calvarium may be thinned and expanded.

TUBEROUS SCLEROSIS

Multiple small irregular nodules of calcium within the cortex are frequently observed in the presence of tuberous sclerosis. In my own experience, multiple small areas of calcification may also be observed symmetrically distributed in the basal ganglions. Dickerson[17] has called attention to the presence of patchy zones of hyperostosis in the diploe and internal table in this disease and has emphasized their relation to underlying tuberous nodules in the brain. The combination of such changes in the calvarium and intracranial areas of calcification would seem to be typical of this condition (fig. 8).

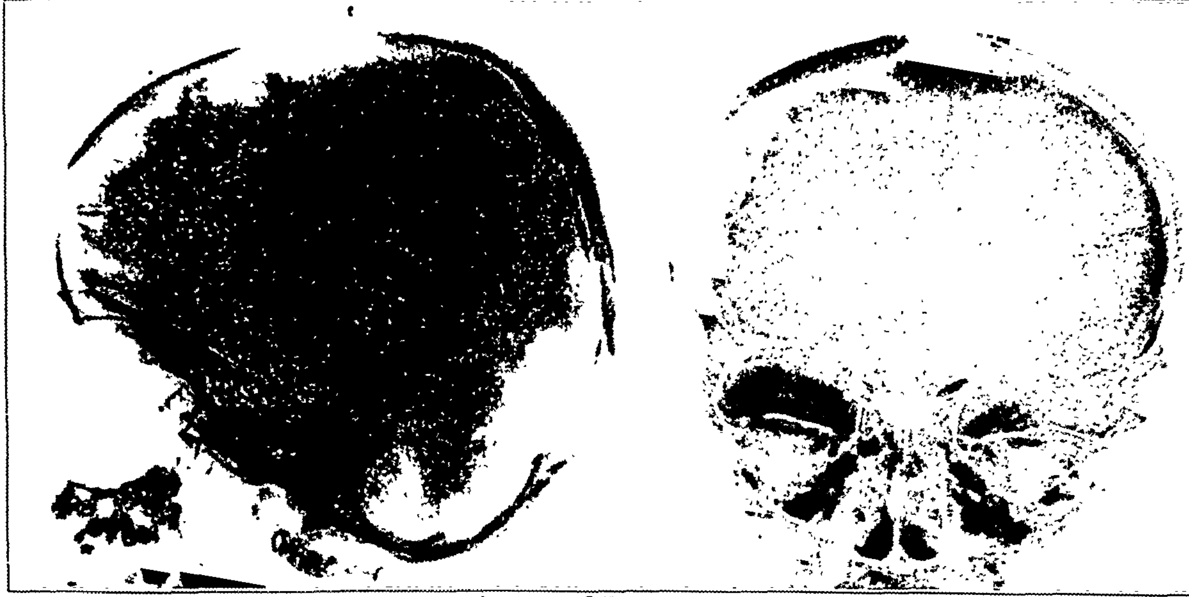

Fig. 7.—Extensive calcification of cerebral hemispheres, more pronounced on the right side, in a case of mental retardation since birth. There was no evidence of an angioma of the face or scalp. The character and distribution of the deposits of calcium are similar to those observed in the Sturge-Weber syndrome (fig. 2).

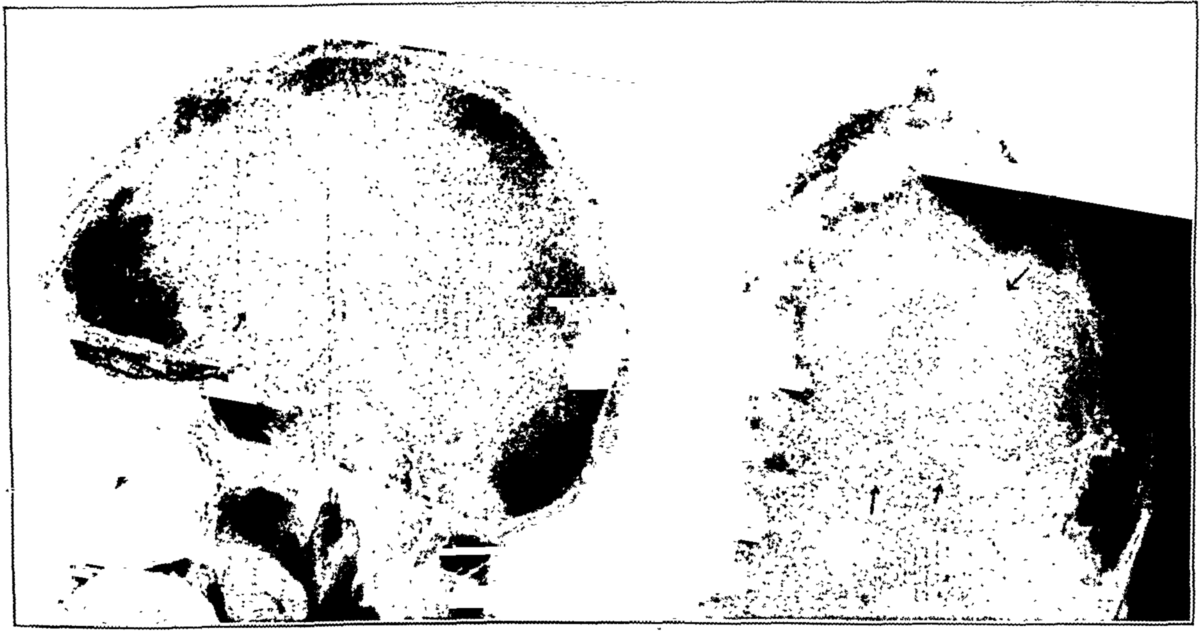

Fig. 8.—Tuberous sclerosis. Calcification of basal ganglions and left side of cerebrum and large mass of calcium in right side of cerebellum. Multiple patches of sclerosis in the calvarium.

PARATHYROID INSUFFICIENCY

To date at the Mayo Clinic, I have observed 12 cases of symmetric calcification of the cerebral basal ganglions in which there was definite clinical evidence of parathyroid insufficiency and tetany. In 1 of these cases the calcification followed a thyroidectomy at the age of 19 years and in the other 11 cases the disease was of the spontaneous type. Detailed clinical and roentgenologic data concerning these cases have been published by my colleagues and myself.[18]

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[17] Dickerson, W. W.: Characteristic Roentgenographic Changes Associated with Tuberous Sclerosis, Arch. Neurol. & Psychiat. 53: 199-204 (March) 1945.

The pathologic basis for the roentgenologic changes is one of colloid deposition in and around the finer cerebral blood vessels with subsequent calcification of the deposits, which coalesce and form vascular sheaths and concretions. This is essentially the same microscopic change as is observed in the brain in association with other conditions and is probably a manifestation of degeneration of varying degree.

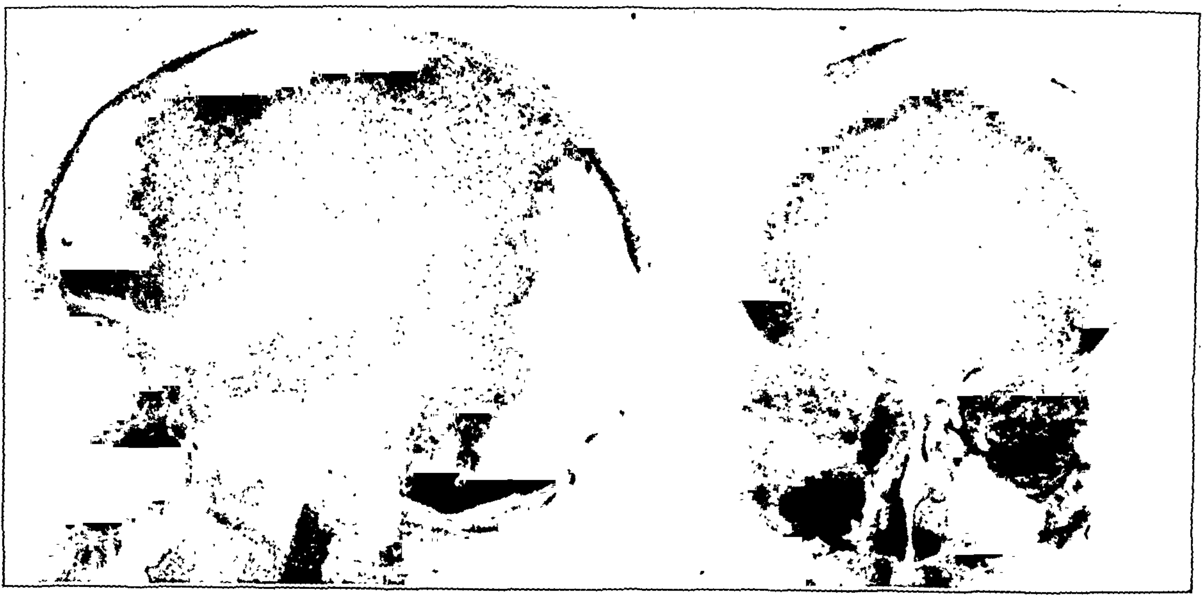

Fig. 9.—Spontaneous parathyroid insufficiency; Symmetric calcification of basal ganglions, which is commonly observed in this condition.

Symmetric calcification of the cerebral basal ganglions produces a characteristic roentgenographic appearance, and considerable variation in the degree and extent of the calcification may occur, depending on the stage of the disease at the time of the roentgenologic examination. The first roentgenographic evidence of calcification is small irregular discrete symmetrically distributed shadows of increased density in the region of the various basal ganglions, especially in the putamen and caudate nucleus (fig. 9). When the calcification is more pronounced, the irregular shadows have a wavy linear appearance. This is especially obvious in the dentate nucleus of the cerebellum and in the folds of the cerebellar hemispheres. As the masses of calcium coalesce, the shadows become larger, denser and more obvious. Coincident cerebellar calcification as well as evidence of calcification in the deeper layers of the cerebral cortex may be observed at any stage of the disease. The latter may be so marked as to simulate a vascular lesion or calcified glioma. The fact that the shadows are bilateral and symmetric is usually sufficient to exclude the possibility of tumor of the brain. Follow-up roentgenograms in cases of parathyroid insufficiency have revealed no change in the character and extent of the calcium shadows in spite of the definite clinical response to adequate calcium therapy.

Calcium deposits in the choroid plexus of the lateral ventricles may be confounded with calcification of the basal ganglions, especially in roentgenograms made in the posteroanterior projection. In cases in which diagnosis is in doubt, pneumoencephalography may be used to establish the relation of the shadows to the lateral ventricles. As mentioned previously, calcification of the basal ganglions may also occur after encephalitis and toxoplasmosis and in association with tuberour sclerosis and mental deficiency.

SUMMARY AND CONCLUSIONS

The roentgenologist should play a significant role in the identification of various conditions that exhibit intracranial calcification as part of their underlying pathologic changes. In spite of the fact that a similar microscopic distribution of calcium may be found in lesions of different cause, the gross configuration and distribution of the calcium masses as revealed in roentgenograms are frequently typical of various lesions.

ABSTRACT OF DISCUSSION

DR. EUGENE P. PENDERGRASS, Philadelphia: Dr. Camp has contributed a great deal to our knowledge on intracranial calcification. The pineal gland is calcified in many instances. I have seen it at birth. If it is at the normal position it is rarely mistaken for anything else.

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[18] Eaton, L. M.; Camp, J. D., and Love, J. G.: Symmetric Cerebral Calcification, Particularly of the Basal Ganglia, Demonstrable Roentgenographically; Calcification of the Finer Cerebral Blood Vessels, Arch. Neurol. & Psychiat. 41:921-942 (May) 1939. Eaton, L. M., and Haines, S. F.: Parathyroid Insufficiency with Symmetrical Cerebral Calcification: Report of Three Cases, in One of Which the Patient Was Treated with Dihydrotachysterol, J. A. M. A. 113:749-752 (Aug. 26) 1939. Camp, J. D.: Symmetrical Calcification of the Cerebral Basal Ganglia: Its Roentgenologic Significance in the Diagnosis of Parathyroid Insufficiency. Radiology. 49:568-577 (Nov.) 1947.

I have on one occasion misinterpreted a small shadow of calcification that was thought to be a pineal body displaced downward. At operation the calcific lesion was a rice body in a cyst of the third ventricle. Choroid calcification likewise may occur early. My associates and I have seen it as early as 4 years. Displacement may be due to contracting (atrophic) lesions and mass lesions. Calcification of the choroid may occur bilaterally or unilaterally. You will remember Dr. Camp's descriptions of symmetric calcification. One has difficulty in recognizing the cause unless one is given a clue to the diagnosis. Calcification of the falx may occur in the midline, or it may develop from either side of the falx. We have seen calcification of the internal carotid in persons aged 4 years. We have seen it in patients with hypertension. We know that it occurs in vitamin poisoning. There are so many pathologic calcifications that I hesitate to enter into that subject. I should like to call attention to calcification in porencephaly. That is another of these traumatic lesions. The intracranial calcifications that Dr. Camp showed you are unusual. He has had a number of them and they have been proved, so that there is no question about the diagnosis. They might have been thought to be tuberculomas and gliomas.

I should like to emphasize the importance of good roentgenographic technic. The slides shown by Dr. Camp illustrate beautifully what I would like to say. One should use fine focus tubes, good grids and good screens in examining the head. If a broad focus tube and poor technic are employed, calcification of lesions such as have been demonstrated here today will be missed.

DR. JOHN D. CAMP, Rochester, Minn: I have nothing to add except that I am sorry that Dr. Pendergrass did not have an opportunity to show you the slides that he showed to me last night. They portrayed excellent examples of many of the conditions which I have just shown you.

FULMINATING DERMATITIS BULLOSA MEDICAMENTOSA DUE TO "MESANTOIN"

DAVE B. RUSKIN, M.D.
Caro, Mich.

Methylphenylethyl hydantoin ("mesantoin"), one of the most recent clinically tested anticonvulsant drugs, has been credited with considerable effectiveness in the reduction and control of grand mal seizures. It appears to be somewhat less effective in the control of psychomotor attacks and seldom effective in petit mal. Most writers have attributed one or more side effects to the use of this drug. One of these discussed was the appearance in some patients of a cutaneous rash, a reaction which is also elicited with phenobarbital, diphenylhydantoin sodium ("dilantin") and trimethadione ("tridione"), the three most commonly used anticonvulsants. Eruptions due to drugs are usually pinkish or reddish, macular and of symmetric distribution, with more or less itching and burning, and may simulate any condition or disorder.[1] Because this reaction is encountered with the use of phenobarbital, diphenylhydantoin sodium and trimethadione, it is interesting to study the relationship of their chemical formulas to one another and to methylphenylethyl hydantoin. It will be noted (fig. 1), that the phenylethyl radical of phenobarbital plus the hydantoin radical of diphenylhydantoin sodium together yield the formula of a highly toxic drug, phenylethyl hydantoin ("nirvanol"), a drug used in the treatment of chorea.[2] This drug causes a macular rash, fever, eosinophilia, stupor and granulocytopenia. Further studies (fig. 1) also indicate that when the nitrogen carries a methyl group (CH^3) as a substituent, as in trimethadione, the resultant formula is that for methylphenylethyl hydantoin. Since both phenylethyl hydantoin nirvanol and trimethadione (tridione) produce reactions of the skin trimethadione only occasionally , it is not surprising that methylphenylethyl hydantoin is also observed to cause cutaneous reactions.

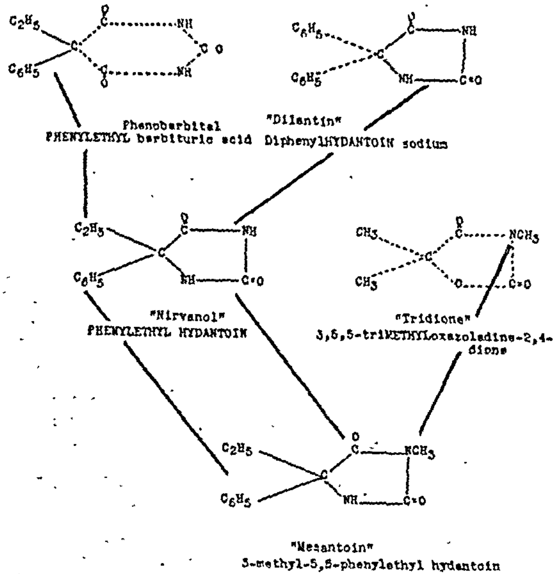

Fig. 1.—Chart showing the related formulas of anticonvulsants.

Loscalzo[3] reported a rash in 4.5 per cent of his group of patients receiving 5-phenyl-5-ethyl 3-methylhydantoin in combination with phenobarbital ("hydantal"). In all cases the reaction developed within two weeks. He reported a communication from Kozol[4] in which it was reported that virtually no rashes resulted when treatment with methylphenylethyl hydantoin was begun in small doses and the dose increased gradually. In Loscalzo's 3 patients, the rash completely disappeared in approximately ten days when treatment with the drug was discontinued. He reported having noted no effect on the blood.

From the Caro State Hospital for Epileptics, Caro, Mich., Dr. R. L. Dixon, Medical Superintendent.

[1] Sutton, R. L., and Sutton, R. L., Jr.: Diseases of the Skin, ed. 9, St. Louis, C. V. Mosby Company, 1935.

[2] Beckman, H.: Treatment in General Practice, ed. 3, Philadelphia, W. B. Saunders Company, 1938.

[3] Loscalzo, A. E.: Treatment of Epileptic Patients with a Combination of 3-Methyl-5, 5-Phenylethylhydantoin and Phenobarbital (A Preliminary Report), Nerv. & Ment. Dis. 101:537 (June) 1945.

[4] Kozol, cited by Loscalzo, A. E.: The Control of Epilepsy: An Interim Report on 3-Methyl-5, 5-Phenylethylhydantoin and Phenobarbital Therapy, J.A.M.A. 145:496 (Oct. 25) 1947.

Kozol[5] reported a rash in 10 per cent of the patients in his group taking methylphenythyl hydantoin, but by desensitizing some of them he was able to reduce this figure to 7 per cent.

Lennox [6] listed 14 per cent as having a generalized measles-like rash. In these cases, blood cell counts, at the onset and at the height of the eruption, did not reveal any abnormalities except moderate leukocytosis.

Elsewhere[7] I have reported the results of one year's administration of methylphenylethyl hydantoin to a group of 26 institutionalized patients. I indicated that (1) the occurrence of toxic reactions did not necessarily increase proportionately with the dosage and (2) toxic reactions appeared to depend more on the patient than on the drug. Of the toxic reactions, the complaint of drowsiness was the most frequent, but was independent of the dosage or the concurrent administration of phenobarbital. Only 1 patient (3.8 per cent) presented a rash, which was scarlatiniform in nature and which appeared when the patient received only 0.1 Gm. daily. This rash disappeared when treatment with the drug was discontinued and did not reappear when the patient was again receiving the drug. By starting, the second time, with a smaller dosage and raising the dosage slowly, it was eventually possible for the patient to receive 0.3 Gm. daily.

Since the completion of the one year study on the original 26 patients, the drug has become more plentiful and an increasing number of patients are gradually being added to the original group. In only 1 of these did a rash develope. Unfortunately, this rash did not present the fairly innocuous picture I might have expected from my own past experience or the experience of others. This report is, therefore, presented to serve as a word of caution against the unbridled enthusiasm which often follows the development of a new fairly successful treatment for a condition which, in the past, has been so unresponsive.

REPORT OF A CASE

The patient, an only child, was born on April 9, 1938, following a pregnancy complicated by nausea and "heartburn." The family history indicated that a parental grandmother was committed to a mental institution with a diagnosis of melancholia. Several paternal aunts were said to have had seizures. A paternal cousin was feebleminded from birth. The maternal grandmother had conculsions. A maternal aunt was committed to a mental institution with a diagnosis of dementia precox, paranoid type. The mother had convulsions during infancy.

The mother was 18 at the time of the patient's delivery, and the delivery was normal. The patient began cutting teeth at 2 months and at 1 year had a full set of molars. At 6 or 8 months, she was dropped on her head.

She had her first convulsion at 9 months. At 11 months, she was hospitalized, with a diagnosis of acute infection of the respiratory tract and convulsions. At 15 months, she began to walk, but not without difficulty. At 3 years of age she had measles. At 4 she had whooping cough and another unidentified illness associated with a rash. At this age she had the habit of masturbation, which later ceased. She was subject to frequent earaches, particularly of the left ear. Also at this age she hit her head on the cement, causing unconsciousness.

She began regular attendance at school, but was sent home because of poor adjustment. At 5 she was hospitalized for tonsillectomy. She was again hospitalized at 6, with a diagnosis of "low intelligence, behavior problem and convulsions." These convulsions had never been frequent and had usually been associated with some infection An electroencephalogram was taken at this time and the results interpreted as no. 4 abnormal (the classification range being from 1 to 5, with 5 considered grossly abnormal). Her intelligence quotient was 86, with erratic unstable personality. Roentgenograms of the skull were reported as showing no abnormalities. She was enrolled in the White Special School, Detroit, but made no adjustment, and it was impossible to allow her in a classroom for more than an hour daily. She was soon removed as uncontrollable. She would spit, kick, and tear papers of other children.

During this 12 month interval, she was followed up in a neurology clinic, and treatment with neither diphenylhydantoin sodium nor phenobarbital affected the seizure incidence or behavior. A rash and ataxia developed with either drug. Her seizures were infrequent, and her difficulties became decreasingly of a convulsive nature and increasingly on the basis of personality. She became more talkative, repetitious, destructive and unsafe if left alone or with other children. Omission in treatment of diphenylhydantoin sodium and administration of sodium bromide did not decrease the difficulties.

At 7 she was admitted to a state mental institution, where she was described as excitable, talkative, uninhibited and brutal toward others. Her activities were of a manic nature. She seemed less mature than the average 7 year-old child. She showed a severe speech defect, with inability to pronounce several letters (g, y and f) and slurring. Her intelligence quotient at this time was 66. She walked with an unsteady gait and presented constant mydriasis. Results of laboratory studies were negative.

Three months after admission she was paroled as improved, with a formal diagnosis of psychosis with convulsive disorder. She returned

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5. Kozol, H. L.: Epilepsy; Treatment with the New Drug: 3-Methyl-5, 5-Phenylethylhydantoin (Phenantoin), Am. J. Psychiat. 103:154 (Sept.) 1946.

6. Lennox, W. G.: Two New Drugs in Epilepsy Therapy, Am. J. Psychiat. 103:159 (Sept.) 1946.

7. Ruskin, D. B.: Mesantoin (3-Methyl-5, 5-Phenylethylhydantoin) in the Treatment of Epilepsy in a State Hospital, to be published.

to the White Special Hospital, but was able to attend for only a few weeks, because of her behavior.

Two months after parole from the mental institution she was admitted to the Caro State Hospital.

Physical examination on admission disclosed a 7 year old girl of normal height and slightly underweight. Her mentality was estimated at approximately 4 years. She was overproductive and uninhibited. Complete physical and neurologic examinations failed to reveal any abnormalities. Roentgenograms of the chest were normal. Serologic reactions were negative (Kahn). Urinalysis revealed no abnormalities. A complete blood cell count yielded the following observations: 4,520,000 red blood cells, 8,700 white blood cells, 81 per cent hemoglobin (12.8 Gm.), 54 per cent segmented polymorphonuclear cells, 14 per cent stab forms, 29 per cent lymphocytes, 1 per cent monocytes, 1 per cent juvenile cells and 1 per cent basophils. The spinal fluid was under normal pressure and clear, with negative reactions to globulin and Kahn tests. The colloidal gold curve was 0000000000. Examinations of the stool revealed no bacilli of the typhoid dysentery type. Psychologic tests revealed an intelligence quotient of 72 by the Revised Stanford Binet (form L) and 73 by the Goodenough tests, and she obtained a performance rating of 14 in the Metropolitan Readiness Test.

Two months following her admission the school reported that she was uncooperative and unable to follow even simple instructions. However, there was some indication that she was more stable than on admission. An electroencephalogram revealed a grossly abnormal record, with petit mal variant and psychomotor components, and amplitude asymmetry.

She had one grand mal seizure during the first six months of her hospitalization. Shortly after this, she went home on vacation. While at home she had three seizures in an interval of less than twenty-four hours. These seizures occurred ten days after her return home and were followed immediately by vomiting and acute pharyngitis. The latter responded to treatment with sulfonamide drugs. However, a rash developed from this drug. Five days after the onset she presented a rash of measles. She was returned to the hospital two months later. After her return in 1947, she had three seizures, the last one occurring simultaneously with the onset of chickenpox. On Jan. 31, 1948, she had two grand mal seizures. Her behavior continued to be a problem both in the cottage and in the school. She was given methylphenylethyl hydantoin, 0.3 Gm. daily, beginning February 3. On February 14 a rash developed, characterized by maculas of pinhead size on the face and neck. She was feeling well. There was no erythema of the throat, no spots on the mucous membranes of the mouth or throat and no cervical adenitis. Her temperature was normal. On the next day there was a considerable increase in the number and size of erythematous patches, involving the face, neck, abdomen, thigh and back and, to some extent, the legs and forearms. There was a moderate amount of injection of the conjunctivas. There was no change from normal in the appearance of the buccal mucosa, but the pharynx was slightly hyperemic. The temperature was 100 F. She did not appear ill otherwise and ate heartily. Treatment with methylphenylethyl hydantoin was abruptly discontinued.

Two days after the rash developed, she was hospitalized with a temperature of 105 F. She appeared prostrated and was extremely uncomfortable from the itching. The face was swollen. The eruption was coalescing, and large blebs developed at the mucocutaneous junction on the lower lip. All cutaneous lesions were now elevated, palpable and beginning to form blebs and bullae. These bullae coalesced, so that large areas resembled an extensive second degree burn superimposed on a red maculopapular rash. Ulcers developed on the buccal mucosa. The photographs in figure 2 represent the condition as of February 17, two weeks after the start of treatment with the drug and three days after discontinuance. She received penicillin, 40,000 units about every three hours, ½ grain of codeine as needed, 4 cat units of a digitalis preparation ("digifolin"), oxygen by tent and fluids by mouth at the time of hospitalization. This treatment

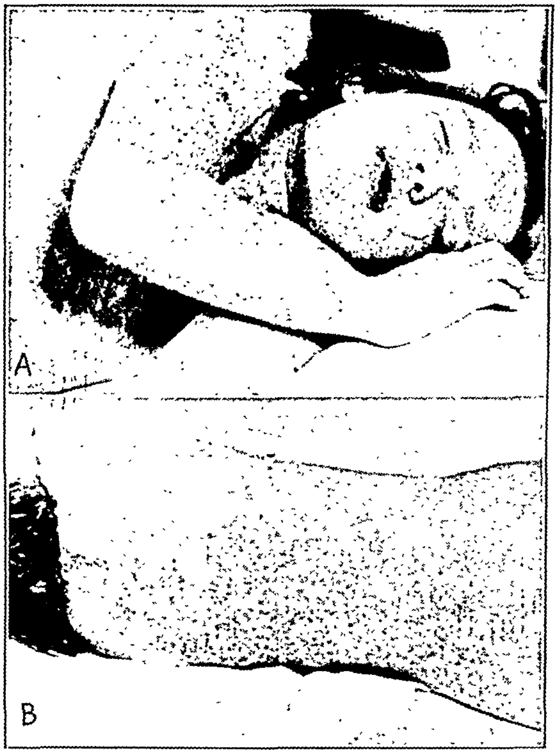

Fig. 2.—Photographs taken on the third day of the rash. *A*, demonstration of both broken and unbroken blisters on the face and the trunk, involvement of the lips and elevated nature of the right forearm. *B*, involvement of the posterior portion of the trunk, with a collapsed blister between the scapulas.

was continued daily, except that the digitalis preparation was reduced in dosage to 2 cat units. She became distended on the second day of hospitalization, as a result of paralytic ileus.

Attempts were made to administer fluids and plasma intravenously, but this had to be discarded as so much skin was involved in the reaction that it was impossible to locate a vein. The eyes and lips were treated prophylactically. Enemas failed to reduce the distension, and a neostigmine preparation, which was administered every three hours, was used to combat the ileus. An attempt to cut down on a vein, under local anesthesia, met with failure, as the veins that were encountered collapsed and failed to remain patent.

Fluids were administered subcutaneously until the fourth day of hospitalization, at which time the ileus had cleared and she was able to take limited amounts of fluid by mouth. Her general condition on that day was no worse than on the second day of hospitalization. Figure 3 indicates the condition of the skin. Even the soles of the feet were involved with rash and blisters. It was necessary, on the second day, to use morphine compound (1/6 grain) instead of codeine to relieve the pain and restlessness. A week after hospitalization, the patient had lost the superficial layer of the skin of two thirds of the body. During the first week of hospitalization decided leukocytosis developed. There was originally a relative as well as an absolute increase of stab nuclear neutrophils. Within a few days there was a progressive drop in the total white cell count, with a drop of mature neutrophils to 8 per cent and stab nuclear neutrophils to 30 per cent and a real as well as relative increase of lymphocytes to 59 per cent. The mature neutrophils continued to remain at a low level; there was a temporary secondary rise of the stab nuclear cells and a gradual decline in the lymphocytes. Greater areas of the skin continued to become involved. Treatment of the skin became mainly a problem of arresting the loss of serum, as in a burn. Secondary leukocytosis developed, followed by a second drop in the white cell count and a terminal outpouring into the blood stream of juvenile forms of the neutrophilic cell (fig. 4). With this last change in the blood, there was also a decrease in red blood cells and hemoglobin. With no apparent change in her condition otherwise, she gasped and died. Permission for autopsy could not be obtained. The patient had one seizure on the day that treatment with methylphenylethyl hydantoin was discontinued and none from then to the time of her death, February 27.

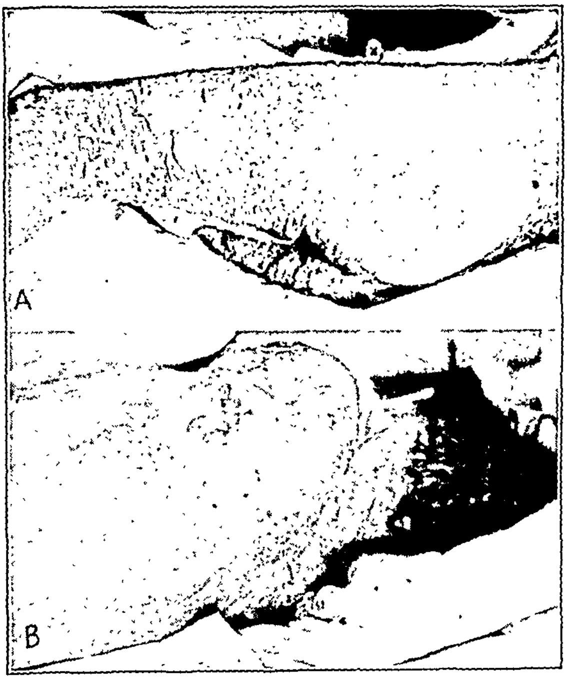

Fig. 3.—Photographs taken on the fifth day of the rash. *A*, progression from the rash to the blistered condition demonstrated here. *B*, destruction and peeling of the corium.

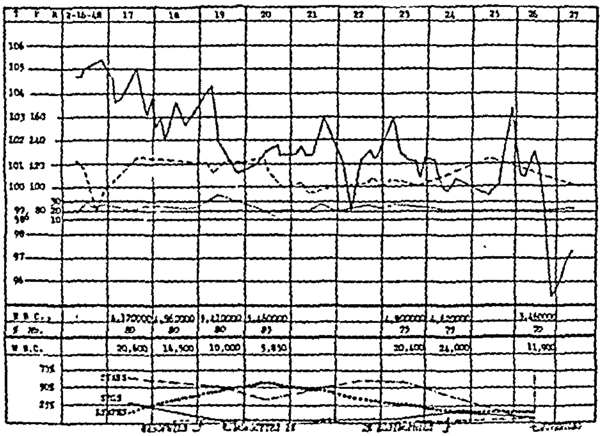

Fig. 4.—Chart showing the temperature, pulse rate, respirations and results of studies of the blood during the period of illness.

SUMMARY

A girl, aged 10, had a history of repeated manifestations of cutaneous reactions to various drugs, including anticonvulsants. After having taken methylphenylethyl hydantoin ("mesantoin"), 0.3 Gm. daily for twelve days, a rash developed, with changes in the blood picture. The clinical course led rapidly to her death.

CONCLUSIONS

Methylphenylethyl hydantoin ("mesantoin"), which has proved to be useful as an anticonvulsant in epilepsy, may cause serious side effects, among which are reactions of the skin and changes in the blood. Although the rashes are usually benign and respond quickly to cessation of treatment with the drug, it is possible for this complication to be of a serious nature. It is necessary to use extreme caution in treatment with this drug, especially if the patient has shown earlier sensitivity of the skin. This complication does not necessarily depend on the administration of a large dosage.

All patients should receive examinations of the blood before and during treatment with this drug. The examination of the white blood cells and a blood smear are as important (if not more so) as an examination of the red blood cells and the estimation of hemoglobin. The physician should inquire into the possibility of previous changes in the blood, whether or not the changes may have been the result of ingestion of other drugs. Once it has been determined that methylphenylethyl hydantoin should be used, it should be administered in small initial doses and increases should be made slowly and by small increments. This cannot be stressed too strongly. All patients chosen to receive this drug should be cautioned to discontinue its use as soon as side effects are experienced and to report this to their physicians.

Clinical Notes, Suggestions and New Instruments

MANAGEMENT OF GASTRIC HEMORRHAGE USING TOPICAL THROMBIN

T. M. ROGERS, M. D.
Sterling, Colo.

The most common complication of peptic ulcer is hemorrhage. In persons over 40, because of the rigidity of the arterial walls, severe bleeding is more common. The mortality in this age group is eight times that of those under 40. The mortality of those whose hemoglobin is below 9.4 Gm. (60 per cent) is four times that of those whose hemoglobin is above 60 per cent.[1]

Thrombin is a sterile, standardized, hemostatic powder obtained from bovine plasma, and was originally intended to contract capillary bleeding either as a dry powder or in sterile isotonic solution. Its action depends on its ability to clot fibrinogen, thus forming a natural clot which seals the capillary ends. It is supplied in sterile packages of ampules containing 5,000 Iowa units.[2]

REPORT OF CASES

CASE 1.—On March 15, 1947, at about 3 a.m., A.J., a business man aged 64, was found in a semicoma lying on the bathroom floor of his home in a pool of vomited blood. Two days previously, he recalled later, he had become nauseated and "fainted" after passing a large tarry stool. He denied any recent gastric pain or distress. A local physician was called and morphine was given subcutaneously; he was restricted from fluids or food and kept at bed rest. During the day he had a large coffee ground vomitus and in the evening of the following day he was referred to the hospital. In 1934, he recalled later, he was placed on an ulcer regimen for four months, after roentgen examination during the course of investigation for epigastric distress. Physical examination showed a moderately ill man appearing weak with drawn facies and a subicteric tint to the skin and sclera. The skin and mucous membranes were dry with evidence of dried blood about the lips. Heart and lungs were normal, blood pressure was 110 systolic and 60 diastolic; the pulse rate was 72. The abdomen was distended and slightly tympanitic, with tenderness in the upper right quadrant. Except for hyperactive reflexes and tarry residue in the rectum, the examination gave normal results, urine was normal, hemoglobin 9.4 Gm., red blood cell count 3,050,000, white blood cell count 6,000, with 75 per cent segmented cells.

Because of the relatively good condition of the patient at this time it was felt that conservatism was the course to follow, and he was placed on a modified Andresen regimen, consisting of hourly feedings of skimmed milk and gelatin solution, with hard candy between feedings. Meperidine hydrochloride and barbiturates were administered freely for restlessness and pain. During the afternoon of the following day he became extremely faint, vomited a large amount of bright red blood and chilled; the pulse became rapid and irregular as he showed signs of air hunger and hemorrhage. The hemoglobin dropped to 6.3 Gm., the red blood cell count dropped to 2,650,000 and the white blood cell count rose to 10,000. In spite of vitamin K, liver extract, epinephrine orally, sedation, subcutaneous administration of dextrose and isotonic solution of sodium chloride with human blood plasma, and blood transfusion his condition became more precarious with each succeeding day. On March 20, 1947, the red blood count dropped to 1,800,000, the temperature rose to 103.6 F., the pulse rate to 140 and the respiration rate to 140. He was irrational, confused, noisy and uncooperative. Each transfusion appeared to initiate bright red vomitus and large involuntary tarry stools. In desperation, "pentothal sodium" was given intravenously in a 10 per cent solution and repeated as necessary. This was followed by short periods of deep sleep with quietness and rest. The pulse and respiration rate and temperature dropped, and he became more rational. Later this was administered into the blood transfusion tubing, and a more prolonged and lighter anesthesia resulted. Just at the time that my associates and I felt that we were gaining, on the afternoon of the fifth hospital day, he showed more signs of hemorrhage and within an hour vomited a large amount of bright red blood and passed several blood red stools. With the patient practically moribund we mixed 10,000 units of thrombin with 2.5 cc. of isotonic sodium chloride solution and administered it orally. From this time on there was a gradual but steady improvement without hematemesis and with only an occasional tarry stool. The usual ulcer type of regimen with supportive treatment and the continued use of thrombin orally, three doses daily for five days, and "pentothal sodium" intravenously, as needed, resulted in steady progressive improvenent. On the seventeenth hospital day he was up and out of bed. He was discharged to his home on the twenty-seventh day. Hemoglobin had returned to 10,9 Gm. and red blood cell count to 3,500,000.

During the early part of his hospitalization we felt that we were dealing with an ulceration into a sclerotic large blood vessel. We were more than once tempted to resort to surgery, but with statistics revealing increased mortality, we continued to follow the so-called conservative course. Topical trombin having been used to stop bleeding in certain previous operative procedures, a try here proved to be of definite advantage at a critical period.

Subsequently, as the strength, general condition and blood count improved, a roentgen examination on May 1, 1947 revealed a healing prepyloric ulcer. On May 5, 1947, a posterior gastroenterostomy was performed. A dense scar was noted in the prepyloric area. Recovery was uneventful, except for peripheral neuritis of his left arm, which is slowly diminishing with large doses of thiamine hydrochloride and physical therapy. While on a modified bland diet he is carrying out his normal activities. There has been no return of symptoms.

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[1] Pelner, L.: Gastroenterology in General Practice, Springfield, Ill., Charles C Thomas, Publisher, 1946, p. 39.

[2] Parke-Davis Company. An Iowa unit is that amount of thrombin to clot 1 cc. of standard fibrinogen in fifteen seconds.

Case 2.—J.G., a student aged 16 years, was admitted via ambulance to the hospital on Sept. 16, 1947, after a large bloody emesis two hours previously. On arrival at the hospital he vomited about 2 cups of dark brown blood. Three weeks previously a diagnosis of rheumatic fever had been made, and he was given moderately large doses of acetylsalicylic acid. For three days before admission he gave rather indefinite symptoms of gastric distress one and a half to two hours after meals. Physical examination revealed an acutely ill, apprehensive lad, with a rapid, thready pulse; a mild systolic murmur was heard at the apex and in the left axillary region. There was a definite midepigastric tenderness. Complete blood cell count taken immediately revealed 3,050,000 red cells, 11,000 white cells and hemoglobin of 9.4 Gm. Thrombin, 10,000 units in an isotonic solution, was given by mouth that evening and repeated three times the following day. A modified Andresen diet was given. Recovery was prompt and uneventful. There being no further evidence of hemorrhage, he was discharged September 28 on a modified ulcer diet. To date, Dec. 4, 1947 he has had no recurrence of bleeding or gastric distress. Salicylates are given, enteric coated. For reasons best known to his parents, roentgen examination was refused.

SUMMARY

Two cases of gastric hemorrhage in which there was dramatic response to orally administered topical thrombin was reported, in 1 of which there was a gastric hemorrhage in a 64 year old man to the extent that he was nearly exsanguinated. This was proved to b due to a peptic ulcer eroding into a large blood vessel. The second case was in a youth aged 16 who had two moderate sized gastric hemorrhages which were due to acute gastritis. Both patients responded rapidly to orally administered topical thrombin.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following reports. Howard A. Carter, *Secretary.*

MICROWAVE RADIATIONS

Heating of Human and Animal Tissues by Means of High Frequency Current with Wavelength of Twelve Centimeters (The Microtherm)

STAFFORD L. OSBORNE, Ph.D.
and
JESSE N. FREDERICK, M.S.
Chicago

Radar was made possible by development of the magnetron oscillator tube. Radar was one of the closely guarded secrets during the war. Now, with the ending of hostilities, its field of usefulness has been extended into the field of medicine. The Raytheon microtherm, which generates energy in a continuous wave, air-cooled magnetron oscillator tube, is the first generator of this type to be developed for the heating of human tissues. The microtherm operates at a frequency of 2,400 to 2,500 megacycles, or at a wavelength of approximately 12 cm. with a maximum power output of 125 watts. The energy is applied to the patient by means of a director (fig. 1). The entire radio-frequency circuit consists of the magnetron oscillating tube with a coaxial cable connected to a director.

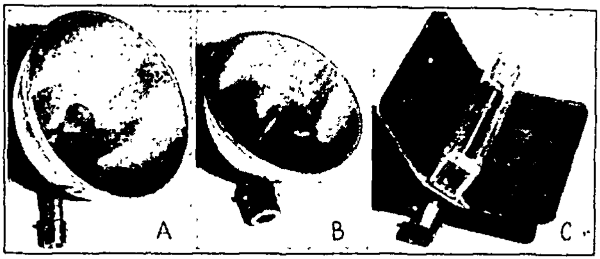

Fig. 1.—Types of directors: *A*, hemispherical, 6 inches in diameter; *B* hemispherical, 4 inches in diameter, and *C*, rectangular

This investigation was undertaken to determine whether high frequency current of this magnitude would heat living tissues to a temperature of 104 F., at a depth of 2 inches (5.08 cm.). It was also necessary to learn whether the heat gradient as the result of treatment was normal, that is, a decreasing temperature from superficial to the deeper underlying tissues, or whether there was a reversal of this normal heat gradient. The Council on Physical Medicine of the American Medical Association loaned a Raytheon microtherm to make these studies possible. The following experiments were undertaken:

1. The thighs of dogs were subjected to the high frequency energy. Temperature measurements were taken at a depth of ½, 1, 1½ and 2 inches (1.27, 2.54, 3.81 and 5.08 cm.) from the surface to secure the heat gradient from the surface to a depth of 2 inches (5.08 cm.).
2. The eyes of dogs were exposed to the high frequency energy. Temperature measurements of the vitreous humor of the eye were taken. The eyes were examined for evidence of damage.
3. The frontal sinus of the dog was subjected to the high frequency field. Temperature measurements were taken within the frontal sinus cavity.
4. The thighs of human subjects were treated and temperatures recorded at a depth of approximately 2 inches.

METHODS

All temperatures were measured with thermocouples made of constantan and copper wires (28 gage Leeds and Northrup double cotton covered and enameled) soldered into the tip of a 16 gage lumbar puncture hypodermic needle. The couples were connected to a potentiometer of requisite sensitivity. For the animal work, five hypodermic needle thermocouples and one rectal thermocouple were connected by means of a switch box to the potentiometer. The couples were calibrated against a thermometer calibrated by the Bureau of Standards with scale divisions in 0.1 degree Fahrenheit. Calibration tests indicated that the potentiometer and thermocouple combinations were accurate to within ± 0.2 degree F. The thermocouples were removed from the field of microwave emanation during the heating. To conform to general clinical practice, microwaves were applied for twenty minutes.

The Raytheon microtherm was used for all experiments. Radio waves of 12.2 cm. length were channeled through a coaxial cable to a director. From the director the waves were beamed onto the surface to be heated. Two hemispherical directors, one 4 inches (10.16 cm.) and the other 6 inches (15.24 cm.) in diameter, and a rectangular director were used.

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From the Departments of Physical Medicine and Physiology, Northwestern University Medical School.

This study was made possible by a grant from the Council on Physical Medicine of the American Medical Association.

The hemispherical directors produced circular surface-heating patterns with maximum heating approximately ½ inch (1.27 cm.) inside the outer circumference of the director. The rectangular director produced an elliptical surface-heating pattern with maximum heating at the center. All temperatures were taken within the area of maximum heating.

1. *Leg Muscle of the Dog.*—Fourteen experiments were carried out on animals under anesthesia with pentobarbital sodium. The hair was clipped from the lateral aspect of the thigh, and thermocouples were inserted within an area 1 inch (2.54 cm.) square posterior to the femur. Temperature measurements were made after a suitable control period preceding and following each treatment. Skin temperatures were omitted because they were considered unreliable. Subcutaneous temperatures were taken within twenty seconds after the cessation of heating. Temperatures were then taken in the following order and at the following depths: ½, 1, 1½ and 2 inches (1.27, 2.54, 3.81 and 5.08 cm.). The entire procedure was completed within 1½ minutes after the heating was stopped.

2. *Eye of the Dog.*—Seven treatments (exposure of the eyes to the high frequency energy) were given on "acute" animals and six treatments on 1 "chronic" animal. On 1 "acute" animal the temperatures of the vitreous body of the two normal eyes were compared and found to be within 0.2 degree Fahrenheit of each other. In the acute animals control temperatures were taken in the vitreous body of one eye and the other eye was treated. Final temperatures were taken in the vitreous body of the treated eye. One animal received a series of six treatments on the left eye over a period of three weeks. Each treatment was given under anesthesia with pentobarbital sodium. Temperatures were not taken, but the treated eye was studied with an ophthalmoscope before and after each treatment. The temperature reached in the "chronic animal was between 105 and 106 F., based on temperatures obtained in acute animals receiving similar treatment. All treatments in the "acute" and "chronic animals were given with the rectangular director at a spacing of 2 inches (5.08 cm.). Rectal temperatures were taken before and after each treatment.

3. *Frontal Sinus of the Dog.*—Six experiments were carried out on dogs under anesthesia with pentobarbital sodium. Control temperatures were taken on the sinus to be treated by inserting the thermocouple through the medial end of the supraorbital border of the frontal bone into the cavity of the sinus. The rectangular director was used at a spacing of 2 inches (5.08 cm.).

RESULTS

1. *Leg Muscles of the Dog.*—The average thigh temperature for ten experiments using a 6 inch (15.24 cm.) director placed at a skin-source distance of 1 inch (2.54 cm.) is recorded in table 1.

The average thigh temperature secured on 3 animals by using the 6 inch (15.24 cm.) director but at a 2 inch (5.08 cm.) skin-source distance is given in table 2.

TABLE 1.—*Average Thigh Temperature for Ten Experiments (Six Inch Director at a Skin-Source Distance of One Inch)*

Depth of Thermocouple	Temperature F. Before	After	Maximum
Subcutaneous	95.7	108.0	112.7
½ inch	97.4	107.1	
1 inch	99.1	106.3	
1½ inches	100.4	105.1	
2 inches	100.4	104.1	106.1
Rectal	102.2	102.4	

The temperature difference between the subcutaneous and 1 inch (2.54 cm.) level showed more variation among individual experiments than did the difference between the 1 inch (2.54 cm.) and 2 inch (5.08 cm.) levels. In one experiment the animal was exposed to a strong breeze during treatment. The final temperatures showed an increase from the subcutaneous level to a depth of 1½ inches (3.81 cm.), as shown in table 3.

Another unusual situation was encountered in one single experiment. The final temperature at a depth of 1½ inches (3.81 cm.) was 107.3 F., while at the 1 inch (2.54 cm.) depth the temperature was only 106.6 F. At autopsy the thermocouple at the 1½ inch (3.81 cm.) level was found to be embedded in a mass of fat.

TABLE 2.—*Average Thigh Temperature in Three Experiments (Six Inch Director at Skin-Source Distance of Two Inches)*

Depth of Thermocouple	Temperature F. Before	After
Subcutaneous	95.9	107.7
½ inch	98.2	106.6
1 inch	98.8	106.2
1½ inches	99.6	103.8
2 inches	99.4	103.2
Rectal	101.5	101.5

TABLE 3.—*Increase in Temperature from Subcutaneous Level to Depth of Two Inches*

Final subcutaneous temperature	100.8 F.
Final temperature at depth of ½ inch	104.4
Final temperature at depth of 1 inch	105.1
Final temperature at depth of 1½ inches	107.1
Final temperature at depth of 2 inches	104.4

The average thigh temperatures in four experiments with the smaller 4 inch (10.16 cm.) director, used at a skin-source distance of 2 inches (5.08 cm.) and directed along the anterior border of the thigh, are recorded in table 4.

In two of these experiments the animal received burns along the anterior border of both thighs. The burned areas sloughed to a depth of approximately ½ inch (1.27 cm.) five days later, and the lesion required six weeks to heal. Figure 2 shows a typical cooling curve for subcutaneous tissues and tissues heated at a depth of 2 inches (5.08 cm.).

TABLE 4.—*Average Thigh Temperatures of Four Experiments (Four Inch Director at Skin-Source Distance of Two Inches)*

	Temperature F. Before	After
Subcutaneous	94.5	111.0
Depth of 2 inches	97.8	103.3
Rectal	102.2	102.7

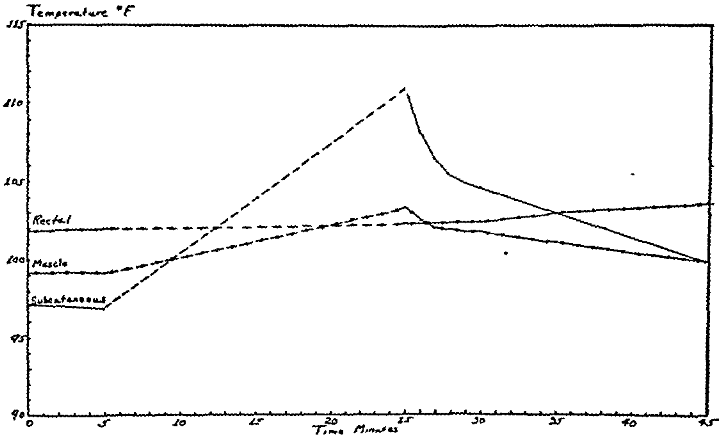

Fig. 2.—Typical cooling curves for subcutaneous tissue and muscle at a depth of 2 inches

2. *Eye of the Dog.*—The average temperatures of the vitreous body of the eye for seven acute experiments are recorded in table 5. The rectangular director was placed at a 2 inch (5.08 cm.) skin-source distance from

the eye. Treatment was given for a period of twenty minutes with the generator set for 60 to 80 per cent of maximum output. Figure 3 shows the cooling curve for the vitreous body.

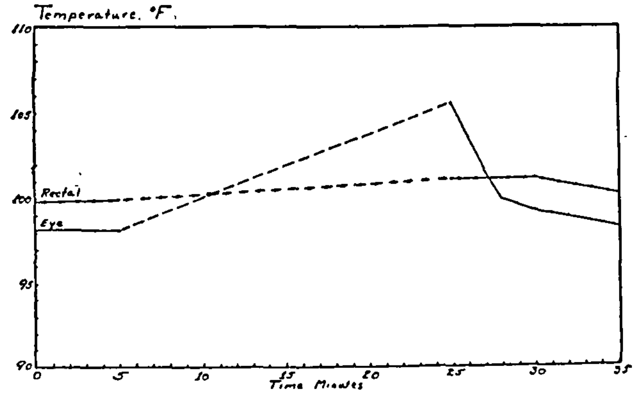

Fig. 3.—Typical cooling curve for the eye.

The left eye of 1 animal received six treatments. Inasmuch as the average final temperature of the acute eye experiments was 105.8 F., the assumption has been made that the final temperature of the chronic animal should be approximately 105.8 F. since all experiments were run under identical conditions. Following treatment there was no evidence of damage to the retina and no enlargement of the retinal vessels. There was increased redness of the conjunctiva, which disappeared a short time after cessation of treatment. There was no damage to tissues surrounding the eye in either acute or chronic dogs.

Table 5.—*Average Temperatures of Vitreous for Seven Acute Experiments (Rectangular Director at Skin-Source Distance of Two Inches)*

	Temperature F.		
	Before	After	Maximum
Vitreous body	98.8	105.8	112.2
Rectal	100.3	101.3	

3. *Frontal Sinus of the Dog.*—The average temperatures of the six experiments on the frontal sinus are found in table 6. The rectangular director was placed at a 2 inch (5.08 cm.) skin-source distance from the sinus. Figure 4 gives a typical cooling curve of the frontal sinus following treatment.

Table 6.—*Average Temperature of Frontal Sinus in Six Experiments (Rectangular Director at Skin-Source Distance of Two Inches)*

	Temperature F		
	Before	After	Maximum
Frontal sinus	95.1	105.1	106.9
Rectal	101.2	101.9	

4. *The Human Thigh.*—The average thigh temperatures for the six experiments performed on each of the 4 subjects were as follows: subject 1, 105.1 F.; subject 2, 103.5 F.; subject 3, 104.2 F., and subject 4, 103.9 F.

The average for the total of twenty-four experiments was 104.2 F. One experiment was terminated at ten minutes due to a pronounced erythema around the cannula. This was found to be due to moisture which had collected under the gauze covering the cannula. On subject 4 a superficial blister ½ inch (1.27 cm.) square was produced approximately 2 inches (5.08 cm.) from the cannula. Within the next ten days the blister dried and disappeared with no discomfort to the patient. In all experiments erythema was at a minimum when compared to the erythema produced by the usual short wave diathermy treatment.

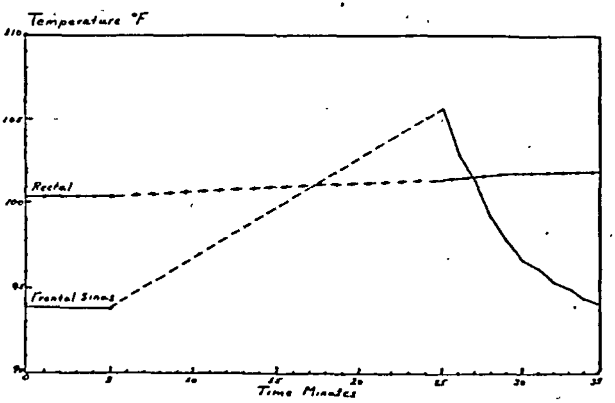

Fig. 4.—Typical cooling curve for the frontal sinus.

COMMENT

The question of ill effects from exposure to radar waves has been investigated by Lidman and Cohen,[1] Daily[2] and Fallis.[3] Lidman and Cohen could find no evidence of stimulation or depression of erythropoietic and leukopoietic systems of army personnel exposed to radiation from standard radar sets for periods ranging from a few months to nine years. Daily studied navy personnel who were exposed for several hours per day for periods up to nine years. He found no hematologic changes, no premature alopecia, no dermatologic manifestations and no clinical evidence of damage to reproductive tissues. Several subjects complained of headaches after exposure to radar waves for several hours. The headaches always disappeared spontaneously within one half to one hour after cessation of exposure. Fallis exposed guinea pigs to radiations from the air-borne unit, SCR-517, which has an output of 45 kilowatts. The animals were exposed for three hours daily for eight weeks at a distance of 2 feet (60.96 cm.). He noted no effect on appearance, growth, body temperature or reproduction and no histologic changes.

The microtherm unit used in our experiments has a maximum output of 125 watts. The output of the SCR-517 used by Fallis is three hundred and sixty times the maximum output of the microtherm. In contrast to the foregoing experiments we exposed local areas for twenty minute periods. In view of the evidence produced by these investigators it would seem *improbable that any ill effects should result from the limited exposure used in clinical practice.*

1. *Leg Muscles of the Dog.*—The heat produced in living animal tissues by exposure to high frequency radiations of 12 cm. wavelength has been studied by Krusen, Herrick, Leden and Wakim.[4] They recorded

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[1] Lidman, B. I., and Cohen, C.: Effect of Radar Emanations of the Hematopoietic System, Air Surgeon's Bull. **2**: 448-449, 1945.

[2] Daily, L. E.: A Clinical Study of the Results of Exposure of Laboratory Personnel to Radar and to High Frequency Radio, U. S. Nav. M. Bull. **41**: 1052-1056, 1943.

[3] Fallis, R. H., Jr.: Studies on the Biological Effect of High Frequency Radio Waves (Radar), Am. J. Physiol. **147**: 281-283, 1946.

[4] Krusen, F. H.; Herrick, J. F.; Leden, U., and Wakim, K. G.: [illegible] Preliminary Report of Experimental Studies of the [illegible] ("Radar") in Living Tissues, Proc. Staff [illegible] 4, 1947.

temperatures of the skin surface, of subcutaneous tissue, of superficial (1.9 cm.) layer of muscle and deep (3 cm.) layer of muscle. In these experiments they have shown a positive temperature gradient from the skin surface to the deep layer of muscle. If radiations of this magnitude produce an increasing temperature from the surface to the deeper layers, a burn could occur in the deeper layers although the surface was quite unharmed.

On the other hand our experiments show a negative temperature gradient from the subcutaneous level to a depth of 2 inches (5.08 cm.) except in the one experiment cited. When the experiment was repeated and the animal was protected from the breeze, the final temperatures showed the usual negative gradient. In one other animal we observed in three successive experiments that the final temperature at a depth of 1½ inches (3.81 cm.) was greater than the final temperature at 1 inch (2.54 cm.). At autopsy it was found that the cannula at this depth was embedded in a mass of fat. In a report from the Raytheon Laboratories[5] it was shown that in nonliving tissue fat absorbs energy of this wavelength more readily than does lean meat. From this one experiment it appears that this might also hold true for living tissues. Further experimentation is definitely needed.

2. *Eye of the Dog.*—Puntenney and Osborne[6] used a 6 meter wave diathermy generator and applied the high frequency current by means of Schliephake glass electrodes to the eyes of experimental animals. They reported difficulty in localizing the heat solely to the eye without damage to the surrounding tissues. They also found a close relationship between the general body temperature and that of the eye during the heating and cooling periods.

Contrary to the results obtained by these investigators, no difficulty was encountered in focusing heat to the eye when the microtherm generator was used in our experiments. Contiguous tissues were not injured. In our animals the general body temperature was not increased in spite of the high vitreous temperatures secured. It would appear from our experiments that this method should be a safe and excellent means for the application of localized heat to the eye.

3. *The Frontal Sinus of the Dog.*—Andreen and Osborne[7] measured temperature of the maxillary sinus of human subjects using, among other methods of heating, the high frequency current. They used both conventional diathermy and induction heating. The highest temperature reported by them after a twenty minute exposure was 99.1 F., a rise of approximately 0.9 degree Fahrenheit. Our experiments on the frontal sinus of the dog showed for the total experiments an average temperature elevation to 105.1 F. In 1 instance a temperature of 106.9 F. was secured. This radiation should be used, therefore, to see whether these rises in temperature can be duplicated in the maxillary sinus of the human subject. At present we have no other means of heating this region of the head.

4. *Heating of the Human Thigh.*—These are the first experiments to be reported giving the internal temperature of the human thigh at a depth of approximately 2 inches (5.08 cm.) following exposure to radiation of 12 cm. wavelength. Our experiments show that a temperature of 104.2 F. can be secured at a depth of 2 inches (5.08 cm.) in the human thigh by means of the microtherm diathermy generator. This meets the heating requirements of the Council on Physical Medicine of the American Medical Association. Heat sensation on the surface is not pronounced. Erythema is at a minimum and generally much less than that noted with the usual short wave diathermy treatment. It must not be lost sight of, however, that these two criteria have been a safety factor for adequate dosage. Thus, in careless hands heating by this method might be dangerous. Our animal experiments show that the heat decreases from the superficial to the deeper tissues, but this temperature gradient is not as steep as in the short wave diathermy. Krusen, Herrick, Leden and Wakim in their animal experiments show a reversal of the temperature gradient. Further investigation of this factor should be undertaken. A disadvantage of this new method of tissue heating, in our opinion, is its definite localization. In all our experiments it will be noted that body temperature undergoes little change. There has been a gradually growing appreciation that diathermy is more effective when large areas, such as an entire limb, are heated rather than a definite localized area. By this large area technic the circulation of an entire limb can be influenced, and, if dosage of radiation is low, an active hyperemia is secured and passive congestion avoided. At present it is not possible to heat large areas of the body with the microtherm because of the limited size and shape of the directors in use. This would seem to be a distinct disadvantage.

SUMMARY

1. Microwave (radar) radiations were applied to the thighs of dogs, and temperature measurements made subcutaneously and at ½ inch (1.27 cm.) intervals to a depth of 2 inches (5.08 cm.). Following exposure to high frequency energy the maximum temperature was observed in the subcutaneous level and decreasing temperatures were found with increasing depth. The average temperature at a depth of 2 inches (5.08 cm.) in ten experiments using the 6 inch (15.24 cm.) hemispherical director at a spacing of 1 inch (2.54 cm.) from the skin surface was 104.1 F. (40.1 C.).

2. In seven "acute" experiments on dogs the eye was exposed to microwave radiations. The average temperature of the vitreous body following microwave treatment was 105.8 F. (41 C.). One animal received a series of six treatments over a period of three weeks. There was no evidence of damage to the eyes or contiguous tissues.

3. Six experiments were performed in which the frontal sinus of the dog was exposed to microwave radiations. The average of the temperatures of the frontal sinus following exposure to the microwave was 105.1 F. (40.6 C.).

4. In twenty-four experiments on human subjects the thigh was exposed to microwave radiation. The average temperature at a depth of approximately 2 inches (5.08 cm.) immediately following microwave irradiation was 104.2 F. (40.1 C.). One small superficial blister was produced. By the tenth day the blister had disappeared. The treatments were comfortable to the

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[5] Experiments by Raytheon Manufacturing Company regarding claims for the microtherm (unpublished data submitted to the Council on Physical Medicine of the American Medical Association). Raytheon Microtherm Acceptable, report of the Council on Physical Medicine, J.A.M.A. 135:986 (Dec. 13) 1947.

[6] Puntenney, I., and Osborne, S. L.: Temperature Changes and Changes in Caliber of Retinal Blood Vessels After Short Wave Diathermy, Arch. Ophth. **22**: 211-227 (Aug.) 1939.

[7] Andreen, M. A., and Osborne, S [illegible] the Temperature of the Maxillary Sinus After [illegible] ethods of Heating. A Comparative Study, Arch. [illegible] (Sept.) 1936.

patients, and a minimum of erythema was noted. Microwave treatment should be applied cautiously because the minimum of erythema and discomfort to the patient gives the operator less warning of overheating. The limitations of localized heating by this method have been indicated.

ARTEE CURETTE ACCEPTABLE

Manufacturer: Artee Products Company, Box 3974, Cleveland 20.

The Artee Curette is a small instrument intended for use in removing foreign bodies from the surface of the eye. It was formerly called the Professional Safe Eye Snare. It consists of a cylindric middle portion with a magnet at one end and a wire loop at the other; the two ends are capped with metal screwtops, of which one bears a clip to hold it in the pocket like the clip on a mechanical pencil. The over-all length of the instrument is 11.7 cm. (4.6 inches), and the diameter is slightly less than 1 cm. (0.4 inch). The magnet is stated to be made of "alnico V." The rest of the instrument, including the wire, is stated to be made of stainless steel. It is stated that the loop is made of flexible wire 0.005 inch (0.13 mm.) in diameter which has been drawn through diamond dies to give it a highly polished mirror finish.

GENERAL AUTOMATIC ELECTRICALLY COOLED OXYGEN TENT ACCEPTABLE

Manufacturer: General Hospital Supply Service, 256 West 69th Street, New York 23.

The General Automatic Electrically Cooled Oxygen Tent consists essentially of two parts, a transparent canopy suspended over the upper part of the patient's body and a cabinet, mounted on casters, through which the oxygen from a supply tank passes into the canopy. The cabinet contains the electrical apparatus, which includes a sealed, self-lubricating compressor and uses 4½ amperes on a 110-115 volt 60 cycle alternating current. A direct current unit is furnished at an extra charge, and special compressors can also be furnished. The cabinet without canopy and hangers weighs from 89 to 91 Kg. (196 to 200 pounds). The shipping weight including canopy and hanger varies from 117 to 136 Kg. (257 to 300 pounds) depending on the material used for crating.

When tested for inflammability, the canopy was found not to maintain combustion in air. In 60 per cent oxygen it burned brightly, but there was no "flash fire." Users of oxygen tents should remember that bedclothes (cellulose being a carbohydrate) burn viciously in oxygen and are as important in a consideration of fire hazards as are the materials of the tent. Oils must not be used for any purpose in connection with oxygen apparatus; this applies not only to lubricating oils for the machinery but also to oils that might be applied to the skin of the patient and might rub off on the bedclothes.

I.E.C. NEBULIZER ACCEPTABLE

Manufacturer: Inhalational Equipment Co., Inc., 248 East 119th Street, New York 35.

The I.E.C. Nebulizer is a device made of blown "pyrex" glass, equipped with a rubber pressure bulb and designed to convert aqueous solutions into a fine air-borne mist or nebula. This nebulizer is specifically designed for administering penicillin, streptomycin, sulfathiazole, epinephrine and similar drugs by inhalation as aerosols. It produces a uniformly fine mist of microscopic particles and is made with a U-shaped bend that acts to baffle large particles, allowing only the particles of microscopic size to pass through the nebulizer.

LANTEEN FLAT SPRING MENSINGA TYPE DIAPHRAGM ACCEPTABLE

Manufacturer: Lanteen Medical Laboratories, Inc., 900 North Franklin Street, Chicago 10.

The Lanteen flat spring Mensinga type diaphragms are available in 2.5 mm. gradations from 50 to 95 mm. Each package contains one diaphragm and a tube of "Lanteen jelly," with applicator. The flat (watch-spring) type of spring imposes certain limitations on the direction in which the ring can be bent. The diaphragm is designed to be put into place without a special inserter.

The Council accepts the Lanteen Flat Spring Mensinga Type Diaphragm with the understanding that the contraceptive jelly will be omitted from the package or until such time as the latter is accepted by the Council on Pharmacy and Chemistry.

I.E.C. NEBULIZER FOR PENICILLIN AEROSOL ACCEPTABLE

Manufacturer: Inhalational Equipment Co., Inc., 248 East 119th Street, New York 35.

The I.E.C. Nebulizer for Penicillin Aerosol incorporates the inhalational nebulizer which has been accepted by the Council on Physical Medicine. The entire equipment includes a rebreathing bag, a Y tube, a water bottle and an attachment for an oxygen tank. The nebulizer is connected with an oxygen tank, which supplies both the gas and the pressure needed to make the nebulizer work. The rebreathing bag is intended to prevent waste of the penicillin, and there is the possibility of further saving in the suggested use of an arrangement for producing the aerosol during the inspiratory cycle only. The rebreathing bag has a capacity of 2,500 cc. The nebulizer is connected to an oxygen cylinder which is used to nebulize the solution at a flow of from 6 to 8 liters per minute.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

ESTROGENIC SUBSTANCES (WATER INSOLUBLE) (See New and Nonofficial Remedies 1947, p. 343).

The following dosage form has been accepted:

E.R. SQUIBB & SONS, NEW YORK

Pessaries Amniotin: 2,000 and 5,000 I.U. Each pessary contains sufficient estrogenic substances (water insoluble) in corn oil to provide the stated unitage expressed in terms of estrone, enclosed in a soft gelatin capsule for use as a vaginal suppository.

MEPERIDINE HYDROCHLORIDE (See New and Nonofficial Remedies 1947, p. 28).

The following dosage forms have been accepted:

WINTHROP-STEARNS, INC., NEW YORK

Demerol Hydrochloride (Powder): 15 Gm. vials.

Solution Demerol Hydrochloride: 50 mg. per cc., 30 cc. vials.

HEXESTROL (See New and Nonofficial Remedies 1947, p. 353).

The following dosage form has been accepted:

S.E. MASSENGILL CO., BRISTOL, TENN.

Tablets Hexestrol: 3 mg.

PHENOBARBITAL SODIUM-U.S.P. (See New and Nonofficial Remedies 1947, p. 418).

The following dosage form has been accepted:

THE WM. S. MERRELL CO., CINCINNATI

Solution Phenobarbital Sodium with Benzyl Alcohol 2% in Propylene Glycol 70%: 0.12 Gm. and 0.3 Gm., 2 cc. ampuls.

STREPTOMYCIN (See New and Nonofficial Remedies 1947, p. 150).

The following dosage form has been accepted:

THE WM. S. MERRELL CO., CINCINNATI

Streptomycin Calcium Chloride Complex: 1.3 Gm., 20 cc. vials. 1.3 Gm. of Streptomycin Calcium Chloride Complex equivalent to 1.0 Gm. of Streptomycin base.

BLOOD GROUP SPECIFIC SUBSTANCES A AND B.—A sterile solution of polysaccharide-amino acid complexes, capable of reducing the titer of the anti-A and anti-B isoagglutinins of group O donor blood. Blood group specific substance A is isolated as a precipitate from a tryptic digest of hog gastric mucin. Group specific substance B is isolated as a precipitate from a tryptic digest of the glandular portion of horse gastric mucosa

Actions and Uses.—Blood Group Specific Substances A and B, when added to group O blood renders the latter safe for transfusion into patients having other blood groups. While this eliminates reaction attributable to the corresponding isoagglutinins, it should be kept in mind that group O blood may continue to give rise to reactions due to pyrogens, Rh incompatibility and immunologic unknowns.

Dosage.—Blood Group Specific Substances A and B may be added to group O blood just prior to administration or at the time of collection and storage. One transfusion unit (10 cc.) is capable of reducing the anti-B and anti-B isoagglutinin titer of 500 cc. of group O blood to at least one fourth of its original titer.

SHARP & DOHME, INC., PHILADELPHIA

Blood Group Specific Substances A and B: 10 cc. vials. Preserved with phenol 3%.

U.S. Patent reissue 22208 (Expiration Date July 14, 1959).

NORMAL HUMAN SERUM ALBUMIN.—The albumin fraction of normal adult human plasma. The finished product contains 25 per cent of albumin and not more than 0.33 per cent of sodium. It complies with the minimum requirements of the National Institute of Health for serum albumin and conforms to the specifications of the Commission on Plasma Fractionation.

Actions and Uses.—To reduce edema and raise the serum protein level in hypoproteinemia; also used in the treatment of shock.

Dosage.—Approximately 1 cc. per pound of body weight given at a rate not greater than 2 cc. per minute, usually to be accompanied by isotonic sodium chloride solution or 5 per cent dextrose.

CUTTER LABORATORIES, BERKELEY, CALIF.

Normal Human Serum Albumin (Salt-Poor) 25 per cent: 20 cc. bottles, containing 5 Gm. of albumin with not more than 0.33 per cent of sodium in a buffered diluent, osmotically equivalent to 100 cc. of plasma. No preservative added.

Licensed by Research Corporation. U.S. Patent 2,390,074.

DIGITOXIN—U.S.P. (See New and Nonofficial Remedies 1947, p. 248).

The following dosage form has been accepted:

THE CENTRAL PHARMACAL COMPANY, SEYMOUR, IND.

Tablets Digotoxin; 0.2 mg.

PERTUSSIS VACCINE COMBINED WITH DIPHTHERIA AND TETANUS TOXOIDS (See New and Nonofficial Remedies 1947, p. 460).

The following dosage form has been accepted:

E. R. SQUIBB & SONS, NEW YORK.

Diphtheria and Tetanus Toxoid Alum Precipitated and Pertussis Vaccine Combined: 1.5 cc. (one 3 dose immunization) and 7.5 cc. vials (five 3 dose immunizations). Preserved with sodium ethyl mercuri thiosalicylate 1:10,000.

PROTEIN AND AMINO ACID PREPARATIONS (See THE JOURNAL, March 6, 1948 p. 691).

The following dosage form has been accepted:

INTERCHEMICAL CORPORATION, UNION, N. J.

Solution Elamine: 5%, 60 Gm. bottles. A modified protein hydrolysate prepared by acid digestion of casein and supplemented with dl tryptophane.

U.S. patent pending.

BENZALKONIUM CHLORIDE—U.S.P. (See New and Nonofficial Remedies 1947, p. 59).

The following dosage form has been accepted:

WINTHROP STEARNS, INC., NEW YORK.

Solution Zephiran Chloride: 1:1,000; 14.8 cc. bottles.

TESTOSTERONE PROPIONATE—U.S.P. (See New and Nonofficial Remedies 1947 p 377)

The following additional dosage form has been accepted:

RARE CHEMICALS, INC , HARRISON N. J.

Testosterone Propionate· 25 mg. 10 cc. vials; 50 mg., 6 cc vials

METYCAINE HYDROCHLORIDE (See New and Nonofficial Remedies 1947 p. 49)

The following additional dosage forms have been accepted:

ELI LILLY & CO., INDIANAPOLIS.

Solution Metycaine Hydrochloride in Ringer's Solution *(For Spinal Anesthesia)*: 1 5 per cent, 5 cc and 20 cc ampuls; 2 per cent, 30 cc. vials; 5 per cent, 3 cc. ampuls.

Metycaine Hydrochloride *(Powder)*: 15 Gm. and 120 Gm. bottles.

TRIMETHADIONE (See New and Nonofficial Remedies 1947 p. 401).

The following additional dosage forms have been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO ILL.

Dulcet Tablets Tridione: 0.15 Gm.

U. S. trademark 301,662.

Solution Tridione: 500 cc. and 4,000 cc. bottles.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 17, 1948

EDITORIAL ANNOUNCEMENT

The compositors returned to work on Monday, June 28. This issue of The Journal has been prepared in part by the use of Veri-Typer machines.

ABDOMINAL EPILEPSY

Experimental and clinical observations have demonstrated the existence of cortical representation of autonomic function and of abdominal sensations produced by cortical stimulation. Watts and Fulton[1] produced experimental diencephalic lesions which resulted in disturbed gastrointestinal activity. The probable role of the diencephalon in the production of peptic ulcer following brain trauma was emphasized by Cushing. Penfield and Gage[2] exposed the brain of a patient under local anesthesia and stimulated electrically an area just posterior to the postcentral convolution. The patient complained of a pain in the right abdominal quadrant like that experienced before her epileptic attacks. Faradic stimulation in front of this area reproduced what for her was a typical seizure. Winkelman[3] cited the case of a man who experienced intense abdominal pain as the initial symptom of a cerebral hemorrhage involving the frontoparietal area. Klingman[4] and his co-workers reported observations on 12 children with paroxysmal attacks of abdominal pain. The electroencephalographic anomalies in all these were suggestive of cerebral dysrhythmia. In 9 of the children neurologic symptoms consistent with convulsive disorder have since developed. Some of them have been free of symptoms under anticonvulsant therapy.

Moore[5] defined abdominal epilepsy as a disorder characterized by bouts of paroxysmal abdominal pain, the latter being due to hypermotility of the bowel, provoked by abnormal discharges of certain neurons in the vicinity of biochemically or structurally altered cerebral tissue, presumably situated in the premotor and postmotor cerebral cortex and/or the diencephalon. The underlying morphologic structural changes which may produce abdominal epilepsy are no different from those causing any of the other forms of generally accepted epilepsy. In a study of 14 cases of abdominal epilepsy by Moore about one half of the patients had a history of brain injury as a suggestive, and in some cases as an undoubted, relationship to the onset of abnormal cerebral discharges and the symptoms of paroxysmal abdominal pain. The majority of these patients had been treated for a variety of abdominal conditions. Some had one or more futile abdominal operations or equally futile treatment for psychoneurosis. The great majority of these patients obtained relief from anticonvulsant therapy.

Moore[6] emphasized the need for recognition of unexplained paroxysmal abdominal pain, when study of the abdominal viscera has been negative, as being possibly of cerebral origin due to abnormal discharges arising in the premotor or parietal regions.

The criteria for diagnosis are based on (1) exclusion of intrinsic visceral disease, (2) adequate historical data, (3) attack pattern of an epileptic order, (4) associated epileptic show, (5) objective evidence of cerebral organic disease or dysfunction and (6) effect of anticonvulsant drugs on the symptom of abdominal pain and on the electroencephalogram.

RABIES

During the last week in June 1948, Texas reported 23 cases of rabies in animals; Kentucky reported 11 cases and Indiana 9 cases. Of thirty-nine states making such reports to the United States Public Health Service, eighteen did not report cases. One human case was reported in Georgia.

From its foundation in 1907 through 1946 the Pasteur Institute of Southern India at Conoor[1] has given antirabic treatment to 40,421 patients bitten or scratched by rabid animals, mostly, of course, dogs. Of these patients 402 subsequently died of rabies, a death rate of 0.99 per cent. Since 1922 many subsidiary centers for antirabic treatment have been opened. From 1922 through 1946, some 208,481 patients received antirabic treatment at these centers; of these patients 716 died of rabies, a death rate of 0.34 per cent. During 1946, patients treated at the Institute were 402, with 2 deaths, and 19,922 patients were treated at subsidiary centers with 11 deaths (0.08 per cent). The biting animals in these 11 fatal cases were dogs in 9 and jackals in 2. The animals involved in all the fatal cases since 1908 are, in the order of frequency, dog (95.60 per cent), jackal, fox, wild dog, leopard, cat, sheep.

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[1] Watts, J. W., and Fulton, J. F.: The Effect of Lesions of the Hypothalamus on the Gastrointestinal Tract and Heart in Monkeys, Ann. Surg. **101:** 363, 1935.

[2] Penfield, W., and Gage, L.: Cerebral Localization of Epileptic Manifestations, Arch. Neurol. & Psychiat. **30:** 709 (Oct.) 1933.

[3] Winkelman, N. W.: in discussion on Moore,[6] p. 1240. **129:** 1240 (Dec. 29) 1945.

[4] Klingman, W. O.; Langford, W. S.; Greeley, D. M., and Hoefer, P. F. A.: Paroxysmal Attacks of Abdominal Pain, an Epileptic Equivalent in Children, Tr. Am. Neurol. A. 67: 228, 1941.

[5] Moore, M. T.: Abdominal Epilepsy, Rev. Gastroenterol. **15:** 381 (May) 1948.

[6] Moore, M. T.: Paroxysmal Abdominal Pain, J. A. M. A. **129:** 1233 (Dec. 29) 1945.

[1] Annual Report of the Director of the Pasteur Institute of Southern India, Conoor, 1946-1947, Madras, 1947.

Dogs are the main reservoir of rabies. As yet the practical control of canine rabies is far from effective except in countries which prevent the import of dogs unless after quarantine long enough to exclude rabies. Rabies in dogs appears to be increasing in some places. According to newspaper statements rabies in dogs in the suburban part of Cook County, Illinois, in which Chicago is located, is spreading as judged by the number of rabid dogs killed by the police. And we know that rabies in the fox is now well established in many states.[2] There continues to be urgent need for more and more active cooperatively coordinated preventive measures against rabies in dogs as well as other animals.[3]

Absolute safety from human rabies requires that the entire dog population of a community must be kept free from rabies at all times. Better means are needed to determine whether a given animal is or is not infected with rabies. This need of early reliable diagnosis applies especially to human beings exposed to possible rabies, so that more may be learned about the specific results of the antirabic treatment. At present all that usually can be determined is whether or not the biting or scratching animal had rabic infection. Finally, there is the unsolved problem of effective treatment of established rabies. Rabies should not be neglected in the testing of new antibiotics. These are problems that call for the best research that can be provided by public and private agencies. These needs have a special claim on dog lovers. Is it too much to expect of the antivivisectionists that they will not neglect the chance offered by research on rabies to help dogs and other animals?

MORE SILLY NAMES FOR PENICILLIN PRODUCTS

In February 1946 The Journal called attention editorially to a great variety of names for penicillin that had been introduced by manufacturers and purveyors. So many names had been offered that they seemed designed to conceal rather than reveal the nature of the product. Now come other titles that fail to indicate the nature of the product but which suggest the section of the body, or the animal, at which they are aimed, or that are otherwise as ridiculous. Here are a few samples from recent lists:

Buffecillin (Pfizer)
Crysticillin (Squibb)
Dairycillin (Schenley)
Duracillin (Lilly)
Flo-Cillin (Bristol Laboratories)
Gelu-Cillin (Warner)
Hypercillin (Cutter)
Intracillin (Warner)
Par-Pen (Smith, Kline & French)
Pecticillin (Pfizer)
Pelvicin (Schenley)
Pen-Troche (Cutter)
P. O. B. (Cutter)
Poultrycillin (Schenley)
Powdalator (Abbott)
Wycillin (Wyeth)
Capicillin (Barron Chemical Corp.)
Denticillin (Marlo Laboratories)
Nasocillin (Mol-La Laboratories)
Ophtocillin (Marlo Laboratories)
Rectocillin (Mol-La Laboratories)
Salvacillin (Barron Chemical Corp.)
Tablicillin (Barron Chemical Corp.)
Trochicillin (Marlo Laboratories)
Vagicillin (Marlo Laboratories)

To select a rose from such a garden would require a botanist with more basic knowledge of the naming of plants than most physicians possess. Perhaps the blue ribbon should go to either "Poultrycillin" or Vagicillin." Perhaps the next step will be numbers to correspond with certain entrances or exits of the human body; we may be talking about "cillin no. 1" for the front and "cillin no. 2" for the rear. In a previous editorial attention was called to the combination of the manufacturer's name with "cillin." Since there were almost thirty manufacturers, that offered almost thirty possibilities. Now the emphasis seems to be inclining toward the port of entry plus "cillin." The Council on Pharmacy and Chemistry in recent years has tried to be more than reasonable about the acceptance of fanciful names for widely used products of varying manufacture. Even the patience of the proverbial Job would be tried by contemplation of a list such as is here cited. In the previous editorial the editor offered 8 to 5 that doctors would not guess the nature of a product called "Penioral." The odds are improving. We now offer 5 to 1 on "P. O. B."

Current Comment

SCHOOL HEALTH COMMITTEES

Every school, regardless of size or location, has numerous health problems which it must solve to the satisfaction of its local community. Teachers must realize the health status of the children in order to fit the educational program to the individual child's needs and capabilities. Teachers of physical education must know which children have cardiac lesions, hernias and recurrently dislocating joints if exercise is to be safely used. Medical examination obviously must be provided for all school children--but how, at what frequency and by whom?

School authorities are obviously in need of carefully considered medical advice; where shall they obtain it ? The report of the recent Conference on the Cooperation of the Physician in the School Health and Physical Education Program[1] suggests that each local medical society appoint a School Health Committee to represent its membership in working with the local school authorities. A generally acceptable four point school health

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2. Johnson, H. N.: Fox Rabies, J. M. A. Alabama 14: 268 (May) 1945.

3. Control of Rabies: Report by the Committee on Public Health Relations of the New York Academy of Medicine, Pub. Health Rep. 62: 1215 (Aug. 22) 1947. Control of Rabies, editorial, J. A. M. A. 135: 161 (Sept. 20) 1947.

1. Physicians and Schools, Chicago, American Medical Association, 1948.

program including health service, health instruction, healthful school living and the health aspects of physical education has been developed through the combined efforts of forty-five health and educational organizations.[2] School administrators have expressed themselves as in general agreement with the purposes of their program.[3] Apparently the schools are entering a period of rapid development of their health programs. As this development takes place, local medical societies must be prepared to provide through their School Health Committees the consultation and advice that will be requested.

ALLERGIC CARDITIS

In 1932 Vaubel[1] and Kling[2] reported that in rabbits subjected to sublethal anaphylactic shock there develop cardiac lesions resembling those seen in human, rheumatic fever. This observation was afterward confirmed by Hall and Anderson[3] Rich and Gregory[4] and others, who formulated the theory that rheumatic fever is a reaction to parenteral contact with foreign protein to which tissues previously had been sensitized. This theory has been further supported by Moore[5] and his associates of the University of Southern California, who report the production of "rheumatic-like carditis" in mice subjected to repeated injection with egg albumin. In a typical experiment young mice received three intraperitoneal injections of dilute egg white at two day intervals, followed from four to twenty-one days later by a fourth injection of a smaller dose given intravenously. The surviving animals were held for seven days, then killed and their hearts fixed in solution of formaldehyde. Serial sections of these surviving hearts showed numerous rheumatic-like lesions, such as focal areas of acute vascular and perivascular degeneration, complete fibroid degenerations of arteriolar walls, hydropic degeneration and disruption of myocardial fibrils, perivascular cellular infiltrations and frequent verrucous lesions of the mitral surfaces with an occasional pathologic fusion of the aortic cusps. There was no apparent relation between the severity of clinical anaphylaxis and the extent or severity of these cardiac lesions. The allergic cardiac lesions thus bear a striking resemblance to the lesions that occur in acute human rheumatic carditis. Work of Moore and associates thus supports the theory that the human rheumatic heart is a result of parenteral contact with foreign proteins to which the cardiac tissues have been previously sensitized. They believe that this is compatible with the known relation of the streptococcus to rheumatic carditis, since it would be difficult to find a better source of foreign (or denatured) protein than the streptococcus frequently or intermittently gaining admission to the cardiac tissues.

ACUTE POTASSIUM DEFICIENCY IN DIABETIC ACIDOSIS

Several recent clinical studies[1] have demonstrated that diabetic acidosis, particularly after insulin therapy, may be complicated by *an acute potassium deficiency*. The evidence for such a significant conclusion is the consistent observation of a low serum potassium concentration in this condition and a favorable, almost dramatic, response of the acidotic patients to administered potassium chloride. Further supporting evidence is found in the general symptoms shown by the patients, such as paralysis of voluntary muscles, respiratory distress and electrocardographic abnormalities. These symptoms have been observed also in chronic potassium deficiency in experimental animals.[2] The prompt and decided improvement of the insulin-treated patient given potassium therapy has led one group of investigators[1c] to note that " the changes (respiratory distress, altered electrocardiogram, 'shock,' etc.) are due not to a low blood sugar level, as has sometimes been assumed, but to a shift of potassium from extracellular to intracellular space...". The fundamental reason for and acute potassium deficiency in diabetic acidosis is not completly understood, but a number of suggestions have been made.[1] One view is that a renal loss of potassium associated with the diuresis, particularly after insulin is administered, is a primary contributory factor to the acute depletion of potassium. Such a conception is perhaps supported by the observa-

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2. Suggested School Health Policies, Chicago, American Medical Association, 1948.
3. *Health in Schools*, Washington, D.C., American Association of School Administrators, National Education Association, 1942.

1. Vaubel, E.: Beitr. z. path. Anat. u. z. allg. Path. 89: 374, 1932.
2. Kling, F.: Ergebn. d. allg. Path. u. path. Anat. 27: 1, 1933.
3. Hall, E. M., and Anderson, L.: Am. Heart J. 25: 64, 1943.
4. Rich, A. R., and Gregory, J. E.: Bull. Johns Hopkins Hosp. 73: 239, 1943; ibid. 75: 115, 1944.
5. Moore, F. J.; Ridge, G. K.: Huntington, R. W.; Hall, E. M.; Griffith, G. C., and Knowles, R. G.: Proc. Soc. Exper. Biol & Med. 65: 102, 1947.

1. (a) Holler, J.W.: Potassium Deficiency Occurring During Treatment of Diabetic Acidosis, J.A.M.A. 131: 1186 (Aug. 10) 1946. (b) Nicholson, W.M., and Branning, W.S.: Potassium Deficiency in Diabetic Acidosis, 134: 1292 (Aug. 16) 1947. (c) Frenkel, M.; Groen, J., and Willebrands, A. F.: , Low Serum Potassium Level During Recovery From Diabetic Coma, Arch. Int. Med. 80; 728 (Dec.) 1947.
2. Ruegamer, W. R.; Elvehjem, C. A.; and Hart, E. B.: Proc. Soc. Exper. Biol. & Med., 61: 234, 1946.

tion of a potassium deficiency in chronic nephritis[3] as indicated by a low serum potassium values, flaccid paralysis, abnormal electrocardiograms and a prompt response to potassium chloride therapy. Another view is that there is a shift of potassium from the extracellular to intracellular fluid, a view which receives some support from a current critical study[4] of exchanges of potassium and sodium in patients with various conditions, including familial periodic paralysis, a condition also characterized by aberrations in the metabolic disposition of potassium. The Yale investigators reached the general conclusion that in experimental and clinical conditions in which there is dehydration, as may occur in diabetic acidosis and chronic nephritis, there is usually a transfer of potassium from the extracellelar to intracellular fluids to replace losses in the latter as a result of renal excretion or possibly for other reasons. Such a concept would appear to explain satisfactorily the low serum potassium values and consequent physical symptoms seen in some cases of diabetic acidosis, chronic nephritis and familial periodic paralysis. The general concept that human deficiency diseases may sometimes be endogenous in origin rather than due to the classical exogenous or dietary lack of essential substances is emphasized by the foregoing studies.

CORRECTIVE TRAINING OF COLOR BLINDNESS

Farnsworth[1] has estimated that there are 5,000,000 men in the United States partially or completely color blind, many engaged in transportation, the arts and crafts of interior decorating, printing, painting, textiles and color reproduction. The benefit to these men if it were possible to remedy or mitigate their deficiencies in detecting colors would be incalculable. The business of controlling color blindness, or rather of ''coaching'' men to pass tests, assumed considerable proportions during World War II. The methods practiced included repeated observation of bright colors; subcutaneous injection of iodine; electrical stimulation of the eyeball; warming of one eye; making of color judgments; observation of red and green lights; viewing dazzling lights of various colors; dosage with extremely large quantities of vitamins, chiefly various preparations of vitamin A with stress on emulsification; injection of cobra venom; repeated coaching on pseudoisochromatic plates or other color blindness tests; continuous wearing of glasses tinted with the color of the presumed deficiency. The National Bureau of Standards, U. S. Department of Commerce, reports that what actually happens when a person with anomalous vision receives training of various kinds is progressive familiarization with the particular type of pseudoisochromatic chart used to gage his progress. Repeated efforts to read the charts create the opportunity for practice and cut down the time required. Red-green deficiency is fairly prevalent among healthy men; about 8 per cent have this defect from birth to an important degree. A red-green confuser may fail to notice the color of a red signal or from a distance may be unable to tell forest land from plowed land. The lives of a whole crew of a bomber or submarine may be the price to pay for the delusion of one crew member that his color vision is normal just because he took treatments and learned to pass a color vision test. The Inter-Society Color Council Subcommittee in its report to the American Medical Association states that reliable scientific evidence indicates that the majority of persons with deviation from normal color vision possess some congenital retinal or neural defect which neither diet nor drugs, nor training in perceptual discrimination, can remedy. No crucial role in passing the tests in current use is played either by facility in the use of color names or by degree of familiarity with the various color tones, both stressed by the " corrective" color trainers. Prolonged study of the color charts of the test, however, enables the applicant to memorize digit series, familiarize himself with certain clues and tricks of composition or utilize certain aids in viewing. Thus, without materially improving his general color ability he may pass the qualifying test on retrials. In the interest, therefore, both of society and of the individual, a false rating of whose abilities can in the end work only injury to his prospects, the council condemns any training systems of the color blind which claim to be corrective. The Association of Schools and Colleges of Optometry in a resolution passed June 22, 1947 likewise condemned so-called " corrective training of color vision defects." Farnsworth emphasized that the experimental data on the subject lead to the conclusion that the basic psychophysiologic functions, as indicated by luminosity curves, color mixture ratios and other stimulus data by which normal or defective color vision is described, are unaffected by medicine, training or other therapy. The consensus, therefore, among the best informed and most experienced specialists in the field of color vision is that congenital color deficiency cannot be remedied by the use of diet, medicine, training or any other treatment known to science.

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[3] Brown, M. R.: Currens, J. H., and Marchand, J. F.: Muscular Paralysis and Electrocardiographic Abnormalities Resulting From Potassium Loss in Chronic Nephritis, J. A. M. A., 124; 545 (Feb. 26.) 1944.

[4] Elkinton, J. R.; Winkler, A. W.; and Danowski, T.S.: Clin. Investigation 27; 74, 1948.

[1] Farnsworth,: Investigation on Corrective Training of Color Blindness. Sight-Saving Review 17: 194, 1947.

ORGANIZATION SECTION

PROCEEDINGS OF THE CHICAGO SESSION

MINUTES OF THE ANNUAL SESSION OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION, HELD IN CHICAGO, JUNE 21-25, 1948

HOUSE OF DELEGATES

Thursday Afternoon—Continued

ELECTION OF OFFICERS

Report of Reference Committee on Rules and Order of Business

Dr. H. P. Ramsey, Chairman, presented the following report:

This is nearly all a repetition of what was said to the House yesterday in response to an inquiry. I direct your attention again to your Handbook, pages 38, 39 and 40, covering conduct of the elections. On page 40, item 8 reads "Roll Call for Casting Ballots." At that time, all three ballots are to be cast. Now, if you will turn back to page 38, "Election of Officers," you will find thereafter certain references to white, blue and yellow ballots, specimens of which are here.

The Secretary will place the blackboard in the center where nominations as made may be recorded in your full view. At the conclusion of the nominations for each office the Speaker will so declare. At the conclusion of all of the nominations or items for the white ballot, the Speaker will declare that nominations have been made for all of the offices on the white ballot.

The same procedure will be followed in respect to the blue ballot and to the yellow ballot, all of which will be cast at the same time, at the time of a roll call of the House. You will observe that a ballot box with a glass front has been mounted on the far side of the auditorium and that, as you pass to drop your ballots, you will fold them letterwise and deposit each ballot separately so that the tellers in attendance may note that you have dropped one of each color.

Furthermore, there will be no blackboard tally. The Chair has been requested to augment the Tellers' Committee by six. There are now three, and that will make nine. The Tellers' Committee will subdivide itself into three subcommittees one subcommittee for each color ballot, to expedite the work of counting the ballots. When they are through, the Speaker will call for their report.

Dr. E. Vincent Askey, California, stated that there is one clarification which might be made, that is that if there are three or more nominations for any office, the By-Laws state that the lowest man shall drop out and another ballot be cast until a majority is won; that unless that is understood it is quite possible that there may be three men voted on and then the final vote which would have to be taken might result in half of the delegates having gone, thinking they had cast their ballot, and that it is important that it is understood that the ballot and voting is not final until the result of the Tellers' count is in because another ballot might be necessary.

Dr. Ramsey added that Dr. Askey was correct; that yesterday he had stated that in case of any run-off ballots, plain pieces of paper would be distributed by the Secretary for any such possible run-off ballots, and that a copy of each of the three ballot sheets would be distributed at the same time.

The Speaker appointed the following extra tellers as suggested by the committee: To assist Dr. Green, Chairman of the Tellers, Dr. James Q. Graves, Louisiana, and Dr. Gerald V. Caughlan, Iowa; to assist Dr. Samuel, another member of the Tellers' Committee, Dr. Clark Bailey, Kentucky, and Dr. E. P. McNamee, Ohio, and to assist Dr. Smith, the other Teller, Dr. A. S. Giordano, Indiana, and Dr. George A. Unfug, Colorado. The Speaker requested all voting delegates to move into the section reserved for voting delegates in order to facilitate matters in passing and collecting ballots, and further requested all others to take seats in the back of the hall, after which the ballots were distributed, a white, a blue and a yellow ballot being given each voting member of the House.

Dr. H. P. Ramsey, Chairman of the Reference Committee on Rules and Order of Business, stated that if there should be only one nominee it is possible or desirable that the nominee be elected by acclamation without the necessity for a teller count.

Nominations for President-Elect

Dr. Charles H. Phifer, Illinois, nominated for President-Elect Dr. Ernest E. Irons, Chicago, and the nomination was seconded by delegates from Alabama, Illinois, Tennessee, Mississippi, Iowa, Pennsylvania, Georgia, New Jersey, South Carolina and others.

Dr. W. A. Coventry, Minnesota, nominated for President-Elect Dr. A. W. Adson, Rochester, Minn., and the nomination was seconded by delegates from Wisconsin, the Section on Nervous and Mental Diseases, California, the Section on Laryngology, Otology and Rhinology, South Dakota, Illinois, Ohio, Oklahoma, Colorado, New Jersey, Michigan, South Dakota and others.

On motion of Dr. A. A. Walker, Alabama, seconded by several and carried, nominations for President-Elect were closed.

Nomination for Vice President

The Vice Speaker presided.

Dr. K. S. J. Hohlen, Nebraska, nominated Dr. Roy W. Fouts, Omaha, as Vice President, and the nomination was seconded by delegates from practically every state. Dr. Arthur J. Bedell, Section on Ophthalmology, moved that the nominations be closed, and the motion was seconded and carried.

On motion of Dr. Lowell S. Goin, California, seconded by Dr. James C. Sargent, Wisconsin, and carried, the Secretary cast the ballot of the House for Dr. Roy W. Fouts as Vice President, and the Vice Speaker declared Dr. Fouts duly elected to that office for one year.

Nomination for Secretary

The Speaker resumed the Chair.

Dr. A. A. Walker, Alabama, nominated Dr. George F. Lull, Chicago, as Secretary, and the nomination was seconded by delegates from practically every state.

On motion of Dr. William Weston, Section on Pediatrics, seconded by Dr. Mather Pfeiffenberger, Illinois, and carried, nominations for Secretary were closed.

It was moved by Dr. James C. Sargent, Wisconsin, seconded by Dr. Robert H. Hayes, Illinois, and carried, that Dr. F. F. Borzell, Vice Speaker, cast the ballot of the House for Dr. Lull as Secretary.

The Vice Speaker cast the ballot of the House for Dr. George F. Lull, Chicago, to serve as Secretary for a term of one year.

Nomination for Treasurer

Dr. E. L. Henderson, Chairman, Board of Trustees, nominated for Treasurer Dr. J. J. Moore, Chicago, and the nomination was seconded by many. Dr. Robert H. Hayes, Illinois, moved that nominations be closed, and the motion was seconded and carried.

The Secretary cast the vote of the House for Dr. J. J. Moore, Chicago, as Treasurer for one year, on motion of Dr. Mather Pfeiffenberger, Illinois, seconded by Dr. Robert H. Hayes, Illinois, and carried.

Nomination for Speaker of House of Delegates

Dr. W. L. Estes Jr., Pennsylvania, nominated for Speaker of the House of Delegates Dr. F. F. Borzell, Philadelphia, and the nomination was generally seconded. It was moved by Dr. Val H. Fuchs, Louisiana, seconded by Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, and carried, that nominations be closed.

On motion of Dr. B. R. Kirklin, Section on Radiology, seconded by several and carried, the Speaker cast the ballot of the House for Dr. F. F. Borzell, Philadelphia, as Speaker of the House of Delegates for one year.

Nominations for Vice Speaker of House of Delegates

Dr. Thomas P. Murdock, Connecticut, nominated for Vice Speaker of the House of Delegates Dr. Creighton Barker, New Haven, Conn., and many seconded the nomination.

Dr. John J. Masterson, New York, nominated for Vice Speaker Dr. James R. Reuling, Bayside, N. Y.

Dr. H. B. Everett, Tennessee, moved that nominations be closed and the motion was seconded by several and carried.

The Speaker declared that this completed the nominations for the offices on the white ballot and that it would be necessary to vote only for the President-Elect and the Vice Speaker of the House of Delegates.

Nominations for Trustee to Succeed Dr. William F. Braasch

Dr. Walter F. Donaldson, Pennsylvania, nominated Dr. Louis A. Buie, Rochester, Minn., to succeed Dr. William F. Braasch, Rochester, Minn., as Trustee, and the nomination was seconded by several.

Dr. Robert E. Schlueter, Missouri, nominated Dr. James R. McVay, Kansas City, Mo., for that office.

Dr. James C. Sargent, Wisconsin, nominated Dr. Gunnar Gundersen, La Crosse, Wis., for that office, and the nomination was duly seconded.

Dr. Arthur J. Bedell, Section on Ophthalmology, moved, and Dr. H. B. Everett, Tennessee, seconded the motion, which was carried, that the nominations be closed.

Nominations for Trustee to Succeed Dr. Ernest E. Irons

Dr. Mather Pfeiffenberger, Illinois, nominated Dr. Edwin S. Hamilton, Kankakee, Ill., to succeed Dr. Ernest E. Irons as Trustee, and the nomination was seconded by several.

Dr. R. K. Packard, Illinois, nominated Dr. Warren W. Furey, Chicago, for that office and that nomination was seconded by several.

On motion of Dr. Robert H. Hayes, Illinois, seconded by Dr. G. Henry Mundt, Illinois, and carried nominations for Trustee to succeed Dr. Ernest E. Irons were closed.

Trustee to Succeed Dr. Wingate Johnson, Winston-Salem, N. C., Who Was Appointed to Serve Until this Session for Dr. C. W. Roberts, Atlanta, Ga., Deceased

Dr. J. Morrison, Hutcheson, Va., nominated Dr. Walter B. Martin, Norfolk, Va., to complete the unexpired term of Dr. C. W. Roberts, deceased and the nomination was severally seconded.

Dr. Charles F. Strosnider, North Carolina, nominated Dr. Wingate Johnson, Winston-Salem, N. C., for that office.

Dr. William Weston, Section on Pediatrics, moved that nominations be closed, and the motion was seconded by several and carried.

Several delegates requested permission to deposit their ballots immediately as they were forced to leave. On motion, duly made, seconded and carried the following named delegates were granted such permission: Dr. Lowell S. Goin, California; Drs. J. Stanley Kenney, Thomas M. Brennan, A. A. Gartner, P. J. Di Nitale and Scott Lord Smith, New York; Dr. Hilton S. Read, New Jersey; Dr. G. S. Klump, Pennsylvania; Drs. F. M. Wiseley, L. Howard Schriver and E. P. McNamee, Ohio, and Dr. E. L. Compere, Section on Orthopedic Surgery.

On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. Mather Pfeiffenberger, Illinois, and carried, the list was closed.

Place of Annual Session in 1951

Dr. E. L. Henderson, Chairman, Board of Trustees, reported as follows: Atlantic City has been chosen for the 1949 Annual Session and San Francisco for the 1950 Annual Session. Invitations have been received from Atlantic City and Chicago to hold the annual session in 1951 in those cities, and both cities have the facilities for holding a session.

The Speaker announced that this concluded the nominations for the blue ballot.

Nominations for Standing Committees by the President

Nominations for Members of Judicial Council

Dr. R. L. Sensenich, President, nominated as members of the Judicial Council; Dr. John H. O'Shea, Spokane, Wash., to succeed himself, and Dr. Homer L. Pearson Jr., Miami, Fla., to fill the unexpired term of Dr. Lloyd Noland, resigned.

Nomination for Member of Council on Scientific Assembly

Dr. Sensenich nominated Dr. Alphonse McMahon, St. Louis, to succeed Dr. L. B. Jackson, San Antonio, Texas, as a member of the Council on Scientific Assembly.

It was moved by Dr. A. A. Walker, Alabama, seconded by Dr. James C. Sargent, Wisconsin, and carried, that the House confirm the nominations made by the President and the Speaker declared Dr. John H. O'Shea, Dr. Homer L. Pearson Jr., and Dr. Alphonse McMahon duly elected to the offices indicated by the President.

Nominations for Standing Committees by Board of Trustees

Nominations for Council on Medical Education and Hospitals

Dr. E. L. Henderson, Chairman, Board of Trustees, stated that it is customary to submit two names for each vacancy on the Council on Medical Education and Hospitals, and, therefore, the Board nominates to succeed Dr. John H. Musser, deceased, whose place in the interim had been filled by Dr. Virgil P. Sydenstricker, Augusta, Ga., Dr. William L. Pressly, Due West, S. C., and Dr. Carl A. Grote, Huntsville, Ala., in compliance with the amended By-Law passed by the House.

Dr. E. L. Henderson, Chairman, Board of Trustees, nominated, for the member of the Council on Medical Education and Hospitals to succeed Dr. Harvey B. Stone, Baltimore, Dr. Harvey B. Stone, Baltimore, and Dr. L. T. Coggeshall, Chicago.

Nominations for Council on Medical Service

Dr. E. L. Henderson, Chairman, Board of Trustees, presented, as is customary, three names in nomination for each vacancy on the Council on Medical Service. The following were nominated to succeed Dr. Walter B. Martin, Norfolk, Va.: Dr. Henry B. Mulholland, Charlottesville, Va.; Dr. Julian Price, Florence, S. C., Dr. W. R. Brooksher, Fort Smith, Ark.

Dr. Henderson presented the following nominations for member of the Council on Medical Service to succeed Dr. A. W. Adson, Rochester, Minn., Dr. Joseph D. McCarthy, Omaha; Dr. James Stevenson, Tulsa, Okla., and Dr. Thomas F. Thornton, Waterloo, Iowa.

Roll Call for Balloting

The Secretary called the roll and each delegate as his name was called answered the roll and deposited his three ballots in the ballot box, after which the tellers proceeded to count.

Election of Affiliate Fellows

Physicians from Adjacent Country

The Secretary presented the nominations, approved by the Judicial Council, of Dr. John McMillan, Montreal, Canada, and Dr. H. V. Dobson, Peterborough, Ontario, Canada, for Affiliate Fellowship. The nominations were seconded by Dr. Arthur J. Bedell, Section on Ophthalmology and carried.

American Medical Missionaries

The Secretary presented nominations approved by the Judicial Council for Affiliate Fellowship of the following named medical missionaries:

Aldrich, Herschel C., Nadiad, India.
Brewster, Harold N., Foochow, China.
Carlson, *Emery W., Kunming, Yunnan, China.*
Christensen, Aage J., Robertsport, Liberia, West Africa.
Dick, Willis G., Mukden, Manchuria, China.
Fischer, Viola L., Shanghai, China.
Fisher, Kenneth B., Loma Linda, Calif.
Hestenes, Erling G., St. Paul, Minn.
Innocent, George C., Singapore.
Lefforge, E. Everett, Sierra Leone, W. Africa.
Ross, J. Hervey, *Morelia* Michoacan, Mexico.
Schilt, Clarence H., Bagdad, Iraq.
Wagner, William, Portland, Ore.

NOMINATED BY SECTIONS

On motions duly made, seconded and carried, the following nominees for Affiliate Fellowship approved by the Sections indicated were elected:

Section on Laryngology, Otology and Rhinology

Holtman, David Eugene, Boyceville, Wis.
Koenig, Oscar, Glendale, Calif.

Section on Pathology and Physiology

Glaser, Robert J., St. Louis.

Section on Preventive and Industrial Medicine and Public Health

Hein, Fred V., Chicago.

Election of Associate Fellows

On motion of Dr. H. B. Everett, Tennessee, seconded by Dr. B. H. Minchew, Georgia, and carried, the following named physicians, approved by the Council on Scientific Assembly, were elected Associate Fellows:

ALABAMA

Compton, Wheeler W., Black Mountain, N. C.
Hill, Hugh W., Carrollton.

ARKANSAS

Caldwell, Robert, Little Rock.

CALIFORNIA

Allen, Herbert W., San Francisco.
Berauer, Joseph M., Hollywood.
Bramkamp, Allan L., Banning.
Broughton, G. A., Ventura.
Brown, Walter H., San Francisco.
Brunn, Harold, San Francisco.
Burlew, J. M., Santa Ana.
Decker, C. W., Pomona.
Hopkins, Mark F., San Jose.
Huff, Lucius J., Hollywood.
Kress, George H., Los Angeles.
Kuhn, Orta E., Moorpark.
Lefler, Anna B., Los Angeles.
Lemere, Henry B., Beverly Hills.
MacFarlane, Arthur H., Mountain View
Maclennan, A. L., Pasadena.
Moulton, D. H., Chico.
Parker, Carl H., Altadena.
Ransom, J. K., Modesto.
Reed, Edward N., Santa Monica.
Seymour, Eleanor C., Los Angeles.
Shryock, Alfred, Loma Linda.
Tillmanns, Carl S. J., Los Angeles.

COLORADO

Noonan, George M., Denver.
Robinovitch, Louise G., Englewood, N. J.

CONNECTICUT

Taylor, J. C., New London.

ILLINOIS

Adams, A. L., Jacksonville.
Albrecht, Charles A., Chicago.
Abt, Isaac, Chicago.
Andelson, David, Chicago.
Bachelle, C. V., Chicago.
Baker, Henry Lester, Chicago.
Barothy, A. M., Chicago.
Baxter, George E., Glendora, Calif.
Blackstone, G. R., Urbana.
Bothwell, Roy S., Batavia.
Bourland, Robert C., Rockford.
Boynton, Charles O., Sparta.
Brown, J. Archibald, Kankakee.
Capps, J. A., Chicago.
Carr, James G., Evanston.
Carriel, H. B., Elgin.
Carter, Charles W., Winter Park, Fla.
Catlin, S. R., Rockford.
Cheney, H. W., Florence, Ala.
Clements, Robert, Danville.
Cooper, Rachel M., Normal.
Cubbins, Wm. R., Dundee.
Dahlberg, Andrew V., Chicago.
Darling, Ulysses G., Chicago.
Day, James A., Springfield.
Dennison, A. E., Chicago.
Diamond, I. B., Chicago.
Ehrmann, Fred J. E., La Grange.
Ferguson, Clara, Gibson Island, Md.
Findlay, E. K., Chicago.
Fleming, James L., Chicago.
Gale, F. C., Pekin.
Geen, James S., Utica.
Gentles, Harry W., Chicago.
Harmison, F. B., Chicago.

ILLINOIS—Continued

Harvey, Andrew M., Long Beach, Calif.
Harvey, James A., Pasadena, Calif.
Hawks, J. K. P., Bloomington.
Hedges, A. P., Chicago.
Hektoen, Ludvig, Chicago.
Heldring-Fabricius, L. J., DeLand, Fla.
Hill, H. C., Streator.
Hutchins, Linda K., Freeport.
Ikemire, John A., Palestine.
Jack, John B., Brock, Neb.
Jacobs, Charles M., Winnetka.
Kerr, Ellis K., Oak Park.
Knapp, Afred A., Peoria.
Latham, V. A., Chicago.
Lieberthal, David, Chicago.
Lofgren, Emil, Rockford.
Mahoney, G. W., Chicago.
Martin, Albert R., Chicago.
Masilko, V. F., River Forest.
McGaughey, R. S., Danville.
McLean, Wm. T., Maroa.
Meling, N. C., Evanston.
Michael, Oscar W., Muncie.
Middleton, Alonzo B., Clermont, Fla.
Miner, Elizabeth R., Macomb.
Motter, Thomas L., Oak Park.
Mueller, George, Chicago.
Ochsner, E. E., Rockford.
Parker, Rupert M., Chicago.
Pollock, M. D., Decatur.
Preble, Robert B., Chicago.
Prendergast, Joseph, Oak Park.
Pusey, Brown, Golf.
Rhodes, O. M., Bloomington.
Roark, J. P., Bushnell.
Roberts, A. J., Ottawa.
Schmidt, Herman, Okawville.
Schram, A. W., Chicago.
Simpson, Frank E., Chicago.
Steele, W. A., Havana.
Stewart, Allan E., West Palm Beach, Fa.
Stoops, Perry H., Ipava.
Swift, A. W., Belvidere.
Twitchell, B. E., Belleville.
VanBenschoten, Wm. C., Chicago.
VanHoosen, Bertha, Chicago.
Waterman, Samuel A., Miami, Fla.
Weld, Anna, Rockford.
Welfeld, Joseph, Chicago.
Wellenreiter, O. F., Danville.
Wheeler, Ralph H., Chicago.
White, Marion L., Dixon.
Wilkinson, C. E., Danville.
Wood, Wilbur C., Decatur.
Wright, Charles E., Rockford.

INDIANA

Ames, George F., Eaton.
Austin, F. H., Bloomington.
Ball, Thomas Z., Crawfordsville.
Barnard, Pliny C., Parker.
Boren, Samuel W., Poseyville.
Bragunton, Fred, Hammond.
Brown, Edward A., Indianapolis.
Buxton, Eva J., Rockport.
Cramp, Arthur J., Hendersonville, N. C.
Crampton, Chas. C., *Delphi.*
Dando, George H., Hartford City.
Dewey, Geo. W., Lafayette.
DuBois, Frank, Liberty.
Duncan, William F., Aurora.
Emery, Charles H., Bedford.
Eshleman, L. H., Marion.
Gillespie, J. F., Greencastle.
Giorgi, Antonio, Gary.
Gordin, Stanton E., Connersville.
Harold, Norris E., Indianapolis.
Holloway, W. A., Logansport.
Hoppenrath, W. H., Elwood.
Hughes, W. F., Indianapolis.
Johnson, G. C., Evansville.
Kamman, G. H., *Seymour.*
Keeling, James E., Waldron.
Kennedy, Samuel, Shelbyville.
Lane, W. H., Angola.
Lauer, A. J., Whiting.
McCool, W. E., Evansville.
McCulloch, C. B., Indianapolis.
Molloy, Wm. J., Muncie.
Morrison, John S., Lafayette.
Mull, P. L., Louisville, Ky.
Myers, Burton D., Bloomington.
Neier, O. C., Indianapolis.
Niblack, E. S., Terre Haute.
Noble, Thomas B., Indianapolis.
Pfafflin, Chas. A., Indianapolis.
Price, Willard A., Nappanee.
Quickel, D. S., Anderson.
Ranke, W. Henry, Ft. Wayne.
Ravdin, Marcus, Evansville.
Rice, T. R., Petersburg.
Schaefer, C. Richard, Indianapolis.
Schick, M. F., Ft. Wayne.
Schlieker, A. G., East Chicago.
Schweitzer, Ada E., Indianapolis.
Shacklett, Henry B., New Albany.
Sims, Stephen B., Frankfort.
Smith, Rodney D., Bloomington.
Stemm, W. H., No. Vernon.
Swarts, Willard W., Three Rivers, Mich.
Tindal, E. F., Muncie.
Titus, Charles, Wilkinson.
Voyles, Charles F., Indianapolis.
Wheeler, John T., Indianapolis.
White, William J., Gary.
Whitsitt, Schuyler A., Madison.
Wiedemann, Frank E., Terre Haute.
Wyeth, Charles, Ft. Lauderdale, Fla.

IOWA

VanderVeer, F. L. Janesville.

LOUISIANA

Hunter, W. B., Coushatta.
Jauquet, Clotilde C., New Orleans.

MAINE

Hayden, Louis B., Livermore Falls.

MARYLAND

Boyer, George M., Mt. Airy, Damascus.
Chapman, Ross McC., Towson.
Dickerson, John D., Stockton.
Fisher, W. A., Baltimore.
Miller, Sydney R., Baltimore.
O'Neil, F. P., Plainview, Tex.

MASSACHUSETTS

Bancroft, Edward E., Boston.
Carney, Patrick J., Worcester.
Champion, Merrill E., Boston.
Cole, Arthur J., Holbrook.
Cook, Philip H., Worcester.
Gagne, J. A., Chicopee Falls.
Knudson, M. M., West Roxbury.
MacLean, Donald J., Palmer.
Marsh, Arthur W., Worcester.
McCrudden, Francis H., West Newton.
Ruble, Wells A., Glendale, Calif.
Page, Calvin G., Boston.
Senesac, A. N., New Bedford.
Smyth, Henry F., Pocosset.
Sternberg, J. Edward, Wollaston.
Young, Walter H., Dedham.

MICHIGAN

Swift, Earle R., Lakeview.

MINNESOTA

Bertleson, O. L., Crookston.
Ide, Arthur W., St. Paul.
Williams, R. V., Rushford.

MISSOURI

Bailey, Fred W., St. Louis.
Bansbach, Joseph J., St. Joseph.
Bauman, L. C., St. Joseph.
Blair, V. P., St. Louis.
Bradley, John M., St. Louis.
Burford, C. E., St. Louis.
Callaway, L. M., Kansas City.
Coil, Paul E., Mexico.
Cunningham, Harvey L., Cape Girardeau.
DeVilbiss, E. F., Kansas City.
Dickson, F. D., Kansas City.
Edwards, Edwin D., St. Louis.
Gibson, E. T., Kansas City.
Hardin, Thomas L., St. Charles.
Hardy, W. F., St. Louis.
Logan, James A., Warsaw.
Neilson, Charles H., St. Louis.
Neuhoff, Fritz, St. Louis.
Pickens, E. E., Kansas City.
Rassieur, Louis, Kirkwood.
Schulz, G. B., Cape Girardeau.
Smith, Clinton K. Kansas City.
Spencer, Selden, St. Louis.
Stormont, R. M., Webb City.
Tate, P. S., Fulton.
Traubitz, Arnold, Leadwood.
Webster, R. W., Santa Cruz, Calif.
Weinsberg, Charles H., St. Louis.
West, William M., Monett.
Wills, W. J., Springfield.
Zimmerman, Carl A. W., Cape Girardeau.

NEBRASKA

Allen, John F., Van Nuys, Calif.
Haney, W. P., Omaha.
Hellwig, J. W., Omaha.
Shramek, Joseph M., LaCrosse, Wis.

NEW JERSEY

Bartlett, Clara K., Atlantic City.
Fitcroft, William, Waukesha, Wis.
Gille, Hugo, Jersey City.
Pyle, Wallace, Jersey City.
Rosecrans, James H., Hoboken.

NEW YORK

Charlton, Richard, Daytona Beach, Fla.
Clark, Raymond, Brooklyn.
Conway, John A., Hornell.
Coopernail, George P., St. Petersburg, Fla.
Dunning, Henry S., New Canaan, Conn.
Green, Nathan W., New Canaan, Conn.
Heller, Jacob, Brooklyn.
Hodge, W. H., Niagara Falls.
Hooker, H. Lyman, New York.
Keays, Frederick L., Great Neck.
King, David F., Laurelton, L. I.
Ludum, Walter Denton, Brooklyn.
Mayne, Earl H., Brooklyn.
Olin, Joseph D., Watertown.
Randel, William A., Coral Gables, Fla.
Rich, Charles, Yorktown Heights.
Schumer, Henry, New York.
Slavin, James S., Richmond Hill, L. I.
Sprague, W. G., Barker.
Stoddart, James, Buffalo.
Vaughan, Harold S., New York.
Wadsworth, Augustus, Albany.
Wallace, George B., New York.

OKLAHOMA

Anderson, Parkey H., Forsyth, Mo.
Barker, C. E., Oklahoma City.
Hill, C. B., Guthrie.
Loyd, E. M., Taloga.
Maginnes, P. H., Tulsa.
Templin, O. E., Alva.
Torrey, John P., Bartlesville.
Yeargan, W. M., Hollis.

PENNSYLVANIA

Eicher, Charles G., Ontario, Calif.
Hartman, Irvin H., Reading.
Ziegler, Charles E., Miami Shores, Fla.

TENNESSEE

Wilson, Owen H., Nashville.

TEXAS

Alexander, James M., Abilene.
Andrews, Judson M., Wharton.
Gentry, William H., Corpus Christi.
Tabor, Martin E., Dallas.
Taylor, Martin J., Houston.

VERMONT

Holcombe, Luman C., Milton.
Marvin, David, Essex Junction.

VIRGINIA

Harman, W. C., Dolphin.

WASHINGTON

Abrams, C. J., Spokane.
Abrams, W. E., Spokane.
Anderson, F. W., South Bend.
Banks, Rush, Centralia.
Bates, U. C., Seattle.
Booth, Fred'k. A., Pasadena, Calif.
Brown, Francis H., Seattle.
Calhoun, Grant, Seattle.
Canfield, Herbert H., Seattle.
Carroll, Frank M., Seattle.
Chase, E. F., Seattle.
Conway, C. E., Cashmere.
Crookall, A. C., Seattle.
Davis, George H., Kirkland.
Dudley, Homer D., Seattle.
Durand, J. I., Seattle.
Durrant, James A., Snohomish.
Ewing, D. Albert, Seattle.
Fursey, Frank R., Spokane.
Gates, I. N., Seattle.
Goodnow, L. L., Aberdeen.
Hagyard, C. E., Seattle.
Hall, David C., Seattle.
Hendricks, Ralph, Spokane.
Hillis, A. E., Tacoma.
Hood, Charles S., Ferndale.
Horsfall, Frank L., Seattle.
Houston, David H., Seattle.
Hutchinson, Joseph L., Seattle.
Irwin, Lilian C., Seattle.
Jones, Everett O., Seattle.
Kirkpatrick, W. D., Bellingham.
Kunz, Geo. G. R., Tacoma.
Lamson, O. F., Seattle.
Leuty, Joseph D., Farmington.
McClure, Charles E., Seattle.
McKinney, Mark W., Seattle.
Palmer, Don H., Seattle.
Penney, W. B., Tacoma.
Phelps, Frank W., Seattle.
Reger, E. L., Spokane.
Rhodehamel, Harry E., Spokane.
Rose, Frances E., Spokane.
Robertson, J. Benj., Tacoma.
Ruge, E. C., Long Beach, Calif.
Sayer, Joseph H., Seattle.
Schutt, John P., Bremerton.
Seaberg, Simon P., Spokane.
Shaw, Harry A., Seattle.
Shepard, Frank L., Winslow.
Silverberg, Carl W., Seattle.

WASHINGTON—Continued

Smith, Carroll L., Spokane.
Smith, Clarence A., Seattle.
Sutherland, James, Spokane.
Thompson, Nathan, Everett.
Veasey, Clarence A., Spokane.
Von Phul, P. V., Seattle.
Warhanik, Charles A., Seattle.
Welty, E. M., Spokane.
Winslow, K., Seattle.

WEST VIRGINIA

Fortney, Mary J. F., Uhrichsville, Ohio.
Johnson, Henry R., Fairmont.

WISCONSIN

Buchanan, Richard C., Green Bay.
Grosskopf, Ernest C., Waukesha.
Holbrook, Arthur T., Milwaukee.
McCracken, Richard W., Union Grove.
Ruethin, Knute A., Costa Mesa, Calif.

ADDENDA

NEW YORK

Brooks, Paul B., Altamont.
Cox, Gerard H., Saranac Lake.
Cox, Hugh M., New York.
Craw, Nelson A., Fairfield, Conn.
Davis, James C., Rochester.
DuBois, Francis E., Winter Park, Fla.
Dugan, John, Albion.
Foord, Andrew G., Kerhonkson.
Friedman, Louis A., New York.
Haynes, Royal S., New York.
Humphreys, George H., Jamaica.
Hutchinson, Abbott T., Coconut Grove, Fla.
Johnsten, Arthur M., Utica.
Knight, Frank H., White Plains.
McClintock, Thomas H., Garden City, L. I.
Mesmer, John M., Buffalo.
Miller, F. M., Sr., Utica.
Mosser, Fred'k. L., New Rochelle.
Osgood, Alfred T., New York.
Page, Albert W., White Plains.
Rimer, Edward S., New York.
Santry, A. B., Little Falls.
Stein, Arthur, New York.
Turnure, Percy R., Northport.
Wakeman, Charles L., Hancock.
Ward, Ralph F., Briarcliff Manor.
Watson Cassius H., Brookfield Center, Conn.
Woodhouse, F. E., Elmira.

OREGON

Seeley, A. C., Roseburg.

Citation for Distinguished Lay Service

Dr. William Bates, Pennsylvania, moved that in the future the House consider nominations for receiving Citations for Distinguished Lay Service, after they have been received from the Board of Trustees, in Executive Session and act on them in Executive Session. The motion was seconded by several and carried.

Dates of 1949 and 1950 Sessions

Dr. E. L. Henderson, Chairman, Board of Trustees, announced that the 1949 Annual Session would be held in Atlantic City June 6 to 10; the 1950 Annual Session in San Francisco, June 26-30, and the 1949 Interim Session in St. Louis, Nov. 30 to Dec. 3. He added that Dr. David Allman would be the Chairman of the Local Committee on Arrangements for the Atlantic City session in 1949.

Retirement of Dr. Arthur J. Bedell

Dr. Edward P. Flood, New York, announced that Dr. Arthur J. Bedell, Section on Ophthalmology, a member of the House for thirty-three years, is retiring and that he was sure all would miss him.

Expressions of Appreciation

On motion of Dr. F. F. Borzell, Vice Speaker, seconded by Dr. H. B. Everett, Tennessee, and carried, a unanimous vote of thanks was tendered the Chicago Medical Society and the Illinois State Medical Society for their gracious functioning as hosts.

It was moved by Dr. Britton E. Pickett, Texas, seconded by Dr. H. P. Ramsey, District of Columbia, and carried by a rising vote, that the House extend its sincere thanks to Dr. R. W. Fouts for his long and faithful service as Speaker of the House.

Address of Dr. R. W. Fouts

The Vice Speaker presided while Dr. R. W. Fouts addressed the House as follows: Gentlemen, I must admit that it is with somewhat mingled emotion and feeling that I pass this gavel on to a man who I know is eminently qualified, but at the same time having in mind that after all these years I will miss it. If I have served you with satisfaction it has been because of the fine help that I have had and the generous cooperation from each and every delegate. I have done my best. You have seen fit to elect me to the Vice-Presidency, so farewell here does not necessarily mean finality. You will be seeing me. Thank you a lot.

On motion of Dr. B. H. Minchew, Georgia, seconded and carried, the House extended its thanks to the hospitality of

Chicago through the hotels, including the Palmer House, headquarters hotel for the House of Delegates, and the Chicago Hotel Association.

Election of President-Elect

The tellers announced that the total vote on the white ballot was 166. Dr. Ernest E. Irons, Chicago, received 91 votes for President-Elect and Dr. A. W. Adson, Rochester, Minn., received 75, and the Speaker declared Dr. Irons elected President-Elect for the ensuing year, having received a majority of the votes cast.

Election of Vice Speaker of House of Delegates

Of the 166 votes cast, Dr. James R. Reuling Jr., Bayside, N. Y., received 89 and Dr. Creighton Barker, New Haven, Conn., 77. The Speaker declared Dr. Reuling, having received the majority of the votes cast, elected Vice Speaker of the House of Delegates for the ensuing year.

On motion of Dr. Thomas P. Murdock, Connecticut, seconded by Dr. Creighton Barker, Connecticut, and carried, the vote for Dr. Reuling was made unanimous.

Dr. W. A. Coventry, Minnesota, moved that Dr. Ernest E. Irons be declared unanimously elected President-Elect, and the motion was seconded by Dr. J. B. Lukins, Kentucky, and carried, and the Speaker declared Dr. Irons so elected.

Presentation and Address of President-Elect Ernest E. Irons

Dr. Charles H. Phifer, Illinois, introduced the President-Elect, Dr. Ernest E. Irons, who addressed the House as follows:

Mr. Speaker, members of the House: Always, I suppose, to all persons who are so honored, the acknowledgment of an honor becomes a very difficult procedure.

I am impressed with the responsibilities which you have placed on me. Personally, I offer to the House my deepest thanks and gratitude for thus honoring me. I feel no elation. I should, I suppose, but any spark of elation is overcome by a sense of responsibility.

I have been preceded in office, for the last two or three years particularly, by men who have given yeoman service to medicine. We have before us a temporary cessation of the efforts to abridge the freedom of American medicine. We have won some preliminary skirmishes, but, make no mistake, we are not through with this fight. It is a fight that is much more than the fight for the freedom of American medicine. It is a fight for the preservation of American democracy and the American way of life. We have knowledge that there are other attacks in the offing, and I know that the Board of Trustees and your other officers are taking the necessary steps to combat them.

But the battle is going to come a little later, and as the termites that have been boring from within against our democratic way of life become a little more conscious of a losing battle, we shall find that the attacks will become a little more subtle, if that could be, and a little more vigorous.

The opportunity of this House is particularly great now, for you may be able and should be able to arouse in all county medical societies a will to get out and fight locally, and that has not been the case up to date. I say that not in criticism but merely as a statement of fact.

As we all go back to our daily routine, I hope that every one of us may begin, if he has not already begun, an effort to arouse the profession in the county societies and then at the state levels. If we do that, we have 130,000 doctors who can swing anything and bring the public to know the problems that they are facing and the efforts that they must make if they are to maintain their individual freedom and the American way of life.

Again, I thank you for this signal honor which I feel very deeply. I hope I have expressed in some small way my thanks to all of you.

Election of Members of Council on Medical Education and Hospitals

The tellers announced the following results of the vote for members of the Council on Medical Education and Hospitals: *For the member to serve for seven years, Dr. Harvey B. Stone,* Baltimore, received 134 votes and Dr. L. T. Coggeshall, Chicago, 16; for the member to serve for six years, Dr. William L. Pressly, Due West, S. C., received 126 votes and Dr. Carl A. Grote, Huntsville, Ala., 22. The Speaker declared Dr. Stone elected *for a term of seven years and Dr. Pressly for a term* of six years.

Election of Members of Council on Medical Service

The tellers announced the following results of the vote for members of the Council on Medical Service: In place of Dr. Walter B. Martin, Norfolk, Va., Dr. H. B. Mulholland, Charlottesville, Va., received 99 votes, Dr. William R. Brooksher, Fort Smith, Ark., 30, and Dr. Julian Price, Florence, S. C., 16. The Speaker declared Dr. Mulholland, having received the majority of the votes cast, a member of the Council on Medical Service.

The tellers announced the following results of the balloting for a member of the Council on Medical Service in place of Dr. A. W. Adson, Rochester, Minn.: Dr. James Stevenson, Tulsa, Okla., received 47 votes, Dr. Joseph D. McCarthy, Omaha, 62 and Dr. Thomas F. Thornton, Waterloo, Iowa, 32; no one having received a majority of the votes cast, the Speaker announced that another ballot would be taken between Dr. McCarthy and Dr. Stevenson.

Election of Trustees

The tellers announced the results of the voting on the blue ballot:

For Trustee for a term of five years to succeed Dr. William F. Braasch, Rochester, Minn., Dr. Louis A. Buie, Rochester, Minn., 53; Dr. Gunnar Gundersen, La Crosse, Wis., 63, and Dr. James R. McVay, Kansas City, Mo., 48. The Speaker announced that, as no one had received a majority of the votes cast, another vote would have to be taken on Dr. Buie and Dr. Gundersen.

For Trustee for a term of five years to succeed Dr. Ernest E. Irons, Chicago: Dr. Edwin S. Hamilton, Kankakee, Ill., 101, and Dr. Warren W. Furey, Chicago, 63.

The Speaker declared Dr. Hamilton elected Trustee for a term of five years, since he had received a majority of the votes cast.

On motion of Dr. Fred H. Muller, Illinois, seconded and carried, Dr. Edwin S. Hamilton, Kankakee, Ill., was declared unanimously elected Trustee.

For Trustee to serve three years to succeed Dr. C. W. Roberts, deceased: Dr. Walter B. Martin, Norfolk, Va., 110, and Dr. Wingate Johnson, Winston-Salem, N. C., 54. The Speaker declared Dr. Martin elected a Trustee for a term of three years, as he had received a majority of the votes cast.

Place of Annual Session in 1951

The tellers announced that Atlantic City had received 94 votes and Chicago 59. The Speaker declared that the House had selected Atlantic City as the place of the 1951 Annual Session, since it had received a majority of the votes cast.

Election of Trustee and of Member of Council on Medical Service

The tellers spread the second ballot for the two places in which no majority was had. The result of the vote was announced as follows:

For Trustee for a term of five years, Dr. Louis A. Buie, Rochester, Minn., 46, and Dr. Gunnar Gundersen, La Crosse, Wis., 87.

The Speaker declared Dr. Gundersen elected Trustee for a term of five years to succeed Dr. William F. Braasch, Rochester, Minn., since he had received a majority of the votes cast.

For Member of Council on Medical Service, Dr. Joseph D. McCarthy, Omaha, 68, and Dr. James Stevenson, Tulsa, Okla., 61.

The Speaker declared Dr. Joseph D. McCarthy, Omaha, having received the majority of the votes cast, elected a member of the Council on Medical Service for a term of three years.

The House adjourned sine die at 5:40 p. m.

The Scientific Exhibit

The Scientific Exhibit at the Chicago Session of the American Medical Association caused much favorable comment. The artistic quality of the exhibits, the care with which the material was selected and correlated, the patience and perseverance of the demonstrators all resulted in crowded aisles throughout the week. The studious attitude of the physicians present attested to the value of this form of graduate medical instruction.

Three special exhibits were subsidized by the Board of Trustees. The Special Exhibit on Fractures, occupying six booths, was presented for the seventeenth time under the guidance of a committee consisting of Dr. Kellogg Speed, Chicago, chairman; Dr. Frederick A. Jostes, St. Louis, and Dr. Gordon M. Morrison, Boston. The interest in this subject seems to increase with the years. A large number of competent demonstrators took part, and a pamphlet describing the exhibit was distributed.

The Special Exhibit on Physical Medicine was shown for the third time with the usual outstanding success. The committee in charge consisted of Dr. Frank H. Krusen, Rochester, Minn., chairman; Dr. Winfred Overholser, Washington, D. C., and Dr. Howard A. Rusk, New York. There were eight booths, and a pamphlet describing the work in each booth was distributed.

The Special Exhibit on Fresh Pathologic Material, which has been a feature from time to time for many years, was presented by a committee of which Dr. I. Davidsohn, Chicago, was chairman, assisted by a large group of competent pathologists. Fresh pathologic material was brought in each morning and afternoon from various local hospitals, and the continuous demonstrations were a valuable part of the meeting.

Other features of the meeting included a miscellaneous number of subjects. A group of exhibits on diabetes was supplemented by clinics and conferences on diabetes under the guidance of Dr. Howard F. Root, Boston. The program was continuous with a different speaker every half hour, and the room filled to capacity most of the time.

Cancer detection was emphasized by a group of eleven exhibits presented with the cooperation of the American Cancer Society, the American College of Surgeons and the Cancer Prevention Center of Chicago. Dr. Augusta Webster, Chicago, was chairman of the group.

The medical aspects of atomic energy were featured by ten exhibits which attracted an unusual amount of attention. The Atomic Energy Commission, as well as the Army, Navy and Air Force, were represented. Mr. Howard A. Carter, Chicago, assisted in organizing this program.

Motion pictures were shown in two theaters adjoining the exhibits. Thirty-six films were shown once each day throughout the week to enthusiastic audiences. Many of the films supplemented exhibits on the same subjects.

Seventeen sections of the Scientific Assembly presented groups of exhibits dealing with the various branches of medicine. The exhibits were carefully chosen by the Committee on Scientific Exhibit for timeliness and teaching value. Awards were made for the best exhibits by the Committee on Awards.

The Section on Internal Medicine showed fifteen exhibits, three of which received honorable mention. The section representative was Dr. Thomas C. Garrett, Philadelphia.

The Section on Surgery, General and Abdominal, had twenty-six exhibits, one of which was given a certificate of merit and two honorable mention. Dr. Walter G. Maddock, Chicago, was the section representative.

The Section on Obstetrics and Gynecology had nine exhibits, one of which received honorable mention. The section representative was Dr. Frederick H. Falls, Chicago.

The Section on Ophthalmology showed seven exhibits. There were three awards—a gold medal, a bronze medal and a certificate of merit. The section exhibit committee consisted of Dr. Georgiana D. Theobald, Oak Park, Ill., chairman; Dr. Edwin B. Dunphy, Boston and Dr. Phillips Thygeson, San Jose, Calif.

The Section on Laryngology, Otology and Rhinology had seven exhibits, one of which received a certificate of merit. Dr. James B. Costen, St. Louis, was the section representative.

The Section on Pediatrics had eight exhibits. There were two awards—a certificate of merit and an honorable mention. The section representative was Dr. Albert V. Stoesser, Minneapolis.

The Section on Experimental Medicine and Therapeutics had ten exhibits, one of which received a certificate of merit and one honorable mention. Dr. Robert W. Wilkins, Boston, was the section representative.

The Section on Pathology and Physiology presented nine exhibits. There were three awards—a gold medal, a bronze medal and an honorable mention. Dr. Frank W. Konzelmann, Atlantic City, was the section representative.

The Section on Nervous and Mental Diseases had six exhibits. The section representative was Dr. A. B. Baker, Minneapolis.

The Section on Dermatology and Syphilology had twelve exhibits, with two awards of a silver medal and honorable mention. The section representative was Dr. Francis W. Lynch, St. Paul.

The Section on Preventive and Industrial Medicine and Public Health had seventeen exhibits, one of which received a certificate of merit. The section representative was Dr. Paul A. Davis, Akron, Ohio.

The Section on Urology showed eight exhibits. Dr. John H. Morrissey, New York, was the section representative.

The Section on Orthopedic Surgery had ten exhibits. There were two awards—a silver medal and a certificate of merit. Dr. Tom Outland, Elizabethtown, Pa., was the section representative.

The Section on Gastro-Enterology and Proctology had eight exhibits. The section representatives were Drs. Donovan C. Browne, New Orleans, and J. P. Nesselrod, Evanston, Ill.

The Section on Radiology had five exhibits, one of which received an honorable mention. Dr. S. W. Donaldson, Ann Arbor, Mich., was the section representative.

The Section on Anesthesiology had four exhibits, one of which received a certificate of merit. The section representative was Dr. Urban H. Eversole, Boston.

The Section on General Practice of Medicine had eight exhibits, one of which received a certificate of merit. Dr. M. B. Casebolt, Kansas City, Mo., was the section representative.

Twenty-seven papers which were read before the sections of the Scientific Assembly were correlated with exhibits in the Scientific Exhibit.

Report of The Committee on Awards

The Committee on Awards made the following report:

GROUP I

(Awards in Group I are made for exhibits of individual investigation, which are judged on the basis of originality and excellence of presentation.)

The GOLD MEDAL to J. Garrott Allen, Margaret Sanderson, Willadene Egner, Charles McKeen, Richard Elghammer, James Crosbie and Burt Grossman, University of Chicago School of Medicine and Argonne National Laboratory, Chicago, for the exhibit on Hemorrhagic Disease Caused by Heparinemia—Temporary Control by Toluidine Blue or Protamine Sulfate.

The SILVER MEDAL to Harry B. Macey, Scott and White Hospital, Temple, Texas, for the exhibit on Plastic Procedure for Lymphedema of the Extremities.

The BRONZE MEDAL to William Stone Jr., Massachusetts Eye and Ear Infirmary, Boston, for the exhibit on New Type Movable Implant.

CERTIFICATES OF MERIT, Group I, are awarded to the following (alphabetically arranged):

William P. Boger and J. Wm. Crosson, Philadelphia General Hospital, Philadelphia, for the exhibit on Caronamide—Application to Enhancement of Penicillin Therapy.

Albert Faulconer Jr., Roger W. Ridley and Richard E. Jones, Mayo Clinic, Rochester, Minn., for the exhibit on An Acoustic Gas Analyzer for Research in Anesthesiology.

Arild E. Hansen and Hilda F. Wiese, University of Texas School of Medicine, Galveston, for the exhibit on Dietary Fat in Relation to the Skin.

Sibley W. Hoobler and Gordon K. Moe, University of Michigan Medical School, Ann Arbor, and Richard H. Lyons, Syracuse University Medical School, Syracuse, N. Y., for the exhibit on Autonomic Blockade with Tetraethylammonium—Pharmacologic Studies with Specific References to Its Diagnostic and Therapeutic Use in Peripheral Vascular Diseases.

David Lehr, New York Medical College, Flower and Fifth Avenue Hospitals, New York, for the exhibit on Low Toxicity of Sulfonamide Combinations—Experimental and Clinical Studies.

In addition, the following exhibits are deemed worthy of Honorable Mention (alphabetically arranged):

That of William Bickers, Richmond, Va., on Dysmenorrhea.

That of Helen Ollendorff Curth, Columbia University College of Physicians and Surgeons, New York, on Cancer and Acanthosis Nigricans.

That of Arthur Lack, Travis Winsor and William Adolph, University of Southern California School of Medicine, Los Angeles, and Birmingham Veterans Administration Hospital, Van Nuys, Calif., on Biomicroscopy of Conjunctival Vessels in Hypertension.

That of Irving S. Wright, Charles D. Marple and Dorothy F. Beck, Committee for the Evaluation of Anticoagulants in the Treatment of Coronary Occlusion with Myocardial Infarction, American Heart Association, New York, on Anticoagulants in the Treatment of Coronary Occlusion with Myocardial Infarction.

That of Anton S. Yuskis and George C. Griffith, University of Southern California School of Medicine and Los Angeles County General Hospital, Los Angeles, on Orthostatic Hypotension and Orthostatic Tachycardia.

GROUP II

(Awards in Group II are made for exhibits which do not exemplify purely experimental studies and which are judged on the basis of excellence of presentation and correlation of facts.)

The GOLD MEDAL to Bertha A. Klien, Chicago, for the exhibit on Disease of the Fundus Oculi.

The SILVER MEDAL to *J. Walter Wilson, University of Southern California, and Orda A. Plunkett, University of California at Los Angeles, for the exhibit on Practical Medical Mycology—Culture and Identification of Fungi as an Office Procedure.*

The BRONZE MEDAL to L. W. Kinsell, G. D. Michaels, Sheldon Margen, H. A. Harper, W. E. Larsen, D. P. McCallie and E. F. Evans, University of California Medical School, San Francisco and U. S. Naval Hospital, Oakland, Calif., for the exhibit on Protein Metabolism in Disease of the Liver.

CERTIFICATES OF MERIT, Group II, are awarded the following (alphabetically arranged):

John G. Bellows and Chester J. Farmer, Northwestern University Medical School, Chicago, for the exhibit on Treatment of Ocular Infections—Use of Chemotherapeutic Agents.

J. Brown Farrior, Tampa, Fla., and Richard C. Boyer, Ochsner Clinic, Tulane Medical School, New Orleans, for the exhibit on the Ear in Roentgen Anatomy.

Garrett Pipkin, St. Joseph's Hospital, Kansas City, Mo., for the exhibit on Indefinite Knee Symptoms Resembling Injured Cartilages.

Alfred R. Roos and John C. Roos, College of Medical Evangelists, Los Angeles, for the exhibit on Hay Fever Research in the Pacific Southwestern States—Visual Education in Allergy.

Claire L. Straith, William G. McEvitt, Matthew Pilling and John R. Lewis, Straith Clinic for Plastic Surgery, Detroit, for the exhibit on Automobile Injuries.

In addition, the following exhibits are deemed worthy of *Honorable Mention (alphabetically arranged):*

That of Carleton Dean, Michigan Crippled Children Commission, Lansing, Mich., on Prosthetic Training for Child Amputees in Michigan.

That of Georgia Price and Elizabeth F. Carr, Northwestern University Medical Library, Chicago, on Literature Illustrating the History of Surgery.

That of Michael A. Rubinstein, Montefiore Hospital, New York, on Multiple Myeloma—Its Relation to Leukemia.

That of John D. Stewart, Sidney M. Schaer, W. H. Potter and Alfred J. Massover, University of Buffalo School of Medicine, Buffalo, on Management of Massively Bleeding Gastroduodenal Ulcer.

That of Heinz S. Weens, James V. Warren, David F. James and Herbert M. Olnick, Emory University School of Medicine, Atlanta, Ga., on Contrast Visualization of the Vascular System.

That of Julius S. Weingart, Iowa Lutheran Hospital, Des Moines, Iowa, on Stereoscopic Photography of Pathologic Specimens.

SPECIAL COMMENDATION

Special Commendation is given to the group of exhibits on Atomic Energy for the timeliness and excellence of presentation of this subject.

Special Commendation is given to the group of exhibits on Cancer arranged with the cooperation of the American Cancer Society, the American College of Surgeons and the Cancer Prevention Center of Chicago.

Special Commendation is given to the group of exhibits on diabetes, as well as the Clinical Conference on Diabetes which is presented in conjunction with the exhibits under the chairmanship of Dr. Howard F. Root, Boston.

SUBSIDIZED EXHIBITS

The Committee on Awards commends highly the Special Exhibits on Fractures, Fresh Pathologic Material and Physical Medicine, which are sponsored by the Board of Trustees of the American Medical Association.

COMMENTS

The sincere and hearty cooperation of the representatives of the seventeen sections of the Scientific Assembly is largely responsible for maintaining the Scientific Exhibit as the most important educational feature of the A. M. A. Convention.

The Committee is impressed with the excellence of the motion pictures presented in the theaters adjacent to the Scientific Exhibit.

The Committee on Awards wishes to express its appreciation and that of all physicians to the Director of the Scientific Exhibit, Dr. Thomas G. Hull, and his assistants, for their selfless devotion in making possible these exhibits which represent the best in research and postgraduate medical education.

Respectfully submitted,

FRANK W. HARTMAN, Detroit, Chairman.
WILBUR BAILEY, Los Angeles.
DAVID BOSWORTH, New York.
DERYL HART, Durham, N. C.
JOE VINCENT MEIGS, Boston.

MINUTES OF THE SECTIONS

SECTION ON INTERNAL MEDICINE

Wednesday, June 23—Afternoon

The meeting was called to order at 2 o'clock by the chairman, Dr. Cecil J. Watson of Minneapolis.

Drs. Robert M. Marcussen and Harold G. Wolff, New York, presented a paper on "The Therapy of Migraine Headache." Discussed by Drs. Roland P. Mackay of Chicago and Eugene Foldes, New York.

Drs. Russell L. Haden and Donald W. Bortz, Cleveland, presented a paper on "The Treatment of Pernicious Anemia." Discussed by Drs. Frank H. Bethell, Ann Arbor, Mich.; Howard L. Alt, Chicago; Hyman I. Goldstein, Camden, N. J., and William P. Murphy, Boston.

Dr. Henry M. Thomas Jr., Baltimore, read a paper on "What Is Psychotherapy?" Discussed by Dr. Francis J. Gerty, Chicago.

Dr. Robert H. Williams, Boston, read a paper on "Selection of Therapy for Individual Patients with Thyrotoxicosis." Discussed by Drs. Saul Hertz, Boston, and Willard O. Thompson, Chicago.

Dr. James S. McLester, Birmingham, Ala., read the Frank Billings Lecture on "Protein Comes into Its Own."

Dr. Elliott P. Joslin of Boston read a paper on "The Furtherance of Diabetes Therapy." Discussed by Drs. W. Wallace Dyer, Philadelphia; Henry T. Ricketts, Chicago, and Frederick M. Allen, New York.

Thursday, June 24—Afternoon

The following officers were elected: Marion A. Blankenhorn, Cincinnati, chairman; Priscilla White, Boston, vice chairman; Charles T. Stone, Dallas, Texas, delegate; William D. Stroud, Philadelphia, alternate delegate; Thomas C. Garrett, Philadelphia, representative to the Scientific Exhibit.

Drs. F. Tremaine Billings Jr., Bernard M. Kalstone, James L. Spencer and George R. Meneely, Nashville, Tenn., presented a paper on "Prognosis of Acute Myocardial Infarction." Discussed by Drs. Herrman L. Blumgart, Boston, and Chauncey C. Maher, Chicago.

Drs. Louis Leiter, Reuben Mokotoff, Raymond Weston, Doris J. W. Escher, Leon Hellmann and Martin Cherkasky, New York, presented a paper on "The Mechanism and Treatment of Renal Dysfunction in Chronic Congestive Heart Failure." Discussed by Drs. Arthur M. Master, New York; Tinsley R. Harrison, Dallas, Texas, and Fred M. Allen, New York.

Dr. Cecil J. Watson, Minneapolis, read the chairman's address, on "Certain Activities and Impacts of the American Board of Internal Medicine."

Dr. Edward S. Ray, Richmond, Va., read a paper on "Sarcoidosis." Discussed by Drs. George T. Harrell, Winston-Salem, N. C., and Robert G. Bloch, Chicago.

Drs. John R. McDonald and Lewis B. Woolner, Rochester, Minn., presented a paper on "The Value of Cytologic Study of Sputum and Bronchial Secretions in the Diagnosis of Carcinoma of the Lung." Discussed by Dr. Henry A. Cromwell, New York.

Drs. Ralph Tompsett, Alphonse Timpanelli and Walsh McDermott, New York, presented a paper on "Discontinuous Therapy with Penicillin." Discussed by Drs. W. W. G. Maclachlan, Pittsburgh, and Frederick H. King, New York.

Friday, June 25—Morning

A joint meeting was held with the Section on Experimental Medicine and Therapeutics. The minutes of this meeting appear in the minutes of the Section on Experimental Medicine and Therapeutics.

SECTION ON SURGERY, GENERAL AND ABDOMINAL

Wednesday, June 23—Morning

The meeting was called to order at 9 o'clock by the chairman, Dr. B. Noland Carter, Cincinnati.

Dr. Arthur B. McGraw, Detroit, read a paper on "Factors Contributing to Low Mortality in Appendectomy for Acute Appendicitis: A Ten-Year Study." Discussed by Drs. Frederick F. Boyce, New Orleans; Max M. Zinninger, Cincinnati; J. L. Crook, Jackson, Tenn., and Arthur B. McGraw, Detroit.

Dr. William A. Altemeier, Cincinnati, read a paper on "The Treatment of Acute Septic Peritonitis." Discussed by Drs. Champ Lyons, New Orleans; Edwin J. Pulaski, San Antonio, Texas, and W. A. Altemeier, Cincinnati.

Drs. Robert W. Buxton and Frederick A. Coller, Ann Arbor, Mich., presented a paper on "Acute Obstruction of the Small Bowel." Discussed by Drs. R. J. Noer, Detroit; Clarence Dennis, Minneapolis, and Dr. Frederick A. Coller, Ann Arbor, Mich.

Dr. Marshall L. Michel, New Orleans, read a paper on "Acute Obstruction of the Colon." Discussed by Drs. Clarence Dennis, Minneapolis; George V. Brindley, Temple, Texas, and M. L. Michel, New Orleans.

Dr. Louis M. Rousselot, New York, read a paper on "The Rationale and Value of Combined (One Stage) Splenectomy and Portocaval Shunts in Portal Hypertension: Observations on Venous Shunts in the Postsplenectomy Patient with Recurring Hemorrhage." Discussed by Drs. Robert R. Linton, Brookline, Mass.; Paul Ravenna, Chicago, and L. M. Rousselot, New York.

Dr. Brian B. Blades, Washington, D. C., read a paper on "Empyema." Discussed by Drs. Edward M. Kent, Pittsburgh, and Thomas H. Burford, St. Louis.

Thursday, June 24—Morning

The following officers were elected: chairman, Dr. William MacFee, New York; vice chairman, Dr. Emil Holman, San Francisco.

Dr. B. Noland Carter, Cincinnati, read the chairman's address on "The Present Status of Surgery of the Heart and Associated Great Vessels."

Dr. George Crile Jr., Cleveland, read a paper on "The Incidence of Malignant Tumors of the Thyroid." Discussed by Drs. Charles W. Mayo, Rochester, Minn.; Warren H. Cole, Chicago, and George Crile Jr., Cleveland.

Drs. I. S. Ravdin and Edward Rose, Philadelphia, presented a paper on "Hyperthyroidism." Discussed by Drs. Harold L. Foss, Danville, Pa.; Warren H. Cole, Chicago, and I. S. Ravdin, Philadelphia.

Dr. Winchell McK. Craig, Rochester, Minn., read a paper on "Hypertension: Evaluation of Treatment." Discussed by Drs. Geza de Takats, Chicago; James L. Poppen, Boston; Frederick M. Allen, New York, and W. McK. Craig, Rochester, Minn.

Dr. Norman E. Freeman, San Francisco, read a paper on "Acute Arterial Injuries." Discussed by Drs. Frederick W. Cooper, Georgia; Harris B. Shumacker, Baltimore; Geza de Takats, Chicago, and N. E. Freeman, San Francisco.

Dr. Robert E. Gross, Boston, read a paper on "Surgical Treatment for Coarctation of the Aorta." Discussed by Drs. Willis J. Potts, Chicago; Richard B. Capps, Chicago; Alfred Blalock, Baltimore; Egbert H. Fell, Chicago; Norman Freeman, San Francisco, and Robert E. Gross, Boston.

Friday, June 25—Morning

A joint meeting was held with the Section on Gastro-Enterology and Proctology.

Dr. A. H. Aaron, Buffalo, read a paper on "Newer Aspects of the Treatment of Ulcer."

Drs. Keith S. Crimson, R. W. Rundles, George J. Baylin and H. M. Taylor, Durham, N. C., presented a paper on "Vagotomy."

These papers were discussed by Drs. Lester R. Dragstedt, Chicago; Francis D. Moore, Boston; A. C. Ivy, Chicago; Waltman Walters, Rochester, Minn.; Walter L. Palmer, Chicago; Sara M. Jordan, Boston; R. L. Sanders, Memphis, Tenn.; Otto Porges, Chicago; R. S. Dinsmore, Cleveland; Erwin Levin, Chicago; Keith S. Grimson, Durham, N. C., and A. H. Aaron, Buffalo.

Dr. Russell S. Boles, Philadelphia, read a paper on "Nonspecific Inflammatory Lesions of the Terminal Ileum and Colon."

Dr. Leland S. McKittrick, Boston, read a paper on "Nonspecific Inflammatory Lesions of the Small and Large Bowel."

These papers were discussed by Drs. Clarence Dennis, Minneapolis; Burrill B. Crohn, New York; Lester R. Dragstedt, Chicago; Everett D. Kiefer, Boston; J. H. Fitzgibbon, Portland, Ore.; A. F. R. Andresen, Brooklyn; Russell S. Boles, Philadelphia, and Leland S. McKittrick, Boston.

Dr. Neil W. Swinton, Boston, read a paper on "Diagnosis of Carcinoma of the Colon and Rectum." Discussed by Drs. Harry M. Weber, Rochester, Minn.; William H. Daniel, Los Angeles, and Neil W. Swinton, Boston.

SECTION ON OBSTETRICS AND GYNECOLOGY

Wednesday, June 23—Afternoon

The meeting was called to order at 2 o'clock by the chairman, Dr. William F. Mengert, Dallas, Texas.

Dr. Gerald W. Gustafson, Indianapolis, read a paper on "The Management of Occiput Posterior Position." Discussed by Drs. Edward L. Cornell, Chicago; Gerald Rogers, Oklahoma City, and Buford G. Hamilton, Kansas City, Mo.

Drs. Catherine Macfarlane, Margaret C. Sturgis and Faith S. Fetterman, Philadelphia, presented a paper on "Report of a Ten Year Experiment in the Control of Cancer of the Uterus." Discussed by Drs. B. Z. Cashman, Pittsburgh; Augusta Webster, Chicago; J. Hofbauer, Cincinnati, and Catherine Macfarlane, Philadelphia.

Dr. Goodrich C. Schauffler, Portland, Ore., read a paper on "Unusual Experiences in the Practice of Obstetrics and Gynecology in China." Discussed by Drs. Frank E. Whitacre, Memphis, Tenn.; Nicholson J. Eastman, Baltimore; Bertha Selmon, Battle Creek, Mich., and Goodrich C. Schauffler, Portland, Ore.

The following papers were read in a panel discussion on "Endometriosis," Dr. Joe V. Meigs, Boston, moderator.

Dr. Francis B. Carter, Durham, N. C.: "Diagnosis and Medical Management."

Dr. Clayton T. Beacham, Philadelphia: "Conservative Surgical Treatment in Young Women."

Dr. Clyde L. Randall, Buffalo, N. Y.: "Management of Complications of Endometriosis."

Thursday, June 24—Afternoon

The following officers were elected: chairman, Dr. LeRoy A. Calkins, Kansas City, Kan.; vice chairman, Dr. Herbert E. Schmitz, Chicago; secretary, Dr. Arthur B. Hunt, Rochester, Minn.; representative of Board of Governors of the American College of Surgeons, Dr. E. L. King, New Orleans; representatives to American Board of Obstetrics and Gynecology, Dr. Francis B. Carter, Durham, N. C.; Dr. R. A. Kimbrough, Philadelphia, and Dr. Robert A. Faulkner, Cleveland; representatives to American Committee on Maternal Welfare, Drs. Benbow Thompson, Los Angeles, R. D. Mussey Sr., Rochester, Minn., and Oren Moore, Charlotte, N. C.; representative of the Section to the Scientific Exhibit Committee, Dr. F. H. Falls, Chicago.

Dr. William F. Mengert, Dallas, read the chairman's address, entitled "Estimation of Pelvic Capacity."

Dr. Albert Decker, New York, read a paper on "Culdoscopy." Discussed by Drs. Richard W. TeLinde, Baltimore; Woodward Beacham, New Orleans; Irving Stein, Chicago, and Albert Decker, New York.

Dr. Wilson Footer, Oakland, Calif., read a paper on "Pseudomalignant Changes in the Cervix During Pregnancy." Discussed by Drs. Karl H. Martzloff, Portland, Ore.; W. J. Dieckmann, Chicago; Robert L. Faulkner, Cleveland; J. Hofbauer, Cincinnati; Charles Galloway, Evanston, Ill.; Emil Novak, Baltimore, and Wilson Footer, Oakland, Calif.

The following papers were presented in a panel discussion, Dr. C. A. Gordon, Brooklyn, moderator.

Dr. Bernard J. Hanley, Los Angeles, read a paper on "Antepartum and Intrapartum Obstetric Hemorrhage."

Dr. Russell J. Moe, Duluth, Minn., read a paper on "Postpartum Hemorrhage."

Dr. Joseph M. Hill, Dallas, Texas, read a paper on "Precautions to be Taken on Blood Transfusion."

Dr. Frederick W. Hoffbauer, Minneapolis, read a paper on "Precautions in the Use of Plasma in Obstetric Hemorrhage, with Special Reference to the Causation on Hepatitis."

Friday, June 25—Morning

A joint meeting was held with the Section on Pediatrics. The minutes of this meeting appear in the minutes of the Section on Pediatrics.

SECTION ON OPHTHALMOLOGY

Wednesday, June 23—Morning

The meeting was called to order at 9:15 o'clock by the chairman, Dr. Everett L. Goar, Houston, Texas.

On motion of Dr. Arthur J. Bedell, Albany, N. Y., it was voted unanimously to nominate Dr. John A. MacMillan of Montreal, Canada, as an Affiliate Fellow of the American Medical Association, in view of his membership in a chartered national medical society of a foreign country adjacent to the United States, as set forth in the Constitution and By-Laws of the Association.

The Secretary was instructed to prepare immediately a letter setting forth to the Judicial Council of the House of Delegates Dr. MacMillan's qualifications for such an honor, including his excellent training and reputation.

Dr. Everett L. Goar, Houston, Texas, read the chairman's address, entitled "Postgraduate Education in Ophthalmology in the United States."

Dr. John A. MacMillan, Montreal, Canada, read a paper on "Affections of the Lacrimal Gland and Ocular Complications."

Dr. Algernon B. Reese, New York, read a paper on "Retrolental Fibroplasia and Persistent Hyperplastic Primary Vitreous: Two Entities." Discussed by Drs. Brittain F. Payne, New York; Bertha A. Klien, Chicago; Harold Falls, Ann Arbor, Mich., and William C. Owens, Baltimore.

Dr. Theodore H. Ingalls, Southborough, Mass., read a paper on "The Epidemiology of Encephalo-Ophthalmic Dysplasia." Discussed by Drs. William C. Owens, Baltimore, and Everett Kinsey, Boston.

Drs. Adolph Posner and Abraham Schlossman, New York, presented a paper on "Treatment of Glaucoma Associated with Iridocyclitis." Discussed by Drs. Paul A. Chandler, Boston; Albert D. Ruedemann, Detroit; Harvey Thorpe, Pittsburgh; Conrad Berens, New York, and Everett L. Goar, Houston, Texas.

Dr. William B. Clark, New Orleans, read a paper on "The Use of Strips of Orbicularis Oculi Muscles in Surgery of the Eyelids." Discussed by Drs. Norman L. Cutler, Wilmington, Del., and Rex C. House, Fort Sam Houston, Texas.

Thursday, June 24—Morning

Dr. Thomas D. Allen, Chicago, read the report of the Joint Committee on Optics and Visual Physiology. On motion regularly moved and seconded, it was voted unanimously to send a copy of that part of the report pertaining to contact lenses to Colonel Don Longfellow of the Surgeon General's Office, since that office is presently engaged in an investigation of contact lenses.

Chairman Goar read the report of the Committee on the American Board of Ophthalmology.

Dr. Trygve Gundersen, Boston, secretary, read a résumé of the report of the Joint Committee on the National Museum of Ophthalmic Pathology.

Chairman Goar read the report of the Committee on Scientific Exhibit.

Dr. Gundersen read the report of the Committee on the Museum of Ophthalmic History.

Dr. Lawrence T. Post, St. Louis, read the report of the Committee on the American Orthoptic Council.

Chairman Goar read the report of the Advisory Committee to the Eye Health Committee of the Student Health Association.

Dr. M. Hayward Post, St. Louis, read the report of the representative of the Section to the College of Surgeons.

Dr. Frederick A. Davis, Madison, Wis., read the report of the Committee on Awarding the Knapp Medal.

Dr. A. D. Ruedemann, Detroit, read the report of the representative from the Section to the Joint Committee of Industrial Ophthalmology.

Dr. Francis Heed Adler, Philadelphia, read the report of the Committee on the Knapp Testimonial Fund.

Dr. Gundersen read the report on the Howe Fund.

Dr. Conrad Berens, New York, presented the report of the Joint Committee to the National Conference on Medical Nomenclature. He explained the proposal to place in the index of the Standard Nomenclature the numbers of the international classification. The synonyms are not to be used in the body of the volume, but will be placed in the index.

Dr. Arthur J. Bedell, Albany, N. Y., read the report of the delegate of the Section to the House of Delegates of the American Medical Association.

On motion regularly made and seconded, it was voted unanimously that Dr. Bedell's resignation as representative of the Section to the House of Delegates be accepted with regret. The members of the Section extended Dr. Bedell a rising vote of thanks for his thirty-three years of faithful service.

Dr. Derrick Vail, Chicago, read the report of the executive committee.

Dr. Francis Heed Adler, Philadelphia, vice-chairman, presented the Ophthalmic Research Medal of the Section on Ophthalmology to Dr. Alan Churchill Woods, Baltimore. The members of the Section extended an ovation to Dr. Woods.

The following officers were elected: chairman, Dr. M. Hayward Post, St. Louis; vice chairman, Dr. Brittain F. Payne, New York; secretary, Dr. Trygve Gundersen, Boston; delegate, Dr. William L. Benedict, Rochester, Minn.; alternate delegate, Dr. Parker Heath, Detroit; members of Committee for the Award of the Knapp Prize: Dr. Arnold Knapp, New York, chairman; Dr. Phillips Thygeson, San Jose, Calif., and Dr. David Cogan, Boston; Joint American Committee on Optics and Visual Physiology: Dr. Thomas D. Allen, Chicago, chairman; Dr. Walter B. Lancaster, Boston, and Dr. Lawrence T. Post, St. Louis; Committee on American Board of Ophthalmology: Dr. John Dunnington, New York; Dr. C. S. O'Brien, Iowa City, Iowa; Dr. Phillips Thygeson, San Jose, Calif., and Dr. Brittain F. Payne, New York; Joint Committee on National Museum of Ophthalmic Pathology: Dr. Jonas Friedenwald, Baltimore; Committee on Scientific Exhibit from Eye Section: Dr. Georgiana Theobald, Oak Park, Ill., chairman; Dr. Phillips Thygeson, San Jose, Calif., and Dr. Edwin B. Dunphy, Boston; Committee on Museum of Ophthalmic History: Dr. Burton Chance, Philadelphia, chairman; Dr. Hans Barkan, San Francisco, and Dr. E. V. L. Brown, Chicago; Committee on American Orthoptic Council: Dr. Lawrence T. Post, St. Louis; Dr. Truman Boyes, New York, and Dr. Richard Scobee, Fort Worth, Texas. Advisory Committee to the Eye Health Committee of the Student Health Association: Dr. W. L. Benedict, Rochester, Minn.; representatives of Section to College of Surgeons, Board of Governors: Dr. M. Hayward Post, St. Louis; Dr. James N. Greear, Washington, D. C., and Dr. A. Ray Irvine, Los Angeles; representatives from the Section to the Joint Committee of Industrial Ophthalmology: Dr. A. D. Ruedemann, Detroit, chairman; Dr. Hedwig Kuhn, Hammond, Ind., and Dr. Glenn Harrison, Mason City, Iowa; Committee on Public Relations: Dr. Derrick Vail, Chicago; Dr. Parker Heath, Detroit; Dr. Walter B. Lancaster, Boston; Dr. A. Ray Irvine, Los Angeles; Dr. Frederick A. Davis, Madison, Wis.; Dr. Frederick C. Cordes, San Francisco; Dr. Brittain F. Payne, New York; Dr. S. Judd Beach, Portland, Maine; Dr. Alan C. Woods, Baltimore, and Dr. Lawrence T. Post, St. Louis; Joint Committee to National Conference on Medical Nomenclature: Dr. Conrad Berens, New York.

Dr. Arthur J. Bedell, Albany, N. Y., representative of the Section to the House of Delegates, explained that he had taken the necessary steps to expedite the election to Affiliate Fellowship of Dr. John A. MacMillan of Montreal, Canada, and had been assured by the Judicial Council that speedy favorable action would be taken. Dr. Bedell read the list of Dr. MacMillan's qualifications for this Fellowship.

Dr. S. Judd Beach, Portland, Maine, read a paper on "Verified Refraction." Discussed by Drs. M. Hayward Post Jr., St. Louis; Hugo L. Bair, Rochester, Minn.; Joseph I. Pascal, New York, and I. S. Tassman, Philadelphia.

Dr. Arnold W. Forrest, New York, read a paper on "Intraorbital Tumors." Discussed by Drs. Georgiana D. Theobald, Oak Park, Ill.; T. E. Sanders, St. Louis, and Alan C. Woods, Baltimore.

Drs. P. Robb McDonald and Irving H. Leopold, Philadelphia, presented a paper on "The Use of 'D.F.P.' (Diisopropyl Fluorophosphate) in Glaucoma: Evaluation of Results over a Three Year Period." Discussed by Drs. Leo L. Mayer, St. Louis; William F. Hughes Jr., Chicago; Ralph Rychner, Memphis, Tenn.; Adolph Posner, New York, and Everett L. Goar, Houston, Texas.

Dr. Kenneth C. Swan, Portland, Ore., read a paper on "The Blind Spot Syndrome." Discussed by Drs. Francis Heed Adler, Philadelphia, and Hermann M. Burian, Boston.

Dr. Adolph Posner, New York, demonstrated a tonometer which he has developed in his work.

Friday, June 25—Morning

Dr. Ralph S. McLaughlin, Charleston, W. Va., read a paper on "Nonmedical Problems in Industrial Ophthalmology." Discussed by Drs. Hedwig S. Kuhn, Hammond, Ind.; William A. Sawyer, Rochester, N. Y., and Leo L. Mayer, St. Louis.

Dr. Alan C. Woods, Baltimore, read a paper on "The Use of Streptomycin and Streptomycin Plus 'Promizole' in Experimental Ocular Tuberculosis." Discussed by Drs. Phillips Thygeson, San Jose, Calif., and John G. Bellows, Chicago.

Chairman Goar announced that the House of Delegates had confirmed the nomination of Dr. John A. MacMillan, Montreal, Canada, as an Affiliate Fellow of the American Medical Association, and that four members of the Section were awarded honors for exhibits: Dr. Bertha A. Klien, Chicago, was awarded the Gold Medal for her exhibit on "Diseases of the Fundus Oculi"; Drs. John G. Bellows and Chester J. Farmer, Chicago, received a Certificate of Merit for their exhibit on "Treatment of Ocular Infections: Use of Chemotherapeutic Agents"; Dr. William Stone Jr., Boston, received the Bronze Medal for his exhibit on "A New-Type Movable Implant."

Dr. Harold Gifford Jr., Omaha, Neb., read a paper entitled "A Method of Retrobulbar Anesthesia Which Produces an Associated Motor Block of the Extraocular Muscles." Discussed by Drs. Garrett L. Sullivan, Boston; Edward Burch, St. Paul; Purman Dorman, Seattle, and Everett L. Goar, Houston, Texas.

Dr. Watson Gailey, Bloomington, Ill., read a paper on "Basic Principles of Ocular Muscle Surgery." Discussed by Drs. Frank D. Carroll, New York; Beulah Cushman, Chicago; Purman Dorman, Seattle, and A. D. Prangen, Rochester, Minn.

Dr. Gundersen read a further report of the Committee to Study the Effects of Silver Nitrate in Biological Preparations in the Prevention of Ophthalmic Neonatorum. On motion regularly made and seconded, it was voted unanimously to approve the report, approve the recommendation and send copies to the National Society for the Prevention of Blindness, the editor of the *Woman's Home Companion,* the editor of The Journal of the American Medical Association, and to the forty-eight state health departments.

SECTION ON LARYNGOLOGY, OTOLOGY AND RHINOLOGY

Wednesday, June 23—Afternoon

The meeting was called to order at 2:05 o'clock by the chairman, Dr. Fletcher D. Woodward, Charlottesville, Va.

Dr. David Davis, Washington, D. C., read a paper on "Inhalation of Nebulized Aerosols in Office Practice." Discussed by Drs. Alvan L. Barach, New York, and Samuel J. Segal, Boston

Dr. Watt W. Eagle, Durham, N. C., read a paper on "The Symptomatic Elongated Styloid Process." Discussed by Drs. C. M. Kos, Iowa City, Iowa; O. E. Van Alyea, Chicago; Murdock Equen, Atlanta, Ga., and L. A. Nelson, Dallas, Texas.

Dr. De Graaf Woodman, New York, read a paper on "Rehabilitation of the Larynx in Cases of Bilateral Abductor Paralysis: A Report of the Past Four Years' Experience with the Open Approach to Arytenoidectomy for Relief of Bilateral Abductor Paralysis." Discussed by Drs. Paul H. Holinger, Chicago; Fletcher D. Woodward, Charlottesville, Va., and David R. Higbee, San Francisco.

Dr. Russell A. Sage, Indianapolis, read a paper on "Differential Diagnosis of Oral Lesions." Discussed by Drs. Le Roy

A. Schall, Boston; Charles D. Blassingame, Memphis, Tenn., and Joseph Atkins, Philadelphia.

Dr. O. Popper, Johannesburg, South Africa, read a paper on "*Transtympanic Fenestration: The Final Technic.*" *Discussed* by Drs. Douglas Carruthers, Sydney, Australia; A. L. Juers, Chicago, and Scott Stevenson, London, England.

THURSDAY, JUNE 24—AFTERNOON

On motion regularly made and seconded it was voted unanimously to discharge the Committee on Lye Legislation with the thanks of the Section for the splendid work it has done in the past.

In his report as representative to the American Board of Otolaryngology, Dr. LeRoy A. Schall, Boston, announced that in the examinations conducted in the spring, out of a total of 77 applicants approved by the Credentials Committee, 52 passed and 25 failed, with a percentage of failures of 32.4 per cent. In the October examination, out of a total of 71 qualified applicants examined, 47 passed and 24 failed, with a percentage of failures of 33.8 per cent. Approximately 3,000 persons are now certified by the American Board of Otolaryngology.

The following officers were elected: chairman, Dr. Henry B. Orton, Newark, N. J.; vice chairman, Dr. Daniel S. Cunning, New York; secretary, Dr. J. Milton Robb, Detroit; delegate, Dr. Gordon F. Harkness, Davenport, Iowa; alternate, Dr. Carl H. McCaskey, Indianapolis; representative of Section to Scientific Exhibit, Dr. James B. Costen, St. Louis; representative to American College of Surgeons, Dr. Louis H. Clerf, Philadelphia.

Dr. Fletcher D. Woodward, Charlottesville, Va., gave the chairman's address, entitled "A Medical Criticism of Automotive Engineering."

On motion regularly made and seconded, it was voted unanimously to nominate for Affiliate Fellowship the names of David E. Holtman, D.D.S., Boyceville, Wis., and Oscar Koenig, D.D.S., Glendale, Calif.

Dr. John R. Simpson, Pittsburgh, read a paper on "The Management of Acute Laryngotracheobronchitis." Discussed by Drs. Louis H. Clerf, Philadelphia; Paul H. Holinger, Chicago; Gabriel Tucker, Philadelphia; Thomas Galloway, Evanston, Ill., and David Davis, Washington, D. C.

Dr. John B. Erich, Rochester, Minn., read a paper on "Laryngectomy: A Surgical Technic Which Promotes Rapid Healing." Discussed by Drs. LeRoy A. Schall, Boston; Louis H. Clerf, Philadelphia; C. L. Jackson, Philadelphia, and Joseph P. Atkins, Philadelphia.

Dr. J. Brown Farrior, Tampa, Fla., read a paper on "Lymphoid Eustachian Salpingitis (Lymphoid Tubo-Tympanitis): Selective Criteria for Radiation Therapy." Discussed by Drs. Gilbert E. Fisher, Birmingham, Ala.; John R. Lindsay, Chicago, and Stacy R. Guild, Baltimore.

FRIDAY, JUNE 25—AFTERNOON

Dr. Howard P. House, Los Angeles, read a paper on "Surgery of the Chronic Ear by the Endaural Approach." Discussed by Drs. John F. Tolan, Seattle; James E. Croushore, Detroit, and O. Popper, Johannesburg, South Africa.

Dr. Stacy R. Guild, Baltimore, read a paper on "The Interpretation of Hearing Tests." Discussed by Dr. L. R. Boies, Minneapolis.

Dr. Burt R. Shurly, Detroit, delegate, in making his report, announced his resignation after twenty-five years of service. He stated that a resolution had been adopted warning the profession against the trend of interns and medical students toward establishing a left wing organization with definite communistic tendencies. He also announced the formation of a Section on Diseases of the Chest.

The members of the Section extended an ovation to Dr. Shurly in recognition of his long years of faithful service.

Chairman Woodward introduced Dr. Gordon Harkness, Davenport, Iowa, the newly elected delegate.

Drs. George S. McReynolds, Fred R. Guilford and G. R. Chase, Galveston, Texas, presented a paper on "Blast Injuries to the Ear (Texas City Disaster)." Discussed by Drs. John S. Knight, Kansas City, Mo.; Paul A. Campbell, Chicago, and Stanton A. Friedberg, Chicago.

Dr. David R. Higbee, San Diego, Calif., read a paper on "The Sphenopalatine Ganglion: Anatomy, Function and Symptomatology." Discussed by Drs. William E. Grove, Milwaukee, and *W. Likely Simpson, Memphis, Tenn.*

Drs. Chevalier L. Jackson, John V. Blady, Charles Norris and Walter Maloney, Philadelphia, presented a paper on "Cancer of the Larynx: Five-Year End Results in Series of Five Hundred Cases, with Special Study of Those Developing Recurrence or Metastasis." Discussed by Drs. Gordon B. New, Rochester, Minn.; Paul Holinger, Chicago; Gabriel Tucker, Philadelphia; Murdock Equen, Atlanta, Ga., and John Blady, Philadelphia.

SECTION ON PEDIATRICS

WEDNESDAY, JUNE 23—MORNING

The meeting was called to order at 9 o'clock by Dr. Julius Hess, Chicago, acting chairman.

The meeting was opened with a one minute memorial tribute to the late chairman, Dr. Oscar Reiss, Los Angeles.

Drs. R. J. Huebner, W. L. Jellison and M. Dorothy Beck, Hondo, Calif., presented a paper on "American Q Fever." Discussed by Drs. Garnett Cheney of San Francisco and Thomas B. Turner of Baltimore.

Dr. Russell J. Blattner, Houston, Texas, presented a paper on "*Isolation and Identification of Virus from Body Fluids of Human Subjects.*" Discussed by Drs. Herbert A. Wenner, Kansas City, Mo., and James P. Leake, Washington, D. C.

Dr. John M. Adams, Minneapolis, read a paper on "Primary Pneumonitis in Infancy: Clinical, Epidemiologic and Pathologic Observations." Discussed by Dr. C. B. Conklin, Washington, D. C.

Drs. Albert E. Casey, Birmingham, Ala., and William I. Fishbein, Francis B. Gordon, Frank M. Schabel Jr. and Herman N. Bundesen, Chicago, presented a paper on "Clinical Manifestations of Infection with Poliomyelitis Virus." Discussed by Drs. Hulda E. Thelander, San Francisco; James P. Leake, Washington, D. C.; Clarence Webb, Shreveport, La.; Haddon M. Keith, Rochester, Minn., and A. F. Abt, Chicago.

Dr. Edward Scott O'Keefe, Lynn, Mass., read a paper on "*Enteral Treatment of Diarrhea in Infancy.*" *Discussed by* Drs. Arthur W. Chung, New York, and Noel G. Shaw, Evanston, Ill.

Dr. John A. Toomey, Cleveland, read a paper on "Reaction to Whooping Cough Vaccination." Discussed by Drs. Archibald L. Hoyne and Louis M. Sauer, Chicago.

THURSDAY, JUNE 24—MORNING

The following officers were elected: chairman, Dr. Woodruff L. Crawford, Rockford, Ill.; vice chairman, Dr. Ambrose McGee, Richmond, Va.; secretary, Dr. Margaret Mary Nicholson, Washington, D. C.; delegate, Dr. William Weston, Columbia, S. C.

Dr. F. P. Greenbaum presented a resolution as follows:

> This is in memorial of Dr. Oscar Reiss, chairman of the Section on Pediatrics, of the American Medical Association, born March 4, 1883, died June 16, 1948. The announcement of the sudden death of Oscar Reiss, as he was preparing to come to Chicago to preside over the sessions of the Section on Pediatrics of the American Medical Association, deeply touched those members attending the opening meeting on Wednesday, June 23.
>
> Besides being chairman of the Section on Pediatrics—an office given only to those who evidence real leadership—Oscar, as he was affectionately called by hundreds of us, was held in the highest esteem and respect by all who were privileged to know him personally or through his many worth while contributions to pediatric literature.
>
> We all know how he appreciated the chairmanship of this Section and how happy he was to serve in that capacity. The splendid program of this meeting is an evidence of the attention which he gave to all the duties of the office.
>
> Dr. Reiss graduated from the Medical School of the University of Illinois in 1906. He had his pediatric training at the Sarah Morris Hospital, the Children's Department of Michael Reese Hospital, under Drs. Abt and Hess.
>
> After a few years of practice in Chicago, he moved to Los Angeles. *In that city he rose to a position of preeminence in his specialty in a* large field. We list a few of his many activities: Chief of the Pediatric Service of the Los Angeles Children's Hospital; Associate Clinical Professor of Pediatrics of the University of California; Director of the Pediatric Service of the Cedars of Lebanon Hospital; member of the Medical Milk Commission; Chairman of the Los Angeles Mental Hygiene

Society, and member of the important National Advisory Committee of the Children's Bureau. He was specialist certified by the American Board of Pediatrics since 1931, and a fellow of the American Academy of Pediatrics.

With all of these duties, he still found time to train and guide young pediatricians, all of whom loved and revered him. Many of them visited him in California and always found him to be a genial and charming host; a family man, happiest in his home, and a respected member of the community.

His life of service may well be of inspiration to us always. He will be missed and his memory will be cherished.

We, the assembled members of the Section on Pediatrics, meeting in Chicago, June 24, 1948, hereby desire to record permanently on the minutes of this Section the sense of deep loss in the death of our leader and colleague, Oscar Reiss.

Resolved, That a copy of this memorial be sent to his bereaved wife and children with our sympathy.

The resolution was unanimously adopted.

Dr. L. W. Sauer, Evanston, Ill., presented the following motion: "I hereby make a motion that the chairman of the Section on Pediatrics appoint a committee to study the subject of convulsions and encephalopathy after the administration of any type of antigen—a report to be submitted to the Section at some future meeting." The motion was unanimously adopted.

Dr. M. G. Peterman, Milwaukee, read a paper on "Epilepsy in Childhood." Discussed by Drs. Ambrose W. McGee, Richmond, Va., and Frederick A. Gibbs, Chicago.

Drs. James G. Hughes, Robert G Jordan and Fontaine S. Hill, Memphis, Tenn., presented a paper "Jet Injection in Pediatric Practice." Discussed by Drs. Robert A. Hingson, Memphis, Tenn., and Frank H. J. Figge, Baltimore.

Dr. Darell Boyd Harmon, Austin, Texas, presented an address on "The Classroom as a Factor in Growth Deviation." Discussed by Drs. George F. Munns, Winnetka, Ill.; Thomas J. McElhenny, Austin, Texas, and Dean F. Smiley, Chicago.

Dr. Arthur F. Abt, Chicago, read a paper on "Aplastic Anemia in Children, Report of a Case with Treatment by Splenectomy." Discussed by Drs. Michael Pierce, Chicago, and John E. Cassidy, Washington, D. C.

Dr. Abraham Levinson, Chicago, read a paper on "Streptomycin Therapy in Tuberculous Meningitis." Discussed by Drs. W. W. Bryant Jr., Pittsburgh; Gilbert J. Levy, Memphis, Tenn., and William S. Hoffman, Chicago.

Dr. Sidney A. Portis, Chicago, read a paper on "Newer Concepts of the Etiology and Management of Idiopathic Ulcerative Colitis." Discussed by Drs. Robert J. Coffey, Washington, D. C.; Peter D. Comanduras, Arlington, Va., and Franz G. Alexander, Chicago.

Friday, June 25—Morning

A joint meeting was held with the Section on Obstetrics and Gynecology.

The following papers were read in a panel discussion on "Fetal Anoxia at Birth," Dr. C. Anderson Aldrich, Rochester, Minn., moderator.

Dr. Clement A. Smith, Boston: "Physiologic Background of Fetal Anoxia at Birth and Cyanosis of the Newborn."

Dr. Nicholson J. Eastman, Baltimore: "Prevention of Fetal Anoxia at Birth and Cyanosis of the Newborn."

Dr. Stewart H. Clifford, Boston: "Differential Diagnosis and Management of Fetal Anoxia at Birth and Cyanosis of the Newborn."

Dr. W. W. Zuelzer, Detroit: "Pathology of Conditions in which Fetal Anoxia at Birth and Cyanosis of the Newborn are an Outstanding Feature."

Dr. Edwin L. Kendig, Richmond, Va., read a paper on "A Misconception Concerning the Rh Factor and the Interruption of Pregnancy." Discussed by Drs. S. A. Cosgrove, Jersey City, N. J., and John C. Hughes, Pittsburgh.

Dr. M. Hines Roberts, Atlanta, Ga., read a paper on "Emergencies Encountered in the Neonatal Period." Discussed by Drs. Fred L. Adair, Chesterton, Ind., and Nina A. Anderson, Cincinnati.

Dr. Harold W. Dargeon, New York, read a paper on "Ovarian Tumors in Childhood." Discussed by Drs. Goodrich C. Schauffler, Portland, Ore., and Howard T. Karsner, Cleveland.

SECTION ON EXPERIMENTAL MEDICINE AND THERAPEUTICS

Wednesday, June 23—Morning

The meeting was called to order at 9:20 o'clock by the chairman, Dr. Walter Bauer, Boston.

Dr. Frederick J. Stare, Boston, read a paper on "Fat in Parenteral Nutrition." Discussed by Drs. Smith Freeman, Chicago; Jerome W. Conn, Ann Arbor, Mich., and Walter Bauer, Boston.

Drs. Michael G. Wohl, John G. Reinhold, S. Brandt Rose, L. Ashby Adams and Moses Francis, Philadelphia, presented a paper on "Antibody Response in Patients with Hypoproteinemia, with Special Reference to the Effect of Protein and Protein Hydrolysate Supplementation." Discussed by Dr. Paul R. Cannon, Chicago.

Dr. Jerome W. Conn, Ann Arbor, Mich., presented a paper on "Clinical Significance of the Electrolyte Composition of Sweat in Abnormalities of Adrenal Cortical Function." Discussed by Drs. Benjamin F. Sieve, Boston, and J. G. G. Borst, Amsterdam, Holland.

Drs. Wesley W. Spink, Wendell H. Hall, James M. Shaffer and Abraham I. Braude, Minneapolis, presented a paper on "The Specific Treatment of Brucellosis with a Combination of Streptomycin and a Sulfonamide Compound." Discussed by Drs. C. Wesley Eisele, Chicago, Max Michael, Atlanta, Ga., and Walter Bauer, Boston.

Drs. Benedict F. Massell, James W. Dow and T. Duckett Jones, Boston, presented a paper on "Studies Concerning Oral Penicillin in Patients with Rheumatic Fever." Discussed by Drs. Wesley W. Spink, Minneapolis, and Walter Bauer, Boston.

Drs. Leo Loewe, Albert E. Sobel and Erna Alturr-Werber, Brooklyn, presented a paper on "New Penicillin Products for Sustained Effects." Discussed by Drs. Donald R. Nichols, Rochester, Minn., and Harry F. Dowling, Washington, D. C.

Thursday, June 24—Morning

The following officers were elected: chairman, Dr. Dwight L. Wilbur, San Francisco; vice chairman, Dr. McKeen Cattell, New York; secretary, Dr. Carl V. Moore, St. Louis; delegate: Dr. Edgar V. Allen, Rochester, Minn ; alternate, Dr. Charles M. Gruber, Philadelphia; representative to Scientific Exhibit: Dr. Robert W. Wilkins, Boston.

Dr. Walter Bauer, Boston, read the chairman's address, entitled, "The Importance of a Comprehensive Approach in the Treatment of Rheumatoid Arthritis."

Dr. L. T. Coggeshall, Chicago, read a paper on "The Cure of Recurrent Vivax Malaria with Pentaquine." Discussed by Dr. Alf S. Alving, Chicago.

Dr. Louis K. Diamond, Boston, read a paper on "The Use of Antihemophilic Fraction in the Treatment of Hemophilia." Discussed by Dr. Carl V. Moore, St. Louis.

Drs. Myron Prinzmetal, Eliot Corday, Ramon Spritzler and H. C. Bergman, Los Angeles, presented a paper on "Radiocardiography: A Method for Visualizing the Flow of Blood Through the Heart Utilizing Radioactive Isotopes." Discussed by Drs. Nylin, Stockholm; W. D. Mayer, Detroit, and Louis J. Voorhas, Chicago.

Drs. Hans H. Hecht and Ferne S. Focht, Salt Lake City, presented a paper on "The Influence of "Dibenamine" on the Function of the Sympathetic Nervous System in Man." Discussed by Dr. James P. Hendrix, Durham, N. C.

Friday, June 25—Morning

A joint meeting was held with the Section on Internal Medicine.

Drs. Irving S. Wright and Charles D. Marple, New York, presented "Report of Committee for the Evaluation of the Use of Anticoagulants in the Treatment of Coronary Thrombosis with Myocardial Infarction." Discussed by Drs. Bernard Drexler, Rochester, N. Y., and Walter Vest, Huntington, W. Va.

Dr. Irvine H. Page, Cleveland, read a paper on "Pathogenesis of Arterial Hypertension." Discussed by Dr. Carlos Jimenez Diaz, Madrid, Spain.

Diagnosis of Diaphragmatic Hernia and Coronary Artery Disease."

These three papers were discussed by Drs. Ralph C. Brown, Chicago; Manfred Kraemer, Newark, N. J.; Donovan C. Browne, New Orleans; Kenneth A. Crockett, Salt Lake City; Irving B. Brick, Washington, D. C., and Arthur M. Master, New York.

Drs. Henry J. Tumen and Edwin M. Cohn, Philadelphia, presented a paper on "Heartburn." Discussed by Drs. David J. Sandweiss, Detroit; John H. Fitzgibbon, Portland, Ore.; Anthony J. Bassler, New York; Sidney A. Portis, Chicago; Hyman I. Goldstein, Camden, N. J., and Henry J. Tumen, Philadelphia.

Drs. David Adlersberg and Ernst Hammerschlag, New York, presented a paper on "Studies on the Mechanism of Postgastrectomy Syndrome." Discussed by Drs. Ralph Colp, New York; Joseph B. Kirsner, Chicago; Otto Porges, Chicago; Thomas E. Machella, Philadelphia; H. Necheles, Chicago; Hyman I. Goldstein, Camden, N. J., and David Adlersberg, New York.

Drs. Malcolm Block and Henry C. Bryant, Ann Arbor, Mich., presented a paper on "The Diagnosis of Gastric Neoplasm by Cytologic Examination of Gastric Secretions." Discussed by Drs. Warren C. Hunter, Portland, Ore.; Frank Fremont-Smith, Boston, and Malcolm Block, Ann Arbor, Mich.

Drs. William D. Gambill, John E. Fisher, Bernard D. Rosenak and Rollin H. Moser, Indianapolis, presented a paper on "A Study of the Routine Use of Screening for the Detection of Liver Disease."

Drs. Leon Schiff, S. A. Safdi, R. C. Cogswell, C. W. Kumpe, D. F. Richfield and E. A. Gall, Cincinnati, presented a paper on "Needle Biopsy of the Liver."

These two papers were discussed by Drs. Hugh R. Butt, Rochester, Minn.; E. E. Mandel, Chicago; Frederick W. Hoffbauer, Minneapolis; Hans P. Popper, Chicago; Sheila Sherlock, London, England; William D. Gambill, Indianapolis, and Leon Schiff, Cincinnati.

Thursday, June 24—Morning

The following officers were elected: chairman, Dr. William H. Daniel, Los Angeles; vice chairman, Dr. Russell S. Boles, Philadelphia; secretary, Dr. Grant H. Laing, Chicago; delegate, Dr. Louis A. Buie, Rochester, Minn.; alternate, Dr. Walter A. Fansler, Minneapolis.

Dr. Sara M. Jordan, Boston, read the chairman's address, entitled "Correlation of Gastroenterology and Surgery."

Dr. Milton Plotz, Brooklyn, read a paper on "Possible Hazards of Diets High in Cholesterol in Coronary Disease." Discussed by Drs. Louis N. Katz and Walter L. Palmer, Chicago, and Milton Plotz, Brooklyn.

Dr. Garnet W. Ault, Washington, D. C., read a paper on "The Surgical Treatment of Ulcerative Colitis." Discussed by Drs. Clarence Dennis, Minneapolis; Joseph Bank, Phoenix, Ariz.; Joseph B. Kirsner, Chicago, and Garnet W. Ault, Washington, D. C.

Dr. Thomas E. Machella, Philadelphia, read a paper on "Treatment of Idiopathic Ulcerative Colitis by Means of a Medical Ileostomy and Orally Administered Protein Hydrolysate Solution." Discussed by Drs. T. Grier Miller, Philadelphia; Sidney A. Portis, Chicago; Hyman I. Goldstein, Camden, N. J.; Manfred Kraemer, Newark, N. J., and Thomas E. Machella, Philadelphia.

Drs. Malcolm R. Hill, Carroll S. Small and Lee Richards, Los Angeles, presented a paper on "A Study of the Development of Anal Ducts and Glands, With Particular Reference to the Pathogenesis of Anorectal Disease." Discussed by Drs. Claude C. Tucker, Wichita, Kan.; J. P. Nesselrod, Evanston, Ill.; Edward Levy, New York, and Malcolm R. Hill, Los Angeles.

Drs. Emil Granet, M. B. Kagan and Cyril Solomon, New York, presented a paper on "Lymphomas of the Anorectum." Discussed by Drs. Walter A. Fansler, Minneapolis; Claude C. Tucker, Wichita, Kan., and Emil Granet, New York.

Drs. Elmer H. Loughlin and Samuel H. Spitz, Brooklyn, presented a paper on "The Diagnosis of Intestinal Helminth Infections." Discussed by Drs. Norman R. Stoll, Princeton, N. J.; Donovan C. Browne, New Orleans, and Elmer H. Loughlin, Brooklyn.

Drs. John R. Hill and Louis A. Buie, Rochester, Minn., presented a paper on "Polypoid Lesions of the Terminal Portion of the Colon with Special Relationship to Fulguration." Discussed by Drs. Martin S. Kleckner, Allentown, Pa., and John R. Hill, Rochester, Minn.

Friday, June 25—Morning

A joint meeting was held with the Section on Surgery, General and Abdominal. The proceedings are reported in the minutes of that section.

SECTION ON RADIOLOGY

Wednesday, June 23—Morning

The meeting was called to order at 9:10 o'clock by the chairman, Dr. W. Walter Wasson, Denver.

Dr. U. V. Portmann and Dr. E. C. Ernst, as delegate and alternate, respectively, were approved to represent the Section at the International Congress of Radiology in London in 1950.

Dr. W. Walter Wasson, Denver, read the chairman's address, entitled "What Further Contributions Can Radiology Make to Medicine?"

Dr. Lee A. Hadley, Syracuse, N. Y., read a paper on "Intervertebral Foramen Studies." Discussed by Dr. L. Henry Garland, San Francisco, and Dr. Henry Briggs, East Orange, N. J.

Dr. William Snow, New York, read a paper on "A Basic Analysis of the Obstetric Pelvis by Roentgen Study." Discussed by Dr. J. P. Greenhill, Chicago; Dr. Howard P. Doub, Detroit, and Dr. Ross Golden, New York.

Dr. Charles T. Dotter, New York, read a paper on "Angiocardiographic Visualization of the Pulmonary Artery in Health and Disease." Discussed by Dr. Harry M. Weber, Rochester, Minn.; Dr. Leo Rigler, Minneapolis, and Dr. J. E. Miller, Dallas, Texas.

Dr. Maurice Lenz, New York, read a paper on "Lymphosarcoma: Its Diagnosis and Treatment." Discussed by Dr. Edward L. Jenkinson, Chicago; Dr. T. Leucutia, Detroit; Dr. Ellis Berven, Stockholm, Sweden; Dr. William Klein, New Brunswick, N. J., and Dr. David S. Dann, Kansas City, Mo.

Dr. Ellis Berven, Stockholm, Sweden, read a paper on "Treatment of Malignant Tumors of the Maxillary Antrum." Discussed by Dr. O. E. Van Alyea, Chicago.

Thursday, June 24—Morning

The following officers were elected: chairman, Harry M. Weber, Rochester, Minn.; vice chairman, U. V. Portmann, Cleveland; Secretary, Paul Hodges, Chicago; delegate, B. R. Kirklin, Rochester, Minn.; alternate, E. P. Pendergrass, Philadelphia; representative of the Section on the American Board of Radiology, E. L. Jenkinson, Chicago.

Dr. Juliette Baud, Paris, France, read a paper on "Treatment of Stage I Carcinoma of the Cervix by Intracavitary Radium: Five, Ten and Fifteen Year End Results." Discussed by Drs. Harry H. Bowing, Rochester, Minn., and E. C. Ernst, St. Louis.

Dr. Constance A. P. Wood, London, England, read a paper on "Some Factors Influencing the Response of Cancer of the Mouth and Throat to Radiation." Discussed by Drs. Douglas Quick, New York; Charles L. Martin, Dallas, Texas, and B. W. Windeyer, London, England.

Dr. Francois Baclesse, Paris, France, read a paper on "Roentgen Therapy of Cancer of the Hypopharynx." Discussed by Dr. Juan A. del Regato, Columbia, Mo., and Dr. Maurice Lenz, New York.

Sir Stanford Cade, London, England, read a paper on "Treatment and Results in Cancer of the Breast." Discussed by Drs. U. V. Portmann, Cleveland; Robert J. Reeves, Durham, N. C.; Henry Ullmann, Santa Barbara, Calif.; Robert S. Newell, San Francisco, and Constance A. P. Wood, London, England.

Dr. B. W. Windeyer, London, England, read a paper on "The Present Position of Radiotherapy in Medical Practice." Discussed by Dr. Robert R. Newell, San Francisco, and Dr. Frederick W. O'Brien, Boston.

Friday, June 25—Morning

The Section met jointly with the Section on Preventive and Industrial Medicine and Public Health. The meeting was called to order by W. Walter Wasson, Denver, chairman of the Section.

Dr. Willard F. Machle, New York, read a paper on "Chemical and Clinical Aspects of Beryllium."

Dr. Arthur J. Vorwald, Saranac, N. Y., read a paper on "Pathologic Aspects of Beryllium."

Dr. Stanley A. Wilson, Salem, Mass., read a paper on "Radiologic Aspects of Beryllium."

Dr. Walter M. Anderson, Lompoc, Calif., read a paper on "Clinical Aspects, Diatomaceous Earth."

Dr. William H. Carnes, Baltimore, read a paper on "Pathologic Aspects, Diatomaceous Earth."

Dr. Reginald H. Smart, Los Angeles, read a paper on "Radiologic Aspects, Diatomaceous Earth."

Dr. C. M. Jephcott, Toronto, Canada, read a paper on "Chemical and Physical Factors, Bauxite (Shaver's Disease)."

Dr. A. R. Riddell, Toronto, Canada, read a paper on "Pathologic Aspects, Bauxite (Shaver's Disease)."

Dr. C. G. Shaver, Niagara, Canada, read a paper on "Clinical and Radiologic Aspects, Bauxite (Shaver's Disease)."

A panel discussion and question and answer period was held, with audience participation, with Dr. Arthur J. Vorwald, Saranac, N. Y., as moderator, and the contributors to the joint program as speakers.

SECTION ON ANESTHESIOLOGY

Wednesday, June 23—Afternoon

The meeting was called to order at 2 o'clock by the chairman, Dr. Ralph M. Tovell, Hartford, Conn.

Drs. Henry S. Ruth, Haverford, Pa., and Frederick P. T. Haugen, Philadelphia, presented a "Preliminary Report of Committee on Operative Mortality."

Dr. Ralph M. Tovell, Hartford, Conn., read the chairman's address, entitled "Anesthesiology in the Veterans Administration."

Dr. Henry S. Ruth, Haverford, Pa., reported briefly as delegate.

Dr. Paul M. Wood, New York, read a paper on "The Functions of the American Board of Anesthesiology, Past, Present and Future." Discussed by Dr. Philip D. Woodbridge, Reading, Pa.

Drs. John J. Bonica, Tacoma, Wash., Daniel C. Moore, Seattle, and Morton Orlov, Tacoma, Wash., presented a paper on "Brachial Plexus Block Anesthesia." Discussed by Drs. Robert L. Patterson, Pittsburgh; W. Allen Conroy, Chicago; Daniel C. Moore, Seattle, and John J. Bonica, Tacoma, Wash.

Thursday, June 24—Afternoon

The following officers were elected: chairman, Walter C. Metz, Denver; vice chairman, Urban Eversole, Boston; delegate, Henry S. Ruth, Haverford, Pa.; alternate, R. J. Whitacre, East Cleveland, Ohio; representative to Scientific Exhibit, Harold Bishop, Valhalla, N. Y.; chairman, Committee on Operative Mortality, Frederick P. T. Haugen, Philadelphia; committee members, J. E. Remlinger, Evanston, Ill., and Henry S. Ruth, Haverford, Pa.

Dr. Albert Faulconer Jr., Rochester, Minn., read a paper on "An Acoustic Gas Analyser for Research in Anesthesiology." Discussed by Dr. Charles D. Anderson and Dr. Mary Karp, Chicago.

Drs. Jane E. Denton, O. H. Strauss and H. K. Beecher, Boston, presented a paper on "A Clinical Appraisal of Methadon ('Amidone') and Its Isomers." Discussed by Lieut. Scott Whitehouse, (MC) USNR; Major Charles H. Mitchell, Medical Corps, United States Army and Dr. Henry K. Beecher, Boston.

Dr. K. K. Keown, Philadelphia, read a paper on "Anesthetic Complications During and Following Chest Surgery." Discussed by Drs. W. O. McQuiston, Peoria, Ill.; Dr. Ansel M. Caine, New Orleans, and Dr. Ralph M. Tovell, Hartford, Conn.

Drs. H. A. Bennett, Oklahoma City, and S. C. Cullen, Iowa City, presented a paper on "The Effects of Various Methods of Premedication and Technics of Anesthesia as Related to the Minute Volume Exchange." Discussed by Dr. Curtiss B. Hickcox, Philadelphia; Dr. Paul H. Lorhan, Mission, Kan.; Dr. Philip Woodbridge, Reading, Pa.; Dr. E. M. Papper, New York; Dr. Stuart C. Cullen, Iowa City, and Dr. Ivan B. Taylor, Detroit.

Dr. G. W. Curry, Cleveland, read a paper on "Caudal Sympathetic Block: A Comparison with Lumbar Sympathetic Block." Discussed by Dr. Ivan B. Taylor, Detroit; Dr. Stuart C. Cullen, Iowa City, and Dr. Bruce Anderson, Oakland, Calif.

Friday, June 25—Afternoon

Dr. J. L. Bollman, Rochester, Minn., read a paper on "Laboratory Studies with Radioactive Pentothal." Discussed by Dr. Richard K. Richards, Chicago, and Dr. Edward B. Tuohy, Washington, D. C.

Dr. Bruce M. Anderson, Oakland, Calif., read a paper on "Observations on the Use of Pentothal Sodium in Presence of Hepatic Damage." Discussed by Drs. W. Allen Conroy, and Richard K. Richards, Chicago; Dr. J. L. Bollman, Rochester, Minn., and Dr. Huberta M. Livingstone, Chicago.

Drs. L. S. Goodman, H. O. Brown, Mark Nickerson and S. M. Smith, Salt Lake City, read a paper on "Dibenamine Protection Against Cyclopropane Arrhythmias; Clinical Study with Continuous Electrocardiographic Recordings." Discussed by Drs. A. E. Rapoport, Chicago, and R. J. Whitacre, East Cleveland, Ohio.

SECTION ON GENERAL PRACTICE

Wednesday, June 23—Afternoon

A joint meeting was held with the Section on Preventive and Industrial Medicine and Public Health. The meeting was called to order at 2 o'clock by the chairman, Dr. Eric A. Royston, Los Angeles.

Dr. Leonard Greenburg, New York, read a paper on "Diagnosis and Treatment of Occupational Metal Poisoning."

Dr. Elston L. Belknap, Milwaukee, read a paper on "Lead: The Differential Diagnosis of Lead Poisoning; Accepted Laboratory Criteria."

Dr. William C. Wilentz, Perth Amboy, N. J., read a paper on "The Treatment of Lead Poisoning (Should One Attempt to 'Store Lead' or to 'Delead'?)."

Dr. John H. Foulger, Wilmington, Del., read a paper on "The Industrial Solvents: Their Physiologic Effect."

Dr. Rex H. Wilson, Akron, Ohio, read a paper on "Diagnosis and Treatment."

Dr. L. E. Hamlin, Chicago, read a paper on "The Pneumoconioses: Which Industrial Dusts Are Inert? Which are Harmful? Why?"

Dr. N. P. Anderson, Los Angeles, read a paper on "Common Occupational Skin Disease."

There followed a panel discussion and question and answer period, with audience participation, with Dr. R. T. Johnstone, Los Angeles, as moderator, and the contributors to the joint program, and Oscar A. Sander, Milwaukee, as speakers.

Thursday, June 24—Afternoon

The following officers were elected: chairman, Dr. Winfred B. Harm, Detroit; vice chairman, Dr. Milton B. Casebolt, Kansas City, Mo.; secretary, Dr. Thomas E. Robinson, Salt Lake City; delegate, Dr. Paul A. Davis, Akron, Ohio; alternate, Dr. L. C. Burwell, Los Angeles.

Dr. Eric A. Royston, Los Angeles, read the chairman's address, entitled "The Renaissance of the General Practitioner."

Dr. Marion S. DeWeese, Ann Arbor, Mich., read a paper on "Extraocular Malignant Melanoblastoma: A Clinical Study." Discussed by Drs. S. William Becker, Chicago, and Marion S. DeWeese, Ann Arbor, Mich.

Dr. Bruce H. Douglas, Detroit, read a paper on "The Private Physician and Preventive Medicine." Discussed by Dr. Paul A. Davis, Akron, Ohio.

Dr. Lawrence T. Post, St. Louis, read a paper on "The Diagnostic Significance of Failing Vision." Discussed by Drs. Paul O. Hageman, St. Louis, and Dr. Lawrence T. Post, St. Louis.

Drs. Frank N. Allan and Manuel Kaufman, Boston, presented a paper on "The Nervous Factor in General Practice." Discussed by Dr. John B. Dynes, Boston.

Friday, June 25—Afternoon

Dr. Philip Thorek, Chicago, read a paper on "The Do's and Don'ts of the Acute Abdomen." Discussed by Drs. John Van Probaska, Chicago; Joseph B. Kirsner, Chicago, and Philip Thorek, Chicago.

Dr. S. Allen Wilkinson, Boston, read a paper on "The Present Status of the Peptic Ulcer Problem." Discussed by Drs. Wingate M. Johnson, Winston-Salem, N. C., and S. Allen Wilkinson, Boston.

Dr. Richard Z. Query, Jr., Charlotte, N. C., read a paper on "Rheumatoid Spondylitis: Its Early Diagnostic Features and Management." Discussed by Drs. Edward F. Rosenberg, Chicago; Richard D. Smith, Philadelphia, and Richard Z. Query Jr., Charlotte, N. C.

Drs. William P. Boger and Harrison F. Flippin, Philadelphia, presented a paper on "The Increase and Prolongation of Penicillin Plasma Concentration." Discussed by Drs. Wallace E. Herrell, Rochester, Minn., and William P. Boger, Philadelphia.

Drs William L. Proudfit and A. Carlton Ernstene, Cleveland, presented a paper on "Diagnosis of Coarctation of the Aorta." Discussed by Drs. O. T. Clagett, Rochester, Minn., and William L. Proudfit, Cleveland.

Dr. Edward T. Tyler, Los Angeles, read a paper on "The Use and Misuse of Endocrine Therapy in Sterility." Discussed by Dr. Willard O. Thompson, Chicago.

SECTION ON MISCELLANEOUS TOPICS

Session on Allergy

Wednesday, June 23—Morning

The meeting was called to order at 9:15 o'clock by the chairman, Dr. Francis M. Rackemann, Boston.

Dr. Rackemann gave the chairman's address.

Dr. Frank A. Simon, Louisville, Ky., read a paper on, "Some Basic Facts and Problems of Clinical Allergy." Discussed by Dr. Jiminez Diaz of Madrid, Spain.

Dr. F. B. Schutzbank, Tucson, Ariz., read a paper on "Climatotherapy in the Treatment of Allergic Diseases." Discussed by Drs. O. E. Egbert, El Paso, Texas; Marion B. Sulzberger, New York; Leon Unger, Chicago; Stanley Hampton, St. Louis, and J. A. Rudolph, Miami Beach, Fla.

Dr. Lewis Webb Hill, Boston, read a paper on "An Evaluation of Therapy in Infantile Eczema." Discussed by Dr. A. V. Stoesser, Minneapolis.

Dr. W. B. Sherman, New York, read a paper on "Allergy to Drugs." Discussed by Drs. Marion Sulzberger, New York; Howard Osgood, Buffalo; Theodore Squier, Milwaukee, and J. A. Rudolph, Miami Beach, Fla.

Drs. Gustave J. Dammin and Samuel C. Bukantz, St. Louis, presented a paper on "Immunologic and Morphologic Alterations in Hypersensitive States." Discussed by Dr. Samuel M. Feinberg, Chicago.

Dr. John M. Sheldon, Ann Arbor, Mich., read a paper on "The Use of Intravenous Fluids in Bronchial Asthma." Discussed by Drs. J. W. Thomas, Richmond, Va., and Eugene Foldes, New York.

Dr. Stearns S. Bullen, Rochester, N. Y., read a paper on "What Should the General Practitioner Know About Allergy?" Discussed by Dr. John H. Mitchell, Columbus, Ohio.

Session on Diseases of the Chest

Thursday, June 24—Morning

The meeting was called to order at 9:05 o'clock by the chairman, Dr. Richard H. Overholt, Boston.

Dr. Emil Bogen, Los Angeles, read a paper on "Laboratory Aspects of Streptomycin." Discussed by Dr. Allen Hurst, Denver.

Dr. H. C. Hinshaw, Rochester, Minn., read a paper on "Streptomycin in Extrapulmonary Tuberculosis." Discussed by Drs. Abel Froman, Chicago; Peter Amazon, Brooklyn; Jean Rafael Herradora-Ubeda, Jersey City, N. J., and W. L. Howard, Northville, Mich.

Dr. Karl Pfuetze of Cannon Falls, Minnesota, read a paper on, "Streptomycin in Treatment of Tuberculosis." Discussed by Drs. George Ornstein, New York; Donato Alarcon, México, D. F.; Benjamin Potter, Jersey City, N. J.; H. G. Trimble, Oakland, Calif.; Abel Froman, Chicago, and Morris Braverman, Detroit.

Dr. William Tucker, Minneapolis, read a paper on "Experience with Treatment of Various Forms of Tuberculosis with Streptomycin in Veterans Administration." Discussed by Dr. Karl Pfuetze, Cannon Falls, Minn.

Dr. Edward J. Beattie, St. Louis, read a paper on "The Use of Streptomycin in Surgical Patients." Discussed by Drs. Emil Bogen, Los Angeles, and Richard H. Overholt, Boston.

Dr. Chester S. Keefer, Boston, read a paper on "Antibiotics in Relation to Nontuberculous Diseases of the Chest."

Session on Physical Medicine

Thursday, June 24—Morning

The meeting was called to order at 9:00 by the chairman, Dr. George Morris Piersol, Philadelphia.

Dr. Harold Dinken, Denver, read a paper on "The Physical Treatment of the Hemiplegic Patient in General Practice." Discussed by Dr. Sedgwick Mead, St. Louis; Dr. Isador Blum, Newark, N. J., and Dr. G. J. Boines of Wilmington, Del.

Drs. Khalil G. Wakim, Julia F. Herrick, Gordon M. Martin and Frank H. Krusen, Rochester, Minn., presented a paper on "Therapeutic Possibilities of Microwaves." Discussed by Drs. Harold Dinken, Denver; Jerome Weiss, Brooklyn; David Kling, Los Angeles, Emile Brunor, New York and Louis Newman.

Dr. Howard A. Rusk, New York, read a paper on "Rehabilitation and General Practice." Discussed by Drs. Sedgwick Mead, St. Louis, and Jerome Weiss, Brooklyn.

Dr. Winfred Overholser, Washington, D. C., read a paper on "Psychiatric Aspects of Physical Medicine."

In a panel discussion on "Physical Medicine in General Practice," with Dr. George M. Piersol, *Philadelphia*, as moderator, the following papers were read:

Dr. Frances Baker, San Francisco: "Physical Treatment of Common Disorders of the Feet."

Dr. Frederic J. Kottke, Minneapolis: "Physical Treatment of Backache."

Dr. Robert L. Bennett, Warm Springs, Ga.: "Physical Treatment of Poliomyelitis."

Dr. Sedgwick Mead, St. Louis: "Physical Treatment of Peripheral Vascular Diseases."

Dr. Donald L. Rose, Kansas City, Kan.: "Physical Treatment of Shoulder Lesions."

Session on History of Medicine

Friday, June 25—Morning

The meeting was called to order by the chairman, Dr. Howard Dittrick, Cleveland.

Dr. William J. Mixter, Boston, read a paper on "Rupture of the Intervertebral Disk: A Short History of Its Evolution as a Syndrome of Importance to the Surgeon." Discussed by Drs. Philip Lewin, Chicago, and William J. Mixter, Boston.

Dr. John R. Paine, Buffalo, read a paper on "Continuous Suction Drainage in the Treatment of Intestinal Obstruction: A Historical Evaluation."

Dr. T. Grier Miller, Philadelphia, read a paper on "The Development of Intestinal Intubation as a Practical Clinical Procedure: Introduction of the Double Lumen Tube."

These two papers were discussed by Dr. William J. Mixter, Boston.

Dr. Barnes Woodhall, Durham, N. C., read a paper on "Modern Historical Aspects of Peripheral Nerve Surgery." Discussed by Dr. William J. Mixter, Boston.

Dr. E. B. Astwood, Boston, read a paper on "Recent Developments in Antithyroid Drugs."

Dr. Rudolph Nissen, New York, read a paper on "The First Successful Pneumonectomy and Its Historical Significance." Discussed by Dr. Josiah C. Trent, Durham, N. C.

Washington Letter

(From a Special Correspondent)

July 14, 1948.

Poliomyelitis Cases Maintain Slow but Steady Increase

The unspectacular but steady gain in poliomyelitis incidence continues, according to reports reaching the United States Public Health Service. During the week ended July 3, there were 362 cases throughout the country, compared with 309 for the previous seven day period. A noteworthy fact was that, while Texas remained among the three states which have been hit hardest so far this year (California, North Carolina and Texas account for 64 per cent of the total cases), its weekly report was lower than the previous week's. The other two states, however, showed increases. Heaviest concentration of cases in North Carolina is in the western portion, with Guilford County bearing the brunt. In its weekly morbidity report, the United States Public Health Service called attention to the fact that the seven day period ended July 3 was the sixth consecutive week in which not one case of smallpox had been reported.

Civil Defense Medical Plan Completed

A comprehensive plan for utilization of members of the medical and allied professions in event of an enemy attack on this country's civilian population was approved by the medical advisory committee to the Office of Civil Defense Planning, which met on July 6. The blueprint has been submitted to Russell J. Hopley, director, for final approval.

Between the May and July meetings of the advisory group, Dr. Perrin H. Long, professor of preventive medicine at Johns Hopkins University and medical advisor to the Office of Civil Defense Planning, had worked on a draft of the manpower utilization blueprint. Its details are being withheld, pending completion and release of plans involving other aspects of the civil defense problem. Their publication is not expected before fall.

The following members of the *medical advisory committee* attended the July 6 meeting: Brig. Gen. J. M. Hargreaves, Col. E. S. Standlee, Capt. C. C. Myers, Lieut. Col. K. E. Baltz, Dr. Bruce H. Douglas, Dr. C. W. Camalier, Dr. W. R. Krill, Dr. R. P. Fischelis, Rev. Donald A. MacGowan, Dr. R. L. Sensenich, Dr. F. Wilson, Dr. P. S. Owen, Dr. R. B. Snavely, Miss Margaret Arnstein, Dr. E. F. Daily, Dr. Norvin C. Kiefer and Dr. E. H. Cushing.

Industrial Medicine and Defense Conference

The close relation between industrial health problems and national defense was the subject of a special conference held here July 7-8, sponsored by the Office of Defense in cooperation with the American Medical Association. No action was taken, nor were any policies recommended by the informally organized group, whose members included Drs. R. L. Sensenich, Carl M. Peterson and Richard L. Meiling, of the American Medical Association.

"In the event of another war," said an announcement on the meeting by Secretary of Defense James Forrestal, "the success of an industrial health program, now universally recognized as a vital factor in civil defense, would depend largely on complete coordination of military and civil work in this field. A vast research program to determine what personnel and supplies would be needed and just how much of these are now available must be completed before plans to meet a war emergency can be crystallized. The conference [was] held to integrate further the work of the various interested agencies and to initiate the research that remains to be done."

The conferees, during the two day meeting, heard spokesmen for the following government agencies: Army, Navy, Air Force, Public Health Service, Munitions Board, Office of Civil Defense Planning and National Security Resources Board. Their final afternoon session was held at the Brookings Institution, where they were informed of progress of that organization's investigation of certain health and welfare functions of the federal government.

Others in attendance at the conference were Drs. C. W. Camalier, American Dental Association; A. J. Lanza, Metropolitan Life Insurance Co.; Harold A. Vonachen, Caterpillar Tractor Co.; Edward C. Holmblad, American Association of Industrial Physicians and Surgeons, and Tom Hendricks, Council on Medical Service, American Medical Association.

Army Officers Receive Advanced Degrees

Members of the medical department are amply represented among two hundred and eighty-one Army officers who received degrees from graduate schools of civilian institutions during the academic year just ended. Seven earned the degree of Master of Public Health, five, Master of Science and one each, Master of Hospital Administration and Master of Business Administration. One doctorate, in psychology, was awarded, according to the Army's announcement.

Federal Security Agency Regional Offices Established

Further centralizing functions of Federal Security Agency, in the field as well as at Washington headquarters, ten regional offices have been established, according to an announcement. The step is the latest in the plan to deemphasize the agency's various units—*Public Health Service, Food and Drug Administration*, Office of Vocational Rehabilitation, Children's Bureau, Social Security Administration, Office of Education and Bureau of Employes' Compensation—and build up the parent agency's central function. Regional directors and their headquarters cities are as follows: John F. Hardy, I, Boston; Joseph B. O'Connor, II, New York City; Erval R. Coffe, III, Richmond; J. Kimball Johnson, IV, Cleveland; Ed McDonald, V, Chicago; Richard H. Lyle, VI, Atlanta; James W. Doarn, VII, Kansas City; James H. Bond, VIII, Dallas; Heber R. Harper, IX, Denver, and Fay W. Hunter, X, San Francisco.

Program for Distribution of Tagged Chemicals Announced

The Atomic Energy Commission has announced plans for production and distribution of certain chemicals tagged with radioactive elements in order to stimulate their use in medical and industrial research. Heretofore, radioisotopes have been available from Oak Ridge National Laboratory but investigators desiring "tagged" compounds have had to prepare them themselves. Further information on procurement is obtainable from Isotopes Division, Atomic Energy Commission, P. O. Box E, Oak Ridge, Tenn.

Medical Officers Called to Discuss Manpower Retrenchment

Surgeons of the six field Armies and of fourteen Air Force Commands were scheduled to assemble in Washington July 13 and 14 to discuss means of conserving medical manpower, in view of the additional burden which will ensue this fall when selective service goes into effect. The Army Surgeon General is not expected to return from Europe until late July, and the critical situation faced by the Army medical department was to be explained to the Army and Air Force surgeons by Brig. Gen. G. E. Armstrong, Deputy Surgeon General.

Numerical Importance of Fractures Among Naval Personnel Disclosed

The major role borne by the diagnosis simple fracture is attested by a statistical study published in "Statistics of Navy Medicine" for July. It reveals that during the war years simple fractures resulted in 4,500,000 sick days in the Navy and Marine Corps, a total surpassed only by the number of sick days due to common cold and other infections of the respiratory tract blanketed by the term "catarrhal fever." Between 1942 and 1945, inclusive, 104,820 simple fracture cases were handled, an incidence rate of 1,051 per 100,000.

By anatomic regions, bones of the lower extremity had the highest fracture incidence, testifying to the commonness of shipboard falls down hatchways. This group accounted for 36 per cent of all simple fractures recorded. Of the total of 104,820 cases, only 1,617 led to medical discharge (1.5 per cent). Deaths attributable to fracture origin were almost negligible, with the conspicuous exception of skull fractures. There were 1,460 such cases, of which 517 (35 per cent) terminated fatally.

ARMY

CONFERENCE TO CORRELATE REHABILITATION

Representatives of three armed services and two government agencies met in the office of the Army Surgeon General on June 28 for the benefit of crippled servicemen, ex-servicemen and civilians. A conference on physical medicine and rehabilitation will be held then to plan correlation of all government medical efforts in that field. Participating will be the Army, Navy, Air Forces, Veterans Administration and U.S. Public Health Service, together with civilian consultants of each. Among those participating will be Dr. Frank H. Krusen, director of the Baruch Committee on Physical Medicine. Dr. Krusen is a consultant for both the Army and the Veterans Administration. Armed services conferees will be representatives of the physical medicine units of each agency, led by Lieut. Col. B.A. Strickland Jr., chief of the physical medicine consultants division of the Army Medical Corps.

THE ARMY'S NEW SCHOOL CATALOG

The 523 page booklet entitled "The Army School Catalog," which has just come off the government printing press, confirms Secretary of the Army Royall's statement that education is big business in the Army. The book (Department of the Army Pamphlet no. 20-21) contains information about the one hundred and thirty-six courses available for Army officers and the one hundred and ninety-eight courses available for enlisted personnel in the Army's vast educational system, ranging from neuropsychiatric nursing to courses as far from the field of medicine. The prerequisites for each course are outlined in detail. The director of the Personnel and Administration Division of the Army, Lieut. Gen. Willard S. Paul, said, "The Army School Catalog will become a most important tool in the career guidance program of the Army. Here for the first time in one publication is that vast array of school training open to officers and enlisted men. It will give every man and woman in the service a complete picture of the wide range of school courses open to those who qualify under the prerequisites for selection also found in the catalog."

ARMY INSTITUTE OF PATHOLOGY

Dr. Frank G. Haughwout, formerly with the Bureau of Science, Manila, arrived at the Army Institute of Pathology on July 1 to serve as resident consultant for ninety days. He was for three years imprisoned in Japanese prison camps in the Philippines.

The resident consultants at the Army Institute of Pathology, Washington, D. C., during June were Drs. Hartwig Kuhlenbeck, Philadelphia; Henry Pinkerton, St. Louis; Herman Becks, San Francisco, and Granville Bennett, Chicago. Dr. Kuhlenbeck presented a special lecture at the institute June 16 on "Nephrogenic Adenoma of the Urinary Bladder."

JOINT EXHIBIT

The Surgeon General of the Army and Navy and the Air Surgeon of the Departments of the Army, Navy and Air Force jointly prepared the extensive exhibit for the annual meeting of the American Medical Association June 21 to 25, in Chicago, the theme of which was "The General Practitioner in the Atomic Age." This joint effort, the Army Medical Department states, is further proof of the complete armed forces unification.

NAVY

OFFICERS APPROVED FOR POSTGRADUATE TRAINING

At a recent meeting the Advisory Board of the Bureau of Medicine and Surgery approved the following officers for postgraduate training.

Captain Edward F. Kline: Training in Internal Medicine at Naval Hospital, Long Beach, Calif.

Captain Richard S. Silvis: Course in Surgery, University of Pennsylvania Graduate School of Medicine.

Commander John W. Albrittain: Residency in Dermatology and Syphilology, Naval Hospital, St. Albans, N. Y.

Commander Joseph L. Yon: Fellowship in Surgery at Northwestern University, Chicago (Cook County Hospital).

Lieut. Comdr. Eugene P. Cronkite: Course in Application of Nuclear Physics to the Biologic and Medical Sciences, Univ. of California, Los Angeles.

Lieut. Comdr. Charles H. Eaton: Training in Internal Medicine, U. S. Naval Hospital, Long Beach, Calif.

Lieut. Comdr. Leo S. Madlem Jr.: Residency in Psychiatry, Naval Hospital, Bethesda, Md.

Lieut. Henry G. Gardiner Jr.: Instruction in Psychiatry in a civilian institution to be designated.

Lieut. Chester M. Lessenden: Residency in Dermatology and Syphilology, Naval Hospital, St. Albans, N. Y.

Lieut. William E. Morris: Training in Urology, Naval Hospital, St. Albans, N. Y.

Lieut. Herbert G. Stoecklein: Course in Dermatology and Syphilology, Naval Hospital, San Diego, Calif.

Lieut. (jg) Walter T. Colbert: Course in Submarine Medicine.

Lieut. (jg) James R. Hamilton: Residency in Dermatology and Syphilology, Naval Hospital, San Diego, Calif.

Lieut. (jg) Verne K. Harvey Jr.: Instruction in Preventive Medicine, Univ. of California, Berkeley, Calif.

Lieut. (jg) Harold T. Meryman: Course in Application of Nuclear Physics to the Biologic and Medical Sciences, Univ. of Calif., Los Angeles.

Lieut. (jg) David R. Rogers: Course in Aviation Medicine, Naval Air Station, Pensacola, Fla.

Lieut. (jg) Robert E. Walsh: Residency in Anesthesia, Naval Hospital, St. Albans, N. Y.

TOUR OF INSPECTION IN AFRICA

Rear Admiral Lamont Pugh, deputy chief, Bureau of Medicine and Surgery, left June 23 with Capt. J. J. Sapero, M.C., to visit the Navy's Medical Research Unit in Africa which is now with the University of California's African Expedition in Nairobi, Kenya Province. Admiral Pugh will visit also the Navy's Research Unit at Cairo, the medical installation at Athens, Greece, the medical facilities of the Sixth Task Fleet and of the Naval Forces, East Atlantic and Mediterranean. Capt. Sapero will remain at Nairobi and will head the medical research unit until the completion of the expedition in about six months.

CAPTAIN RODDIS RETIRES

Capt. Louis H. Roddis retired on June 30 from active duty after thirty-four years of service. During the recent war he served as senior medical officer on the hospital ship *Relief* in the Central Pacific campaign. His latest assignment was editor of the *United States Naval Medical Bulletin*, to which position he had been assigned on two previous tours of duty. Capt. Roddis, retired, will continue on active duty at the Naval Hospital, San Diego, Calif., where he will direct the preparation of the Navy's Medical History of World War II.

NEW REGULAR OFFICERS

The following reserve medical officers have transferred to the Medical Corps of the Regular Navy: Lieuts. (jg) Donald E. Lloyd of Emporia, Kan.; Delmar W. Ruthig of Saginaw, Mich., and James H. Watts Jr., of Ansley, Neb.

AWARDS AND COMMENDATIONS

Robert D. Coghill

The President's Medal for Merit has been awarded to Robert D. Coghill, Ph.D., director of research at Abbott Laboratories, North Chicago, Ill. During the war Dr. Coghill was head of the Fermentation Division, Northern Regional Research Laboratory, U. S. Department of Agriculture, Peoria, Ill. The citation signed by the President states that he "planned and directed methods for seeking high yielding strains of penicillin molds and methods of recovery and purification of penicillin, which proved invaluable to the war effort."

RESERVE OFFICERS BEGIN INTERNSHIPS

The following newly appointed medical reserve officers, lieutenants (jg), have begun their internships in Naval Hospitals: Frank Fosdick Allen, Boston; Wilbur F. Amonette III, Radford, Va.; Leonard F. Bender, Upper Darby, Pa.; Robert A. Berger, Williamsport, Pa.; Ellsworth R. Browneller, Williamsport, Pa.; Thomas B. Delaney, Worcester, Mass.; James J. Humes, Overbrook Hills, Pa.; George B. Kimbrough, Louisville, Ky.; Norman A. Parrott, Paducah, Ky.; Paul Podmajersky, Chicago; Robert D. Rector, Mechanicsburg, Pa.; Daniel L. Shaw Jr., Philadelphia; Lawrence Stark, New York, and Robert B. Wright, Erie, Pa.

PERSONAL

Lieutenant (jg) Joseph J. Martorano of New York has recently accepted an appointment as Aviation Physiologist in the Medical Service Corps of the Regular Navy.

VETERANS ADMINISTRATION

MORE NEUROPSYCHIATRIC PATIENTS DISCHARGED THAN ADMITTED

Improved technics in the care of mentally ill veterans are enabling the Veterans Administration, for the first time in many years, to discharge about as many patients as are admitted to its neuropsychiatric hospitals. From July 1947 to April 1948, 1,060 more neuropsychiatric patients were discharged from hospitals than were admitted. However, for the twenty-two month period ending with April 1948, 107,579 patients were admitted for treatment and 106,694 discharged, only 885 more admissions than discharges. The establishment of more mental hygiene clinics for outpatient treatment is another factor for enabling the Veterans Administration to keep its hospital load of mentally ill from increasing substantially. The Veterans Administration neuropsychiatric service endeavors to treat actively mentally ill veterans before they become hospital patients and makes every effort to see that they are returned to their homes in restored or improved health. New policies permitting more effective treatment of mental patients and the improved or new technics used include:

1. Establishment of neuropsychiatric units in general medical hospitals to permit intensive early treatment of acutely psychotic and other psychiatric patients.
2. Establishment of general medical and surgical sections in neuropsychiatric hospitals, along with the organization of acute intensive treatment and continued treatment services for the acutely ill and long term patient.
3. Use of electric shock and insulin shock therapy.
4. Performance of prefrontal leukotomies on selected groups of patients.
5. Increased use of psychotherapy, both individual and group.
6. Extensive educational programs, residency training and affiliation with top medical schools in all the neuropsychiatric specialties.
7. Extension of mental hygiene clinics to treat eligible veterans before they become ill enough to be hospital patients.
8. Introduction of the "team technic" in the mental hygiene clinics. Each team—consisting of a psychiatrist, clinical psychologist and two psychiatric social workers—carries a full case load of patients, greatly speeding treatment and preventing many veterans from becoming patients in mental hospitals by early effective treatment of their illnesses.
9. Testing of the "team technic" in the rural areas in hope of bringing "traveling mental hygiene clinics" to veterans outside metropolitan areas.
10. Reorganization of the neurology service and establishment of neurologic diagnostic and treatment centers to which patients from areas lacking competent neurologic staffs can be referred.
11. Establishment of a clinical psychology program which has become a vital part of the diagnostic and treatment teams in hospitals and clinics. Through the interest of psychologists, neurologists and psychiatrists, many research studies into little known diseases and injuries have been undertaken.
12. Widespread use of volunteer workers in mental hospitals and development of a program of public education regarding mental illnesses.
13. Participation of the Veterans Administration's professional people in community and professional activities outside the hospitals.
14. Establishment of research programs into the causes of war neuroses, epilepsy, schizophrenia and other ailments. Group psychotherapy, shock therapy and other methods of cure also are subjects on the research programs.
15. Establishment of special laboratories for studies in pathology and psychosomatic disorders.
16. More extensive use of narcosynthesis and hypnosis.
17. Intensive medical rehabilitation for chronic patients, including those suffering from the diseases of old age. A current survey reveals that despite improved rates of discharges from hospitals, 74 per cent of all the patients presently in neuropsychiatric hospitals have been there for over a year and 55 per cent of the neuropsychiatric hospital population have been there over three years. Concerted efforts are being made to rehabilitate this group so that they may leave the hospital or be better able to care for themselves within the hospital. Plans to effect these goals include intensive application of physical medical rehabilitation procedures for all chronic patients including the aged, wide extension of trial visits both in the patient's own home or other suitable supervised home, and the establishment of hospital clinics to assist trial-visit patients in remaining out of the hospital.
18. Inauguration of a physical medicine rehabilitation program, including aural rehabilitation and speech correction, educational therapy, manual arts therapy, and physical therapy to assist in the physical and mental recovery of all veteran patients.

TUBERCULOSIS PATIENTS AND VETERANS' LIBRARIES

Patients in the Veterans Administration's eighteen tuberculosis hospitals read on the average, during April, one book, magazine or microfilmed publication every other day from hospital libraries. Veterans in the seventy-four general hospitals obtained reading material from the hospital libraries on an average of once in six days. Veterans in the thirty-four neuropsychiatric hospitals borrowed books and magazines once in every six and one-half days. Nearly 900,000 books and periodicals were on veterans hospital library shelves in April. Veterans' libraries are prepared to handle reference questions on a wide variety of subjects and during April answered nearly 12,000 queries from medical and patient personnel. The director of the veterans administration libraries service is F. R. St. John, formerly librarian in the Army Medical Library, Washington, D.C.

DECREASE OF VETERANS ON PENSION ROLLS

The Veterans Administration announces that the number of living veterans on disability compensation and pension rolls has decreased steadily over the past thirteen months. The total dropped from a peak of 2,328,000 on May 1, 1947, to 2,289,000 on June 1, 1948, a decrease of about 39,000.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

COLORADO

Course in Electroencephalography.—A twelve week graduate course in electroencephalography will be given three times annually starting the first Monday in September, December and March at the Colorado University Medical Center, Denver. It is open to graduates of medical schools approved by the Council on Medical Education and Hospitals who have had at least one year of training in physiology, neurology or psychiatry. The trainees will devote three months in the electroencephalography laboratory of the Colorado Psychopathic Hospital, Denver, and associated laboratories. The number of trainees who can be accommodated will be limited. Tuition is $125. Inquiries are to be directed to Dr. Ewald W. Busse, Director of Electroencephalography Department, Colorado University Medical Center, Denver.

ILLINOIS

Public Health Appointments.—Dr. Henrietta Herbolsheimer has been appointed medical administrative assistant to Dr. Roland R. Cross, director, Illinois Department of Public Health. A graduate of the University of Chicago School of Medicine, Dr. Herbolsheimer has been a member of the staff of the department for seven years. George K. Hendrix has been appointed chief of the Division of Hospital Construction and Services, succeeding Dr. Herbolsheimer. He holds the Bachelor of Science degree in civil engineering and has done graduate work in the field of public health engineering at the University of Michigan, Ann Arbor.

Chicago

Receives Borden Award.—Dr. Ben Fisher, Milwaukee, has been named the winner of University of Illinois Borden Undergraduate Award for 1948, a gift of $500, for research in "Clinical Observations on the Prothrombin Test." Dr. Fisher received his Doctor of Medicine degree from the University of Illinois in June.

Fellows in Allergy.—Drs. Jean Dausset and Claude Lapresle, both of Paris, France, have been awarded fellowships to take a twelve month graduate course in allergy which will be offered next autumn by the University of Illinois' Colleges of Medicine and Pharmacy. They will receive stipends from a fund established by an anonymous donor. Eight American physicians also will be selected for the course, which starts September 27. The 1948-1949 course will be the fourth to be offered by the University of Illinois Allergy Unit.

New Exhibit on Infantile Paralysis.—An exhibit, designed to impart basic knowledge of infantile paralysis and other virus diseases, was opened June 17 at the Museum of Science and Industry in Jackson Park. It was developed by the National Foundation for Infantile Paralysis and the Cook County Chapter to help fight the disease and through education allay public fear regarding it. The first panel shows the relation of nerve impulse to muscle action in normal and paralyzed persons. The second panel shows the various possibilities that medical science is exploring to control poliomyelitis. The third panel is a life-sized transparent man with a simplified nervous structure, showing the muscles affected when poliomyelitis attacks certain areas in the brain and spinal cord. The fourth panel portrays steps in the treatment of patients with poliomyelitis, including orthopedic surgery. What the National Foundation for Infantile Paralysis is doing to fight poliomyelitis—research, education and medical care—makes up the fifth panel.

MASSACHUSETTS

Dr. Castle Succeeds Dr. Minot at Memorial Laboratory.—Dr. William B. Castle, professor of medicine at the Harvard Medical School, Boston, has been named to succeed Dr. George R. Minot as director of the Thorndike Memorial Laboratory of the Boston City Hospital. Dr. Castle has been associated with Dr. Minot, a Nobel Prize winner in medicine and physiology in 1934, in the laboratory for more than twenty years. He has been associate director since 1932. Thorndike Memorial Laboratory, opened in 1923, was designed to provide adequate facilities for research and study to physicians engaged in the care of patients. It is closely integrated with the clinical services of Boston City Hospital and Harvard Medical School.

MICHIGAN

University Appointment.—Dr. Robert R. Morgan, Boston, has been appointed associate professor of epidemiology at the School of Public Health, University of Michigan. Dr. Morgan has recently been working as senior fellow in virus diseases, National Research Council, at the Thorndike Memorial Laboratory in Boston, with Dr. Maxwell Finland and John F. Enders, Ph.D. His investigations have been concerned with Salmonella and chemotherapy of virus infections.

Personal.—Mable M. MacLachlan, director of dietetics, University Hospital, University of Michigan, has resigned, effective June 30, to become educational director of the American Dietetics Association.——Dr. Edward P. Cawley, Ann Arbor, a graduate of the University of Michigan Medical School, 1940, has been appointed assistant professor of dermatology at his alma mater.

NEW JERSEY

Appoint Hospital Medical Director.—Dr. Royal A. Schaaf, Newark, member of the Presbyterian Hospital staff for twenty-nine years, has been named to succeed Dr. E. Zeh Hawkes, Newark, as medical director of the hospital. Dr. Schaaf is president of the Society of Surgeons of New Jersey and past president of the Medical Society of New Jersey. Dr. Hawkes has been medical director for the past twenty-one years. He expects to continue practice in surgery and gynecology.

Museum for Proteins of Organisms.—A museum for the collection and study of the proteins of the blood and other tissues of organisms has been established in the department of zoology at Rutgers University, New Brunswick. The museum is an outgrowth of studies in systematic serology conducted for twenty-three years by Dr. Alan Boyden, professor of zoology, and his students and colleagues. The museum will endeavor to preserve the representative serums and other proteins of organisms, to build up the collection to the point where each group of organisms is represented, to share specimens with other researchers and to learn as much as possible about the samples collected. While the serums of hundreds of species of animals have already been collected, no group of animals is yet adequately represented in the collection or has yet been adequately studied serologically. The museum invites the cooperation of all naturalists in a position to contribute or exchange samples of the proteins of organisms.

NEW YORK

Organize Academy of General Practitioners.—At an organization meeting in Syracuse June 3 the New York State Academy of General Practitioners elected Dr. William A. Buecheler, Syracuse, president; Dr. James H. Arseneau, Lyons, secretary, and Dr. Morton M. Spielman, New York, treasurer.

Pamphlet on BCG Vaccination.—The New York State Department of Health and the Medical Society of the State of New York have published a pamphlet to be distributed to groups directly concerned with BCG vaccination programs. The pamphlet gives the administrative aspects of the program, explains the technics of BCG vaccination and recommends procedures for tuberculin testing. Additional information is given under such headings as Consultation and Advisory Service, Contraindications to Vaccination, Reactions, Record Forms and Ordering of Vaccine.

Personal.—Dr. Dicran A. Berberian, formerly chairman, department of bacteriology and parasitology, American University of Beirut, Lebanon, is now a senior investigator in the department of chemotherapy of the Sterling-Winthrop Research Institute, Rensselaer, N. Y. Dr. Berberian is also assistant professor of medicine at Albany Medical College, where he lectures on tropical diseases.

New York City

Society News.—The Nassau Neuropsychiatric Society was recently organized by the private practicing neurologists and psychiatrists of Nassau County, Long Island and New York, with Dr. James L. McCartney, president, and Dr. Peter G. Denker, secretary-treasurer.

Four Assume Emeritus Status at Columbia.—Four members of the Columbia University College of Physicians and Surgeons faculty assumed emeritus status on July 1. They are: Dr. Louis Casamajor, professor emeritus of clinical neurology; Dr. William H. McCastline, university medical officer emeritus; Dr. Walter W. Palmer, Bard professor emeritus of medicine, and Dr. Edwin G. Zabriskie, professor emeritus of clinical neurology.

Achievement Award.—During the commencement program of the Long Island College of Medicine, June 10, the Alumni Medallion for achievement, an annual award given to the graduate who has made a significant contribution to American medicine, was presented to Dr. George Gray Ward of the class of 1891. Dr. Ward is a former professor of obstetrics and gynecology at New York Postgraduate Hospital, Cornell University Medical College, and Columbia University College of Physicians and Surgeons.

Symposium on Radioiodine.—The Biology Department of Brookhaven National Laboratory, Upton, L. I., announces a conference to be held at Brookhaven July 26-30 on the "Biological Applications of Nuclear Physics." The last three days will be devoted to a symposium on radioiodine, covering the following subjects: radioiodine as a tool in evaluating the functions and physiologic aspects of thyroid tumors, standardization of radioiodine, radioiodine in diagnosis and treatment of hyperthyroidism, histologic types of thyroid carcinoma and their respective abilities to store radioiodine, and clinical methods and results of radioiodine therapy in metastatic thyroid cancer.

Memorial Panel on Pneumatology.—The New York University College of Medicine and the Society for the Prevention of Asphyxial Death prepared a panel on pneumatology at the Ohio State University College of Medicine, Columbus, June 17, as a memorial to William Allen Turner from his daughter, Miss Cameron Turner, Macochee Castle, Ohio. The program included discussions of gases in the saving of life and in the control of pain. The classes are to be repeated the first Friday of each month at the Manhattan General and the New York Eye and Ear Infirmary under the auspices of the New York University College of Medicine, Postgraduate Division, and the Society for the Prevention of Asphyxial Death, Inc. All communications should be addessed to the society, 205 East 78th Street, New York.

Appointments to Research Staff. — The Public Health Research Institute of the City of New York, Inc., a nonprofit organization, engaged in research in problems of public health in New York, has announced the following staff appointments: Dr. DeWitt Stetten Jr., assistant professor in the department of biological chemistry at Harvard Medical School, Boston, has been appointed chief of the division of nutrition and physiology. He replaces Otto A. Bessey, Ph.D., New York, who resigned to become professor and head of the department of biological chemistry at the University of Illinois College of Medicine, Chicago, on April 1. Dr. Hubert Bloch, guest of the Rockefeller Institute for Medical Research from Basil, Switzerland, as associate member in the division of applied immunology. Marjorie R. Stetten, Ph.D., as associate in the division of nutrition and physiology. Dr. Richard E. Rosenfield, New York, as assistant in the division of applied immunology. Dr. Katherine Sprunt, Baltimore, as assistant in the division of infectious diseases. The following have resigned: Dr. Oliver H. Lowry, formerly member and associate chief of the division of nutrition and physiology, has joined the staff of Washington University School of Medicine, St. Louis, as professor of pharmacology. Dr. Robert E. Shank, New York, associate member in the division of nutrition and physiology, has accepted the position of professor of preventive medicine at Washington University School of Medicine.

NORTH CAROLINA

University Appointments.—Dr. Felda Hightower, affiliated with the North Carolina Baptist Hospital and Bowman Gray School of Medicine, Winston-Salem, since July 1941, has become assistant professor of surgery in charge of general surgery. Other appointments include: Dr. Ernest H. Yount Jr., Newton, instructor in internal medicine; Dr. John Carroll Wiggins, Winston-Salem, assistant in clinical medicine; and Dr. Leslie M. Morris, Rutherfordton, instructor in radiology.

OHIO

First Governor Was a Physician.—In the *Bulletin of the History of Medicine* Linden F. Edwards writes that Dr. Edward Tiffin arrived at Chillicothe in 1798 after a hazardous journey from Virginia and immediately began the practice of medicine. George Washington had written previously to the Governor of the Northwest Territory paying tribute to Dr. Tiffin's character and recommending him for official appointment. The governor appointed Dr. Tiffin clerk of the common pleas court of Ross County in 1798, and from then for nearly thirty-one years Dr. Tiffin held public office. He was elected the first governor of Ohio in 1803, and before his second term expired, was elected to the United States Senate. He resigned as senator in 1809 and returned to Chillicothe hoping to retire from public office. However, the following year he was elected to the Ohio General Assembly, and was reelected in 1810. President Madison appointed Dr. Tiffin to be commissioner of what is now the Department of the Interior. He returned to Washington in 1814 as surveyor-general of the Northwest, holding that office during the terms of Madison, Monroe and John Quincy Adams. Dr. Tiffin died in 1820 at the age of 64. He continued to practice medicine almost until the time of his death.

TENNESSEE

University Appointment.—Dr. James N. Etteldorf, Memphis, has been appointed associate professor of pediatrics and will be director of the new pediatric research and diagnostic laboratory in John Gaston Hospital, of the University of Tennessee College of Medicine, Memphis.

Personal.—Dr. James G. Shaffer, assistant professor of preventive medicine and public health at Vanderbilt University School of Medicine, Nashville, has resigned, effective July 1, to become associate professor of bacteriology and virology and associate in preventive medicine at the University of Louisville School of Medicine, Louisville, Ky.

Unveil Portrait of Dr. Ellett.—A portrait of the late Dr. Edward C. Ellett, Memphis, was unveiled June 8 in the Memphis Eye, Ear, Nose and Throat Hospital, where he served as chief of staff from 1926 until his death a year ago. The Memphis Society of Ophthalmology and Otolaryngology commissioned the portrait, and former associates and colleagues and former residents of the hospital contributed to the fund.

TEXAS

University Appointment.—Dr. Benjamin B. Wells, formerly dean of the University of Arkansas School of Medicine, Little Rock, has been appointed director and head of the department of clinical pathology at the University of Texas Medical Branch, Galveston. Dr. Wells was graduated from Baylor University College of Medicine, Houston, in 1935.

Dallas Health Museum Award.—Robert L. Sutherland, Ph.D., Austin, director, Hogg Foundation, University of Texas, Austin, received the first annual Dallas Health Museum Award at the meeting of the state medical association in Houston. Nominations were made to the Health Museum by Texas health agencies and organizations. Dr. Sutherland was cited "For his skill and activity in stimulating local responsibility in mental health education and for his profound interest in people."

Texas Cancer Bulletin.—The first number of the *Texas Cancer Bulletin* was published late in February by the Texas Cancer Coordinating Council, which is made up of the executive heads of the Committee on Cancer of the State Medical Association of Texas, Texas State Board of Health, the University of Texas M. D. Anderson Hospital for Cancer Research, Houston, and the American Cancer Society, Texas Division. The bulletin, prepared six times a year, is distributed free of charge to Texas physicians. Part of the funds for this project have been donated by the American Cancer Society and the state department of health. The M. D. Anderson Hospital is contributing the services of its entire staff. The state medical association is contributing both funds and services. The bulletin, designed for the family doctor, publishes the results of important researches. Two special issues, one for dentists and one for nurses, are scheduled for publication this year. The editorial staff includes Russell W. Cumley, Ph.D., executive editor, and Dr. R. Lee Clark Jr., Houston, directing medical editor.

WISCONSIN

Personal.—Dr. Henry A. Anderson, Medical Director, River Pines Sanatorium, Stevens Point, has been named president of the Wisconsin Trudeau Society, which he has also served as vice-president. Dr. David D. Feld, Wauwatosa, is secretary-treasurer.

Narcotic Violation.—The Federal Bureau of Narcotics reports that Dr. Loraine Karl Everson, Madison, pleaded guilty in the United States District Court to violation of the federal narcotic law and on May 10 was sentenced to a term of six months to be followed by probation for a period of two years.

Agency for the Chronically Ill.—The Central Agency for Chronically Ill, which has established headquarters at 756 North Milwaukee Street, Milwaukee, will list all resources for the care of the chronically ill in Milwaukee; refer requests for services to them; foster coordination of services for the chronically ill, and aid in the development of programs indicated for their care. The Service Club of Milwaukee has given $19,000 toward the development of the agency's program.

GENERAL

New Volumes on Medical Research.—*Methods in Medical Research,* a new series of annual volumes, is announced by the members of the governing board of this publication: Drs. Irvine H. Page, Indianapolis; Andrew C. Ivy, Chicago; Colin M. MacLeod, New York; Carl F. Schmidt, Philadelphia; Eugene A. Stead Sr., Durham, N.C., and David L. Thompson, Detroit. The first volume will be available in August 1948. The new series will be published by Year Book Publishers, Inc., Chicago.

Nutrition Research.—The Nutrition Foundation, Inc., has authorized grants totaling $121,917 to fifteen universities and medical centers in the United States and Canada. Projects deal with vitamins, amino acids, sugars, fats and trace elements. Donations to the foundation of $10,000 each from the Great Atlantic & Pacific Tea Company, New York, and the Purity Bakeries Corporation, Chicago, and of $1,000 from the Southern Cotton Oil Company, New Orleans, have been announced.

Prize for Contribution on Paget's Disease.—The Louis Lefkoe Memorial Foundation, Philadelphia, is offering a prize of $250 for the best original contribution to the medical knowledge of osteitis deformans (Paget's Disease). The paper may cover any aspect of the subject such as pathogenesis, biochemical knowledge, pathology or treatment. The paper is to be submitted to the trustees of the foundation on or before April 5, 1949, the birthday of Louis Lefkoe, in whose memory the foundation was created a year ago.

Books for Refugee Physicians.—The Preparatory Commission for the International Refugee Organization, Washington, D. C., is appealing for a donation of textbooks and journals to be distributed to refugee doctors and dentists. Among the 600,000 displaced persons in Germany, Austria, the Middle East and Italy, there are 2,500 doctors, dentists and pharmacists. One problem of this group is obtaining information on the progress in medicine during the past ten years. Donations should be addressed to the commission, Room 330, 1344 Connecticut Avenue N.W., Washington 25, D. C.

Increase in Life Span.—The persons who died in the United States in 1946 were six years older, on the average, than those who died in 1933, according to figures of the National Office of Vital Statistics. The average (median) age at death was 58.2 years in 1933 and 64.2 years in 1946. On the average, women live longer than men and their average age at death has increased faster. The average age at death for women was 59.2 in 1933 and 66.2 in 1946, an increase of 7.1 years, or 12 per cent. For men the average age at death in 1946 was 62.7 years. This was 5.2 years, or 9 per cent, higher than the corresponding age of 57.5 in 1933. The death rates decreased for every age group in the population between 1933 and 1946. The greatest improvement occurred among children 1 to 4 years of age. The death rate for this group dropped from 4.7 in 1933 to 1.8 in 1946, or 62 per cent. The smallest relative drop in death rates, 10 per cent, is seen for persons 75 years of age and over.

Survey of Tuberculosis Mortality.—A five year summary of tuberculosis mortality was released April 5 by Dr. Herbert R. Edwards of the New York Tuberculosis and Health Association. The tuberculosis death rate for the entire United States was reported as 36.4 per hundred thousand population The fifteen largest cities showed the following 1946 "recorded" death rates: New Orleans 85; Washington, D. C., 62.3; Boston 60.2; Los Angeles 54.2; Buffalo 54; Philadelphia 53.3; Baltimore 50.6 Cleveland 50.4; Pittsburgh 49.4; San Francisco 48.5 Chicago 43.4; Detroit 42.85 New York 41.7; Milwaukee 34.7 and St. Louis 31.4. In foreign countries studied, Lisbon, Portugal, led European cities with a rate of 367, and Bulgaria led European countries with a rate of 161. In 1946 Canada's death rate was 47.3, England and Wales 53.3, Scotland 78.8, Northern Ireland 83.3 and the Irish Free State 114.4. On the European continent a low rate of 32 is reported in Denmark, 47 in the Netherlands, 68 in Spain, 81 in France, 120 in Hungary, 149 in Finland and 161 in Bulgaria. Large European cities in general had high rates: Copenhagen 44, Amsterdam 51, Stockholm 56, Oslo 61, London 70, Edinburgh 76, Paris 78, Belfast 94, Madrid 110, Glasgow 132, Budapest 143, Dublin 152, Rome 159, Vienna 164 and Berlin 260. In Warsaw a rate of 500 was said to prevail in 1944 as against 155 before the war.

Appointments to Strengthen Faculties.—The first group of scholars in medical science, under the plan announced by the John and Mary R. Markle Foundation to support qualified young scientists who plan to make a career in academic medicine, has been appointed. They were selected from candidates nominated by medical schools in the United States and Canada and regional committees appointed by the foundation. Toward the support of the scholars and their research the foundation has allocated $400,000 to their respective medical schools, each school to receive $25,000 payable at the rate of $5,000 annually for five years. As faculty members of these schools, the scholars will devote the next five years to teaching and research, at the end of which time they will have had an opportunity to become established teachers and investigators Scholars will be appointed each year for the next few years for the long range purpose of strengthening medical education.

The sixteen scholars whose appointments begin in 1948 and their fields of research are: Christian B. Anfinsen, Ph.D., biochemistry at Harvard Medical School, Boston; Dr. Henry H. Balch, surgical infections at New York University College of Medicine, New York; Dr. Edward J. Beattie Jr., surgery and cardiorespiratory physiology at the George Washington University School of Medicine, Washington, D. C.; Dr. Marcel E. Blanchaer, biochemistry at the University of Manitoba, Winnipeg, Canada; Dr. Iven W. Brown Jr., injury produced by transfusion at Duke University School of Medicine. Durham, N. C.; Dr. Robert H. Ebert, pulmonary diseases at the University of Chicago. Dr. Richard C. Fowler, physiology and development of physicochemical tools at the University of Rochester School of Medicine and Denistry, Rochester, N.Y., Dr. Henry D. Hoberman, biochemistry and metabolism of compounds by use of isotope tracers at Yale University School of Medicine, New Haven, Conn.; Dr. Ralph A. Kinsella Jr., biologic chemistry at St. Louis University School of Medicine, St. Louis; Dr. Christian J. Lambertsen, pharmacology and cardiovascular and respiratory problems at the University of Pennsylvania School of Medicine, Philadelphia; Dr. William D. Lotspeich, renal physiology at Syracuse University College of Medicine, Syracuse, N. Y.; Dr. Preston B. Lowrance, cardiovascular disease at the University of Virginia Department of Medicine, Charlottesville, Va.; Dr. Frederick D. McCandless, neuropsychiatry at Albany Medical College, Albany, N. Y.; Dr. Manson Meads, internal medicine and infectious diseases at the Bowman Gray School of Medicine, Winston-Salem, N. C.; Dr. Julius B. Richmond, pediatrics at the University of Illinois College of Medicine, Chicago; Dr. Ralph O. Smith, internal medicine at Washington University School of Medicine, St. Louis.

Deaths

Oscar Reiss ⊕ Beverly Hills, Calif., chairman of the Section on Pediatrics of the American Medical Association, 1947-1948 and vice chairman in 1941 and 1942, died June 16, aged 65, of coronary thrombosis. Dr. Reiss was born in Jassy, Rumania, March 24, 1883. He attended the University of Michigan and graduated from the College of Physicians and Surgeons of Chicago in 1906. He practiced in Chicago for a while, then moved to Nevada, then to California. In 1918 he returned to Chicago to receive pediatric training at the Sara Morris Memorial, Michael Reese Hospital. From 1919 to 1923 he was the first chief of the child welfare division of the Los Angeles Health Department, which he had organized. In addition to being a charter member and first president of the Trudeau Society of Los Angeles and the Southwestern Pediatric Society, which he also served as secretary, Dr. Reiss was a founder and three times president of the Southern California Mental Hygiene Society. He served as a consultant and member of the National Advisory Committee of the Childrens Bureau, participated in the first White House Conference on Maternal and Child Health and was invited by President Truman in 1948 to participate in planning a Health Program for the nation. Dr. Reiss was a specialist certified by the American Board of Pediatrics, a fellow of the American Academy of Pediatrics, a member of the American Orthopsychiatric Association, councillor of the Los Angeles County Medical Society and secretary-treasurer of its medical milk commission. He was clinical professor of pediatrics at the University of Southern California School of Medicine in Los Angeles and formerly associate professor of pediatrics at the College of Medical Evangelists in Loma Linda and Los Angeles, a member of the staff of St. Anne's Maternity Hospital, chief medical officer for thirty years of Vista Del Mar, the Los Angeles Jewish Orphans' Home, director of the pediatric service, and chief of staff of the Cedars of Lebanon Hospital, and chief of the pediatrics department of Los Angeles General Hospital for twenty years. He was the co-author of "My Body and How It Works." Dr. Reiss was to have represented the pediatric section of the American Medical Association, the American Academy of Pediatrics and the Southern California Society for Mental Hygiene at the International Conference on Mental Health to be held in London in August.

Oscar Reiss, M.D., 1883-1948

Philip Earle Blackerby ⊕ Kentucky State Health Commissioner, was found dead at his home in Louisville, Ky., June 24, aged 66, of cerebral hemorrhage. Dr. Blackerby was born in Berlin, Ky., July 8, 1881. After graduation from the University of Louisville Medical Department in 1904, he served one year at the New York Postgraduate Medical School and Hospital. From 1906 to 1914 he practiced medicine at Erlanger, Ky., then joined the state board of health, serving until 1917 as field medical officer in a program for the eradication of hookworm disease. From 1917 to 1921 he was director of the bureau of vital statistics and from 1921 to 1943 director of county health work. He was assistant state health commissioner and assistant secretary of the state board of health from 1925 to 1943. Since August 1943, when he was appointed to complete the unexpired term of the late Dr. Arthur T. McCormack, he has served as state health commissioner and secretary of the state board of health, serving also as dean of its school of laboratory technicians. Dr. Blackerby was secretary of the Kentucky State Medical Association, member of the American Public Health Association and its Southern Branch, Conference of State and Provincial Health Authorities of North America, State and Territorial Health Officers Association and the Southern Medical Association. During World War I he served as a captain in the medical reserve corps, in charge of Kentucky recruitment and assignment of physicians to the armed services, and during World War II he was chairman for the procurement and assignment in Kentucky. He was a member of the medical advisory committee to state welfare institutions and an ex officio member of the board of trustees of the Frontier Nursing Service. Dr. Blackerby had been editor of the *Kentucky State Medical Journal.*

Augustus Smith Knight ⊕ Far Hills, N. J.; born in Manchester, Mass., Nov. 24, 1864; Harvard Medical School, Boston, 1891; member of the American Psychiatric Association and the National Committee for Mental Hygiene; fellow of the American College of Surgeons; retired in 1934 as medical director of the Metropolitan Life Insurance Company in New York; treasurer of the Association of Life Insurance Medical Directors from 1903 to 1918 and in 1920 and 1921 president; president of the board of managers of the Greystone Park (N. J.) State Hospital; chairman of the board of trustees of the Somerset Hospital in Somerville, where he died March 21, aged 83, of injuries received in an automobile accident.

I. Newton Agenbroad, Dayton, Ohio; Eclectic Medical Institute, Cincinnati, 1891; died in the Miami Valley Hospital April 1, aged 84, of coronary thrombosis and myocardial disease.

Matilda Beaver ⊕ Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1899; died in the Woman's Hospital, February 2, aged 84, of pulmonary embolus.

Frank Leroy Carson, Shawnee, Okla,; born in Wakeeney, Kan., Feb. 11, 1882; Medical Department of Tulane University of Louisiana, New Orleans, 1906; also a graduate in pharmacy; fellow of the American College of Surgeons; member of the founders' group of the American Board of Surgery; past president of the Pottawatomie County Medical Society; surgeon at the A. C. H. Hospital; on the courtesy staffs of Shawnee Municipal Hospital and Shawnee Indian Sanatorium; died recently, aged 65, of rupture of the pulmonary artery.

William Wyche Dickey, Chattanooga, Tenn.; University of Tennessee College of Medicine, Memphis, 1915; served during World War I; died March 15, aged 68.

Andre L. Ducharme, Lewiston, Me.; University of Montreal Faculty of Medicine, Montreal, Que., Canada, 1921; died in Auburn March 26, aged 54.

Leander Jacob Eads, Hamilton, Mo.; University of Louisville (Ky.) Medical Department, 1889; died March 18, aged 83, of coronary occlusion.

Arthur Henry Ellis ⊕ Greenfield, Mass.; Dartmouth Medical School, Hanover, N. H., 1907; past president of the Franklin District Medical Society; member of the staffs of Franklin County Public Hospital in Greenfield and Farren Memorial Hospital, Montague City; died March 14, aged 66, of arteriosclerosis.

Jacob Julius Epstein ⊕ New York; Yale University School of Medicine, New Haven, 1910; served on the staffs of Beth Israel, Babies' and Gouverneur hospitals; died in the New York Hospital March 24, aged 67, of heart disease.

Edward Carlin Ferguson ⊕ Edwardsville, Ill.; Jefferson Medical College of Philadelphia, 1896; past president of the Madison County Medical Society; affiliated with St. Elizabeth's Hospital in Granite City and St. Joseph's Hospital in Alton; died March 26, aged 75, of coronary thrombosis.

Thomas S. Falvey, Conroe, Texas; University of the South Medical Department, Sewanee, Tenn., 1901; member of the American Medical Association; health officer of Montgomery County and city health officer of Conroe; served as local surgeon for the Santa Fe Railway; died March 15, aged 73, of arteriosclerosis.

Franklin Parkinson Flagg, Maynard, Mass.; Harvard Medical School, Boston, 1892; died in Brighton March 25, aged 82, of cerebral hemorrhage.

Clayton C. Flatt, Kinzua, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1891; member of the American Medical Association; died in the Warren (Pa.) General Hospital March 28, aged 84, of pneumonia.

Charles Ross Fishel, Tacoma, Wash.; Ohio Medical University, Columbus, 1906; member of the American Medical Association and of the Radiological Society of North America, Inc.; served during World War I; died March 15, aged 69.

James Quitman Fountain, Memphis, Tenn.; Medical Department of Tulane University of Louisiana, New Orleans, 1893; for four years state senator from Hancock County, Miss., where he was for many years county health officer; an officer during World War I; served on the staffs of Charity Hospital in Natchez, Miss. and King's Daughters' Hospital in Gulfport, Miss.; died in Kennedy General Hospital March 28, aged 80, of cardiac failure.

Ada Mabel French, Los Angeles; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1900; died February 19, aged 77, of cerebral hemorrhage and hypertension.

Victor C. Goldberg ⊕ Long Beach, Calif.; Columbia University College of Physicians and Surgeons, New York, 1910; died March 17, aged 61.

Jacob S. Gregg, Fort Smith, Ark.; Eclectic Medical College, Cincinnati, 1912; died March 16, aged 63.

Alpheus B. Green, Norfolk, Va.; Leonard Medical School, Raleigh, 1902; died February 5.

Martin Milton Hage, Lake Mills, Iowa; the Hahnemann Medical College and Hospital, Chicago, 1912; member of the American Medical Association; *on* the honorary staffs of Naeve Hospital, Albert Lea, Minn., Forest City (Iowa) Municipal Hospital and Mercy Hospital in Mason City, where he died March 9, aged 62, of cerebral hemorrhage.

Joseph Ridgway Haines, Mount Holly, N. J.; *Jefferson* Medical College of Philadelphia, 1897; also a graduate in pharmacy; served on the staff of Wills Eye Hospital in Philadelphia; died in the State Hospital, Trenton, March 6, aged 81, of bronchopneumonia.

Eward H. Hake, Youngstown, Ohio; Dunham Medical College, Chicago, 1902; member of the American Medical Association; on the courtesy staff of St. Elizabeth Hospital, where he died March 24, aged 74, of coronary thrombosis and diabetes mellitus.

Enoch N. Heston, Columbus, Ohio; Columbus Medical College, 1892; died in the Grant Hospital March 27, aged 78.

Joseph Carl Kahan, *Philadelphia*; Maryland Medical College, Baltimore, 1911; died February 11, aged 79, of coronary thrombosis.

Lawrence Larry Keller ⊕ Dallas, Texas; University of Tennessee College of Medicine, Memphis, 1913; served during World War I; died March 2, aged 61, of general peritonitis following a ruptured gallbladder.

Walter Dennis Kendig ⊕ Kenbridge, Va.; Medical College of Virginia, Richmond, 1905; past president of the Fourth District Medical Society and formerly vice president of the Medical Society of Virginia; member of the board of visitors of the Medical College of Virginia; state senator; affiliated with the Kendig Brothers Hospital in Victoria from 1920 to 1932; died *March 16, aged 67, of heart disease.*

Raymond Arndt Kiefer, Ramsey, N. J.; Jefferson Medical College of Philadelphia, 1903; a medical officer serving during World War I; served on the staffs of the Paterson (N. J.) Hospital and the Good Samaritan Hospital in Suffern, N. Y.; died in Tallman, N. Y., March 29, aged 71, of carcinoma of the bladder.

Jesse Alexander King, Ojai, Calif.; St. Louis College of Physicians and Surgeons, 1905; member of the American Medical Association; died March 31, aged 74.

William A. Kingsley, Brookline, Mass.; Laval University Faculty of Medicine, Quebec, Canada, 1908; died February 9, aged 70, of congestive heart failure.

Joseph Hunter Kirkpatrick ⊕ Los Angeles; Chicago Homeopathic Medical College, 1897; an Affiliate Fellow of the American Medical Association; served on the staff of California Hospital; died March 14, aged 76, of heart disease.

Harry Willard Kline, Anoka, Minn.; the Hahnemann Medical College and Hospital, Chicago, 1919; died March 17, aged 54, of coronary thrombosis and diabetes mellitus.

Marceine Denver Klote, Detroit; St. Louis University School of Medicine, 1928; member of the American Medical Association; affiliated with the Providence Hospital; died March 24, aged 45, of coronary thrombosis.

Samuel Tilden Ladd ⊕ *Portsmouth, N. H.; Dartmouth* Medical School, Hanover, N. H., 1900; past president of the New Hampshire Medical Society; formerly mayor of Portsmouth and comptroller of customs for the New England district; served in the city council and as city physician; died in the New England Deaconess Hospital in Boston, March 27, aged 71, of ruptured aneurysm of the right iliac artery.

Frank Henry Landes, Mount Ayr, Iowa; Marion-Sims College of Medicine, St. Louis, 1897; died March 13, aged 75, of heart disease.

Leslie Phillips Leland ⊕ Worcester, Mass.; Boston University School of Medicine, 1909; member of the New England Obstetrical and Gynecological Society; formerly secretary of the Worcester District Medical Society; member of the medical milk commission; on the staff of the Worcester Hahnemann Hospital, where he died March 16, aged 63, of lymphoblastoma.

John Newton Lightsey, Cotulla, Texas; University of Texas School of Medicine, Galveston, 1911; *member of the* American Medical Association; past president of the La Salle-Frio-Dimmit Counties Medical Society; county health officer; served during World War I; local surgeon for the Missouri Pacific Railroad; died March 17, aged 65, of heart disease.

Andrew Jackson Love, New York; Columbia University College of Physicians and Surgeons, New York, 1910; died March 21, aged 86, of coronary sclerosis.

John Henry Martin ⊕ Red Oak, N. C.; University of Nashville (Tenn.) Medical Department, 1903; died March 19, aged 80, of arteriosclerotic heart disease.

William Martin, Haddonfield, N. J.; Jefferson Medical College of Philadelphia, 1889; past president of the Bucks County (Pa.) Medical Society; served on the Ventnor Board of Education; affiliated with the Frankford and Friends hospitals in Philadelphia; died March 20, aged 79, of cerebral thrombosis.

George August May, Ann Arbor, Mich.; Yale University School of Medicine, New Haven, 1901; served as associate professor of physical education at the University of Michigan; died in the University Hospital March 28, aged 75.

George K. Maynard, Clovis, N. M.; St. Louis University School of Medicine, 1903; member of the American Medical Association; died in Brownsville, Texas, in March, aged 74.

John Patrick Murphy ⊕ St. Louis; St. Louis University School of Medicine, 1924; member of the Clinical Orthopaedic Society and of the American Academy of Orthopaedic Surgeons; on the staff of St. Mary's Hospital; died March 21, aged 61, of heart disease.

Paul Oliver, Frankfort, Mich.; Rush Medical College, Chicago, 1901; fellow of the American College of Surgeons; formerly on the faculty of his alma mater; served during World War I; *formerly on the staff of the West Suburban Hospital* in Oak Park, Ill.; died in Daytona Beach, Fla., March 20, aged 72, of coronary occlusion.

William Henry Orwick, Massillon, Ohio; Western Reserve *University School of Medicine, Cleveland, 1946; interned* at the Youngstown (Ohio) Hospital; lieutenant in the medical corps, Army of the United States, assigned to Fort Adams, Newport, R. I.; died in Walter Reed General Hospital, Washington, D. C., February 20, aged 26, following the removal of a benign cyst from the fourth ventricle.

Leonard Joseph Ostrowski ⊕ East Chicago, Ind.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1912; also a graduate in pharmacy; on the staff of St. Catherine's Hospital; died while vacationing in Mesa, Ariz., March 28, aged 62.

Elmer Ellsworth Overfield, Eaton Rapids, Mich.; State University of Iowa College of Medicine, Iowa City, 1888; died March 25, aged 86, of chronic myocarditis.

Anders Peter Overgaard ⊕ Houston, Texas; Omaha Medical College, 1900; specialist certified by the American Board of Radiology, Inc.; member of the American Roentgen Ray Society, Radiological Society of North America, Inc., and the American College of Radiology; served on the staff of Covenant Hospital in Omaha and the Houston Clinic; died March 14, aged 69, of carcinoma of the bladder.

Samuel Benjamin Peacock ⊕ Pittsfield, Ill.; Keokuk (Ia.) Medical College, 1896; died March 6, aged 81, of heart disease.

Julius Frederick Peppler, Rockford, Mich.; Rush Medical College, Chicago, 1902; for several terms village president; during World War I served in the medical corps of the U. S. Army; on the staff of St. Mary's Hospital in Grand Rapids; died in Veterans Administration Hospital in Grand Rapids March 10, aged 75, of leukemia.

William Anthony Peters ⊕ Elizabeth City, N. C.; Medical College of Virginia, Richmond, 1915; affiliated with Albermarle Hospital; surgeon for the Norfolk and Southern Railroad; drowned while fishing March 17, aged 57.

Meade Hubbard Phelps, Natchitoches, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1912; parish coroner for many years; on the staff of the Natchitoches Hospital; died March 12, aged 62, of coronary occlusion.

De Costa Rhines, Owatonna, Minn.; the Hahnemann Medical College and Hospital, Chicago, 1884; served for many years as county coroner, a term as president of the village council and on the school board; died February 9, aged 89.

Fred J. Roemer, Port Lavaca, Texas; Memphis (Tenn.) Hospital Medical College, 1904; examining physician for Selective Service during World Wars I and II; county health officer; local surgeon for the Missouri Pacific and Southern Pacific railroads; died February 21, aged 69, of heart disease.

John Francis Russell, Troy, N. Y.; Georgetown University School of Medicine, Washington, D. C., 1929; served during World War II; died March 23, aged 44, after an operation for bleeding duodenal ulcer.

Benjamin Clarence Rush, Vaughan, Miss.; Tulane University of Louisiana School of Medicine, New Orleans, 1916; member of the American Medical Association; served during World War I; died March 29, aged 47, of heart disease.

William W. Shafer, Haines City, Fla.; Marion-Sims College of Medicine, St. Louis, 1892; Barnes Medical College, St. Louis, 1893; member of the American Medical Association; past president of the Polk County Medical Society; affiliated with the Morrell Memorial Hospital, Lakeland, where he died January 6, aged 82, of cerebral vascular disease and bronchopneumonia.

Lewis Maurice Shear ⊕ Lancaster, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1910; served on the board of education, formerly city treasurer, director of public safety and city commissioner; affiliated with Lancaster General and St. Joseph's hospitals; died recently, aged 62, of coronary occlusion.

H. Lee Simpson, Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1904; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology and the American Medical Association; fellow of the American College of Surgeons; on the staffs of Harper Hospital, Receiving Hospital and Jennings Hospital, where he died February 3, aged 69, of coronary occlusion.

Claude Maurice Stafford, Detroit; Detroit College of Medicine, 1906; fellow of the American College of Surgeons; served as acting assistant surgeon in the U. S. Public Health Service; U. S. Consulate at Windsor, Ontario, Canada; formerly on the staff of St. Joseph's Mercy Hospital and for many years on the staff of St. Mary's Hospital; died in Riverside, Ontario, March 10, aged 66, of carcinoma of the rectum.

Michael Aloysius Sullivan ⊕ Lackawanna, N. Y.; Niagara University Medical Department, Buffalo, 1899; fellow of the American College of Surgeons; chief of staff of Our Lady of Victory Hospital and senior consultant at the Mount Mercy Hospital in Buffalo; died March 11, aged 71, of coronary thrombosis.

Clarkson B. Thomas ⊕ Plainfield, Ind.; Physio-Medical College of Indiana, Indianapolis, 1902; past president of the Hendricks County Medical Society and of the Seventh District Medical Society; formerly on the faculty of his alma mater; affiliated with Methodist Hospital, Indianapolis; died March 13, aged 71, of coronary occlusion.

William Vernon Tucker, Elkhart, Kan.; Louisville (Ky.) Medical College, 1893; died in Phoenix, Ariz., recently, aged 80, of heart disease and peptic ulcer.

James Lindley Vail, Cranford, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1898; served as physician for the board of education and board of health; died in the Convalescent Home, Roselle Park, March 22, aged 75, of coronary thrombosis.

Henry Edward Whalen ⊕ Dexter, Maine; Jefferson Medical College of Philadelphia, 1922; affiliated with Plummer Memorial Hospital; died in Massachusetts Memorial Hospital, Boston, March 3, aged 50, of hypertensive heart disease.

Phillip Henry White, Cleveland; Illinois Medical College, Chicago, 1904; died in Selma, Ala., February 6, aged 71.

KILLED IN ACTION

Capt. Webster C. Smyers, M.C., A.U.S., 1914-1944

Lieut. Hiram M. Greene (MC) U. S. Navy, 1915-1946

Lieut. Col. Willis H. Drummond M.C., A.U.S., 1899-1944

Webster Cullen Smyers, Dayton, Ohio; University of Cincinnati College of Medicine, 1941; interned at the Miami Valley Hospital; began active duty as a first lieutenant in the medical corps, Army of the United States, in June 1941; promoted to captain; killed in action in the South China Sea Oct. 24, 1944, aged 30, as the result of the sinking of a Japanese ship on which he was being transported while a prisoner of war.

Hiram Moe Greene ⊕ Lieutenant, (MC), U. S. Navy, Fremont, Ohio; University of Louisville (Ky.) School of Medicine, 1941; appointed a lieutenant (jg) in the medical corps of the U. S. Navy on Jan. 6, 1941; interned at the U. S. Naval Hospital in Chelsea, Mass.; officially reported to be missing in action as of Nov. 1, 1943, serving aboard the U. S. S. *Wahoo* when that submarine failed to return from a war patrol in the Sea of Japan; presumptive date of death by the Navy Department is given as Jan. 7, 1946, aged 31.

Correction.—Above is the correct photograph of Willis Hinton Drummond ⊕ Lieutenant Colonel, MC., U. S. Army, Hollywood, Calif., who was killed in action in the Pacific area Dec. 15, 1944. Dr. Drummond's obituary appeared in The Journal, June 26, page 804, under the picture of Major Michael A. Rafferty, M.C., A.U.S., who was killed in action in Belgium, Nov. 24, 1944. Dr. Raffery's obituary appeared in The Journal, Feb. 10, 1945, page 352.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 12, 1948.

The 1947 Epidemic of Poliomyelitis

The Ministry of Health has published an analysis of the 1947 epidemic of poliomyelitis. The corrected notifications during 1947 are likely to amount to between 7,000 and 7,500. This gives an attack of 18 per hundred thousand population, compared to 3.8 in 1938, previously the year of highest recorded incidence. In 1938 the death rate from the disease was 6 per million living and the case fatality rate was 16 per cent. For 1947 the corresponding figures were 18 and 10, respectively. Thus, although there were many more deaths in 1947, the fatality rate was lower than in 1938. Details are also given of the special hospital inquiry to ascertain the probable results of the epidemic. Hospitals have made returns up to Oct. 11, 1947, of 6.762 patients admitted, for 4.717 of whom the diagnosis was confirmed. About one third of the patients were under the age of 5 years, one third between 5 and 15 and one third over 15. Only 14 per cent of the deaths occurred in children under 5 years of age, one fifth in children between 5 and 15 and no less than two thirds in persons over 15. The term infantile paralysis should be abandoned because the disease heavily attacks adults, in whom it carries a greater risk of death than in young children.

The Extent of Recovery

It is probably too early yet to estimate the full extent of the recovery of paralyzed muscles. Only one fifth of the paralyzed patients are at present classified as "severe," that is, "unlikely to return to normal life." Against this nearly a quarter of all the patients attacked by the disease had no paralysis at all. It is estimated that some 3,000 of the patients will need extended hospital treatment. Respirators ("iron lungs") were used for over 300 patients.

Liver Preparations in Pernicious Anemia

In a discussion at the section of medicine of the Royal Society of Medicine on the megalocytic anemias Dr. J. F. Wilkinson said that the liver principle necessary for production of normal red blood cells is absent in pernicious anemia, and a similar, if not the same, principle is obtainable from animal livers. During the last twenty years it has been found widely distributed in the livers of many species of animals. But whale liver and cod liver oil residues, after the oil has been extracted, are inactive. The same holds for fish livers in general, and he has yet to obtain an active liver extract from reptiles. An important observation was that the livers of cattle who died of diseases such as nakuruitis did not contain the active principle. For some time it has been a matter of concern that postwar liver extracts have not the same potency as prewar ones. Diseased livers unfit for food are used, of which possibly half are without pharmaceutic value. The more chemical processes through which liver extracts are put, the greater the risk of a subpotent preparation.

Recently cases have been reported of anemia refractory to highly purified preparations. If the batch from which the preparation was obtained has not been tested, it should not be concluded that the preparation was refractory, for it might be an inactive one. Wilkinson advised that if a patient did not respond to a preparation in a fortnight it should be changed.

As to folic acid, he had found that in 9 of 20 cases it did not prevent the development of neurologic lesions and in 60 of 184 reported cases neurologic lesions had developed. These might come on within a month of starting treatment. Folic acid did not maintain the majority of patients with pernicious anemia in normal health. There was a gradual falling off of the blood count. The effective dose was large in comparison with liver, and it did not relieve the neurologic symptoms.

As to the prognosis in pernicious anemia, Dr. Wilkinson compared cases before and after liver treatment was introduced. In 68 cases before the advent of liver therapy the average duration of life was six months. All but 1 patient died within nineteen months. In his group of patients 1,480 received liver or stomach treatment during the last nineteen years. Only 301 were dead, while of these, 105 had lived for five years and 149 for five to twenty years. Of those still alive, 1,032 had been under treatment for more than five years. One survivor was over 100 years of age; 7 were over 90; 99 were over 80; 500 were over 70. If patients with pernicious anemia were treated adequately with liver or stomach preparations they would get well and remain so.

MADRID

(From Our Regular Correspondent)

June 15, 1948.

History Of The Idea Of Disease

Dr. P. Lain Entralgo, professor of medical history in Madrid University, has given a series of lectures in the Hall of the Madrid Medical Association on the "History of the Idea of Disease." His starting point was the "higher primitive culture," so called by the ethnologists of the *kulturhistorische Schule*, in which disease was considered as a punishment from God and, in interpreting the mechanism of that punishment, two attitudes prevailed: one perceived it as a moral pain (Assyria and Babylonia) and the other saw it as a physical affliction (Indo-European peoples, ancient Greece). Witnesses to this physical interpretation of disease are the first canto of the Iliad and other passages in Homer's poems. The Assyrio-Babylonian conception led to a dead end, whereas the Hellenic one is the basis of all scientific medicine.

The physical idea of disease, worked out by the disciples of Hippocrates, culminated in Galen, for whom disease was a *diathesis para physin*, a preternatural disposition of the physiologic functions. According to Lain, this was how the first systematic general pathology came into being, which was so ample that it comprised, in Galen, even sin or moral disorders, as a preternatural disposition of the soul. For the Assyrians, the sick man was a sinner; for Galen, the sinner was a sick man.

Lain states that theoretic nosology is the history of the Galenic concept of disease, into which Paracelsus introduced an important novelty, the consideration of disease not only as a "state" but as a real and living "entity." Sydenham emphasized the share of reactive effort in disease and taught us to define diseases by their visible characters and not by their essence, as was attempted by Galen. On the other hand, he studied "chronic diseases" with an attention which led him to appreciate the "biographical moment" in human disease.

But the physician who is not satisfied with merely classifying the "morbid species," as was done by the followers of Sydenham, must ask himself what the morbid species really is, its real consistency. It is here that Boerhaave, Stoll, Morgagni and Bichat initiated the anatomoclinic system which was to culminate in Laennec, who taught us to define disease not so much by its symptoms as by the anatomic lesions and the physical signs by which lesions can be diagnosed in patients, thus closing the "Copernican cycle" of the anatomopathologic lesion postulated by Bichat and later by Laennec. This fulfilment was achieved by Bright, Rokitansky and Virchow.

The basic stages following this transformation of medicine by Laennec are as follows: (1) the symptom counteroffensive as a reply to the physical sign (functional tests) the physiopathology of Traube, Naunyn and Frerichs; the pathology of Kraus; the neurology of Jackson, von Monakow and Goldstein; (2) connected with the foregoing, the reintroduction into medical thought of the idea of biologic life achieved by bacteriology: disease as a vital fight: an example of this is Klebs's general pathology, and (3) absolutely new in the history of medicine, the penetration of the idea of personal life into the scientific consideration of the patient, the work of those doctors who have succeeded in understanding the revolutionary message of Freud: in Germany, the creators of personal pathology (Krehl, Siebeck, von Weizsaecker): in the United States, the cultivators of so-called psychosomatic pathology (Dumbar, Alvarez, Wolff). In this way, according to Lain, "medicine has started out to surpass, though without denying it, the purely physical conception of the Greeks. For the first time, medical thought seems to have reached a plenitude of motives although it has not achieved a plenitude of development."

In this course of lectures, Professor Lain Entralgo treated Spanish doctors and historians to an excellent philosophic view of disease. Like his previous course on the history of anatomy, this one provided a new orientation in focusing medical history.

Child Hygiene

In reporting on child hygiene, we shall not speak only of the Public Health Department under Dr. Palanca, which we dealt with in previous letters, but of other centers belonging to other ministries. Child hygiene in Spain is carried on by a series of units attached to different government departments. Intensification has taken place in the development of our puericulture institutions, the first impulse to which was given in 1935 with the establishing of a child hygiene clinic in every provincial capital. From then on state and state-protected works for the care of mothers and children have rapidly multiplied and are now numerous although not sufficient, especially in rural districts.

Institutions belonging to the various ministries and their scope are as follows:

A. *Ministry of the Interior.*—The work in this field done by the Public Health Department is done by the following institutions: in Madrid, the National Puericulture School and, in the provinces, twelve puericulture schools at Barcelona, Bilbao, Gijon, Malaga, Murcia, Santa Cruz de Tenerife, Seville, Valladolid, Valencia and Saragossa. The Madrid school has not been able to readmit a pediatrician of international fame like Dr. Jaso, who has been penalized for his collaboration with the Republican Government during the civil war, in which he did exemplary work; 5 nursing mothers' clinics (Barcelona, Bilbao, Madrid, Malaga and Seville); 194 pediatric clinics, 57 third degree (in important cities), 79 second degree and 58 first degree (practically rural). The number of clinics opened since the war is 133. There are 102 maternity clinics (60 third degree and 42 second), 50 of which have been opened since the civil war.

The Department of Charity and Social Works, in the Ministry of the Interior, has created child hygiene institutions and maternity centers within the Auxilio Social framework in nearly all the provinces, distributed as follows: (1) child feeding centers, 157; (2) maternity clinics, 24 (90 in project); (3) mothers' homes, 8.

By ministerial order, elementary child care is taught to all mothers registered at the maternity clinics, and an award known as "Exemplary Mother Diploma" has been founded. The Public Health Department carries on the monthly publication *Al Servicio de Espana y del Nino Espanol* and has stipulated the obligatory declaration of antidiphtheric vaccination. The Central Puericulture Institute has been founded, being the old children's wing of the Hospital del Rey.

B. *Ministry of National Education.*—To this belongs the so-called school medical corps. Although the child hygiene clinics of the state are also intrusted with the hygiene of school children, the doctors of this corps are the only ones who actually fulfil this important mission. There are school doctors in all the capitals of provinces and large townships. Since the civil war all vacant places have been filled with provisional nominees, and although competitive examinations were announced for definite appointments more than two years ago, these have not taken place yet.

C. *Ministry of Justice.*—Attached to this Ministry is the Young Persons Protection Board, which also maintains puericulture clinics.

D. *Ministry of Labor.*—Under this Department function the National Social Insurance Institute and Mothers' and Children's Fund. Until recently the latter was intrusted with giving sanitary and social assistance under the compulsory maternity insurance and family allowance schemes put into force in 1941 and 1931, respectively. Now both have been put under the national health insurance authorities.

Attached to the Ministry of Labor, too, are the following: (1) child hygiene clinics, 200; (2) maternity clinics, 240; (3) mothers' homes, 9.

E. *Falange Española Tradicionalista y de las JONS.*—In the feminine section of this political party there are 47 puericulture clinics.

To all these institutions belonging to the various ministries mentioned must be added the many created by provincial and municipal corporations over the country. All the child welfare institutions mentioned in this letter are decidely sanitary and social in character and, are generally well run and, if managed by one organization, would function admirably.

In many places where all the departments have branches or delegates, there is a multiplicity of offices and departments, while in others, or in other sectors of one same town, there are none or not enough. All this work represents a strong impulse toward the carrying out of ever more important work on behalf of children's health, but it seems to be hampered by the excess of foundations which interfere with each other's activities.

On July 12, 1942, the government issued the Mothers' and Children's Health Law promulgated by the Public Health Department. This tries to prevent interference between centers and services and contradictions between them; but, seven years have gone by since this act was passed, and coordination has not yet been achieved notwithstanding the desire for it on the part of all Spanish pediatricians. We are, therefore, faced with a contrast between the good intentions and ideas of all the authorities and defective functioning, the basic cause of which is the multiplicity of services.

TURKEY

(From Our Regular Correspondent)

Ankara, June 16, 1948.

Antirabic Campaign

The first antirabic institute in Turkey was established in 1887 in Instanbul. Professor Zoeros Pasha, who had studied at the Pasteur Institute in Paris was the director and Drs. Remzi and Rifat his co-workers. The institute was transferred in 1893 to Pera Nishan Tash, where it was directed by Professors Nicolle and August Marie. From 1896 to 1914 it was under the direction of Professor Remlinger and then for twenty years was under the direction of Remlinger's assistant Dr. Hayem Naoum who died in 1934.

A second antirabic institute was established during World War I in Sivas by Professor Tevfik Saglam Pasha. A third institute soon was established in Diyarbakir, a fourth in Konia and a fifth in Smyrna, and in time seventy-five more antirabic stations were established. When in 1933 the Refik Saydam Central Institute of Hygiene, where all vaccines and serums are prepared, was established in Ankara an antirabic institute was soon added under the direction of Dr. Abdulkadir Cilesix, who gained his experience at the Pasteur Institute in Paris.

At the first institute in Instanbul the original Pasteur method was employed. Later the Hogyes as well as the modified Högyes-Philips method came into use. At present the Semple method is the only one employed in the eighty antirabic stations of the country, whose establishment and work are shown in the accompanying tabulation.

Year	Number of Antirabic Stations	Persons Under Treatment	Deaths
1933	25	381	2
1934	25	1,077	1
1935	30	1,479	7
1936	34	1,994	9
1937	37	1,900	7
1938	52	2,501	2
1939	52	2,849	9
1940	60	3,428	5
1941	60	3,690	2
1942	66	4,136	3
1943	67	4,171	5
1944	72	3,591	1
1945	74	4,255	6
1946	77	5,201	6
1947	80	5,513	2
		45,255	67

Patients dying of rabies in spite of prophylactic treatment are mostly those from rural communities who either came in late for treatment or whose case was of an extremely grave nature.

Though rare cases of rabies in horses, cattles, mules, donkeys and chickens have been recorded, there are none on record in camels, turkeys, geese or ducks. All cities and many towns have antirabic campaign stations, which once a month report to the Ministry of Health on the number of stray dogs and cats killed. In almost every home there are one or two pet cats. People dislike the idea of their pets being killed. Last March a rabid dog was at large in Ankara, and, before it was shot by the police in a crowded street, the dog had within five hours bitten 41 persons. Though from 600 to 700 stray dogs and from 300 to 400 stray cats are killed every month in Ankara alone, the number of stray dogs and cat never diminishes, because new arrivals soon fill the vacancies. Veterinary stations give persons an opportunity to have their pets vaccinated free of charge.

Regulations concerning the scheme of treatment for the fourteen, twenty and twenty-four day Semple treatment advocated by the Ministry of Health have been forwarded to all eighty antirabic stations. Once a month a report on the stations' activities and observations to the Ministry of Health is required. Sixty years of antirabic institutions plus health propaganda through posters, pamphlets and radio talks have made people so aware of the danger of rabies that at the slightest hint of danger they apply for treatment.

Streptomycin Therapy in Tuberculous Meningitis

Before the Turkish Medical Society of Istanbul Dr. Huseyin Salor of the Pera (Istanbul) Municipal Hospital reported a case of tuberculous meningitis successfully treated with streptomycin. A student aged 17 was admitted to the hospital with a temperature of 38.5 (101.3 F.); he was semiconscious and vomited. As there was no localization he was given a sulfonamide drug, but the next day there developed a squint, stiffness of the neck and unconsciousness. Lumbar puncture produced a clear cerebrospinal fluid of high pressure, 150 Nageotte's cells (elements), 120 cg. of albumin and 0.50 cg. of glucose. Microscopic examination revealed only lymphocytes. The Pandy test gave a 3 plus reaction, the Wassermann test 2 plus and the tryptophane test 4 plus. Threads of fibrin floated at the bottom of the test tube containing cerebrospinal fluid. Kernig and Brudzinski signs were positive; moaning, delirium, photophobia and hypersensitivity appeared; the abdomen was sunken and the pulse was weak at 60 to 70 a minute. Twenty-five grams of streptomycin was procured. Treatment began on the eighth day from the onset and on the third hospital day. For seven days 2 Gm. of the drug was injected into the patient intraspinally; part of the solution was given intramuscularly. The improvement on the day after administration of the first dose was amazing. On the fourth day the squint, photophobia, hypersensitivity, stiffness of the neck and the headache had disappeared, the Kernig and Brudzinski signs decreased and the patient had regained consciousness and sat up in bed. After an interval of seven days the streptomycin treatment was repeated for ten days, but this time only 1 Gm. was given, of which 50 mg. was given intraspinally and the rest intramuscularly. At the end of the treatment the temperature had returned to normal, After another seven day interval a third series of 1.5 Gm. of streptomycin was begun, but on the sixth day the temperature began to rise and the patient had pain in the legs and was unable to void, streptomycin was discontinued and within two days the temperature returned to normal. The patient remained in the hospital for twenty more days and was given large doses of vitamins A, B_1 and C. He was now able to walk. He had received 43 Gm. of streptomycin. Against advice he was taken for convalescence to a resort near Bursa, where twenty-six days later and forty-four days after onset of the disease, symptoms reappeared. On readmission to the hospital the patient was delirious and violent, had slight fever and also a slight and high cerebrospinal fluid pressure. For four days he was given a daily dose of 1.5 Gm. of streptomycin of which every other day 100 mg. was given intraspinally and the rest intramuscularly. After a seven day interval he was again given a ten day treatment beginning with 1 Gm. daily, which was gradually reduced to 0.5 Gm. After another seven day interval, a third course of streptomycin treatment was given, so that the patient received a total of 96 Gm. His condition has greatly improved, but from time to time, accompanied by excitement and sometimes delirium, sudden severe headaches terminate with vomiting after one and a half hours. The cerebrospinal fluid pressure is still high; other reactions are negative. The patient, who for five and a half months was subjected to many injections, refuses to submit to any more lumbar punctures. After he left the hospital only once has he permitted a lumbar puncture; then 20 cc. of fluid was taken, after which he was free from attacks for three days.

In the middle of 1946 streptomycin first came to Turkey. Its wider use depends on its price. It can be procured only from the Red Crescent Society and and only on prescription; priority is given to hospitals. Streptomycin sold in pharmacies costs $5 for 1 Gm.

ITALY

(From Our Regular Correspondent)

June 18, 1948

Efficacy of Antihistaminic Agents in Epilepsy

Lennox in the *Journal of Pediatrics* (29:356, Sept. 1946) says: "From the caveman to bromide, thousands of years; from bromide to phenobarbital, seventy-five years; from phenobarbital to diphenylhydantoin, twenty-five years; from diphenylhydantoin to trimethyloxazolidine dione, eight years. At this threefold rate of acceleration, we should have yet another effective remedy by the spring of 1948!" And in the spring of 1948 V.M. Buscaino, director, Neurologic Clinic, University of Naples, reported before the Campana section of the Italian Neurologic Society on the efficacy of small doses of antihistaminic agents in epilepsy. For months he and his pupil Lavitola administered to many patients with severe epilepsy an Italian antihistaminic product, the formula of which comes near to that of the Swiss "antistin" or the American "pyribenzamine." He observed that in the long run this treatment is superior to that with phenobarbital sodium. The attacks become less frequent and are of short duration when they occur. Buscaino has contended many times that epilepsy is always connected with an allergic mechanism. This point of view has been strengthened by a more detailed concept of some allergic reactions limited to certain organs, as in cases of glomerulonephritis from streptococcic infection of the tonsils (Lowell, F.C.: The Newer Concept of Allergy to Drugs and Bacteria, J.A.M.A. 136:665 [March 6] 1948) and in the paper by G. Bikel of the University in Geneva, on agranulocytosis of medicamentous origin. While Busciano's report received much attention in the Italian medical world, more profound proof is required. It seems likely that skin tests will be instituted, perhaps of the type suggested by Bukantz and Dammin in *Science* (107:224. 1948) by virtue of which the skin of epileptic patients before and after they have been treated with antihistaminic agents may be examined for fluorescence with ultraviolet rays after an injection of fluorescein. From these tests one may conclude whether the reduced incidence and the lesser severity of the attacks may be due to the effect of the antihistaminic agents on the neutralization of histamine.

Myocardial Infarction Following Intravenous Injection of Epinephrine

In *Il progresso medico*, May 1948, a paper by Mattioli deals with myocardial infarction following intravenous injection of epinephrine. Research by Meyer, Markwalder, Starling and Patterson revealed that epinephrine produces an acceleration of the coronary circulation. According to Brodie and Cullis, small doses of the drug cause vasoconstriction, but large doses, after a short phase of constriction, may produce vasodilatation, while exactly the reverse occurs in the other vessels. The first of Mattioli's 2 patients had a recurrence of malaria; because of resistance to quinine, treatment with epinephrine was instituted. With the third intravenous dose of epinephrine, which by mistake was 0.1 mg., the patient complained of sudden precordial pain and then of severe epigastric pain radiating to the neck, mandible and left shoulder. The pulse rate was 130, faint and arrhythmic. The patient had the feeling of dying. After several minutes the pulse rate dropped to 100 and became regular. The pain persisted. The man was given an injection of morphine-atropine. After a quarter of an hour the pain subsided. The blood pressure was 110 systolic and 80 diastolic. Next day the temperature was 37.6 C. (99.6 F.); the sedimentation rate was 22; the white blood cell count was 10,000. Electrocardiographic tracings revealed an extrasystole in lead 1, mild deflection in the QRS complex in all leads, presence of a Q wave in the second and third lead with an abnormal ST segment and a strongly negative T wave. The diagnosis was infarction of the posterior part of the left ventricle. The attack was repeated during the night, and the patient, aged 49, died.

The second patient, a man aged 51 who also had malaria, presented the same clinical picture after the intravenous injection of epinephrine. The electrocardiogram disclosed mild abnormalities in all the leads. The diagnosis was infarction of the posterior region of the left ventricle. Mattioli stated that one should not underestimate the effect of epinephrine, which is a highly valuable antiallergic drug; but as these cases revealed, treatment should be instituted only after making sure that the heart of the patient does not present some hidden anomaly which may be responsible for accidents in the office of the physician. Mattioli as well as Levine and Katz emphasized that epinephrine is innocuous in persons with a perfectly normal heart. But signs of arteriosclerosis may always be expected in persons over 45 years of age, particularly if in addition they have chronic malaria or other debilitating diseases.

Physician Imprisoned for the Epidemic of Varese

After a trial of more than one month and a verdict elaborated in sixteen hours, as reported in a previous letter, the physician of Varese who had been accused of disseminating by his imperfect technic an epidemic of "syringe hepatitis" was sentenced to serve five years in prison, to discontinue practice for 2 additional years and to compensate the families of the victims, of whom 12 had died and an additional 100 were infected. The entire nation has been interested. The sentence seems terrible, for in 1946 nobody in Italy knew anything about infection with hematogenous hepatitis through imperfect sterilization of the syringe. The physician of Varese gave no less than fifty intravenous injections of a tonic to his patients every day. Since then the Italian public has been told of the American literature, particularly the views of Dr. Thomas River, who spoke at the Annual Session, Atlantic City, N.J., June 13, 1947, and the paper on epidemic hepatitis by the Chicago doctors Capps, Sborov and Scheiffley, which appeared in THE JOURNAL, March 20, page 819.

The trial had aroused the entire medical profession in Italy because the incriminated physician had an excellent reputation. The defense council will apply to the Court of Appeal, but for the moment the physician, who had enjoyed liberty conditionally, has been imprisoned.

Correspondence

NEOSTIGMINE TOXICITY

To the Editor:—In "Clinical Notes," page 362 of THE JOURNAL, May 22, 1948, an article entitled "Neostigmine Toxicity" by Dr. George G. Merrill reports the first fatality presumably due to neostigmine to be found in the literature. As author of an article entitled "Intravenous Neostigmine in Diagnosis of Myasthenia Gravis," accepted for publication in the *Annals of Internal Medicine,* I feel obligated to comment on this report.

The standard test for myasthenia gravis proposed by Viets and Schwab, and referred to but not described by Dr. Merrill, consists of the intramuscular injection of 1.5 mg. of neostigmine methylsulfate in combination with 0.6 mg. (gr. 1/100) of atropine in a single ampule. In spite of over twelve years of intensive experience with this test by these authors at Massachusetts General Hospital, as well as its use in other institutions throughout the country during this time, no fatalities or extremely severe reactions have been reported. This fact has been confirmed in a personal communication from Dr. Viets received June 7, 1948. It is possible, as Dr. Viets points out, that this record has been achieved by the use of atropine with each injection and by the use of additional atropine immediately on the appearance of any untoward effects. However, it should be emphasized that in addition to its diagnostic use in myasthenia gravis, neostigmine has been employed extensively for postoperative distention, arthritis and neuromuscular disorders, as a test for pregnancy and in many other conditions too numerous to mention. For these various entities, it has been administered intramuscularly and orally, in most cases without atropine, and, until this case, no fatalities have been reported.

In our experience with the intramuscular use of neostigmine as a diagnostic agent in myasthenia gravis, the response in some of the milder cases was slow and somewhat indefinite. It seemed to me that intravenous neostigmine might give a more prompt and complete muscular recovery. Animal studies of neostigmine toxicity by Aeschlimann and Reinert (*Journal of Pharmacology and Experimental Therapeutics,* **43**:413-444, 1931) indicated that neostigmine was about twice as toxic intravenously as intramuscularly. Therefore, for the initial intravenous dose it was decided that one third the standard intramuscular dose, or 0.5 mg. (1 cc. of 1:2.000 solution) of neostigmine should be given in a timed one minute period. This test was first given to a myasthenic patient in 1942 and resulted in complete recovery of all muscular functions in less than two minutes, without any side effects whatsoever. A syringe containing atropine sulfate, 0.6 mg. (gr. 1/100), was kept in readiness at all times and has been given at the first sign of any untoward reaction. Atropine has not been given with neostigmine because, as Viets has pointed out, the usual heightened tolerance of myasthenic persons to parasympathetic stimulation by neostigmine is such that the occurrence of any side effects almost rules out the disease.

Since 1942 we have given intravenous neostigmine to several hundred patients and have seen side effects in only a few nonmyasthenic persons or persons with extremely mild myasthenia. These reactions consisted of mild abdominal cramping, muscle fasciculations, flushing and sweating, mild vertigo, nausea and diarrhea. The pulse rate was occasionally diminished but never more than 10 beats per minute, and the reduction in blood pressure was negligible. All reactions encountered were abolished in a few minutes without exception by the subcutaneous injection of 0.6 mg. (gr. 1/100) of atropine sulfate. Although we have never encountered a severe reaction with intravenous neostigmine, we would not hesitate to give atropine in even larger amounts intravenously should parasympathetic shock occur.

In 1942 there were only 4 cases on our records. Since that time we have diagnosed 30 more, many of which we feel would have gone undiagnosed were it not for this test.

Nevertheless, the report of a death occurring as a result of one-third the usual intramuscular diagnostic dose of neostigmine deserves careful analysis by all physicians interested in the diagnosis and treatment of myasthenia gravis. It is possible, as Dr. Merrill suggests, that the convulsion in this patient, spontaneous or induced, may have by its excessive neuromuscular activity produced an overwhelming amount of acetylcholine, protected by neostigmine, as it probably was, from destruction by cholinesterase. Moreover, as Dr. Merrill further suggests, the probability of an individual hypersusceptibility to neostigmine should be considered here. Cases of hypersusceptibility have been recorded in the literature to practically every active useful drug in the pharmacopeia.

Dr. Merrill should be complimented on promptly reporting this first case of fatality due to a drug as extensively used as neostigmine. This report should certainly inspire caution in those who would use the drug promiscuously without due regard for sound indication and contraindication. But it is to be hoped that the report will not unduly prejudice against the use of neostigmine in the diagnosis and treatment of myasthenia gravis, a disease in which it has achieved such a brilliant specific record

J. EDWARD TETHER, M.D.,
Department of Medicine,
Indiana University Medical Center.

To the Editor:—With great interest we noted the article of George Merrill in the May 22 issue of THE JOURNAL entitled "Neostigmine Toxicity: Report of Fatality Following Test for Myasthenia Gravis." To emphasize the advisability of awareness of the untoward reactions attendant on the use of neostigmine, we call attention to observations on patients in whom pulmonary edema developed after treatment with therapeutic doses of neostigmine orally in February 1947. Our report, in which we discussed the implications of the connection between neostigmine and pulmonary edema, was accepted for publication by *Annals of Internal Medicine* in December 1947.

E. ADELSON, M.D., AND F. BRUNN, M.D., New York.

STREAMLINING THE HEALTH EXAMINATION

To the Editor:—Just a word of caution in regard to streamlining the health examination. It may be true that sixteen symptoms, twenty-three physical abnormalities and six laboratory observations will enable the physician to recognize the two hundred diseases which trouble 98 per cent of patients (THE JOURNAL, May 15, p. 244). However, this implies that if the streamlined technic is used, the remaining 2 of every 100 patients who consult a physician will receive mistaken diagnoses and consequently inadequate or even harmful advice.

The chiropractor or faith healer with a magnetic personality prospers because nine times out of ten correct diagnosis and treatment are not a matter of life and death. It is the tenth fatality that makes him dangerous.

If physicians are content with slick ten minute opinions, 2 or 3 million people may suffer because they have not been given the careful consideration which is their due.

ROBERT W. BUCK, M.D., Boston.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Osteopaths: Right to Practice Optometry Without a License.—This was a suit under the declaratory judgment act for an adjudication that the defendant osteopath was not entitled to practice optometry and to enjoin him from so doing. From a judgment in favor of the defendant, the plaintiffs appealed to the Supreme Court of Arizona.

At the time of bringing this action, and for some time prior thereto, the defendant, a licensed osteopathic physician, was engaged in the practice of optometry. The defendant did not claim the right to so practice by virtue of a license under the optometry act but rather by reason of being a licensed osteopathic physician. Section 67-1407, A.C.A., 1939, being a part of article 14 regulating optometry, provides: "This article shall not apply to physicians licensed to practice under the laws of this state." The defendant contended that he is a "physician" "licensed to practice under the laws of" Arizona, that the statutory provisions requiring a person to be licensed as an optometrist before practicing optometry therefore have no application as to him and that his license to practice osteopathy entitles him to engage in the business of prescribing and furnishing eyeglasses in the manner defined in the statute as constituting the practice of optometry.

The assignments of error raised one question: Is the defendent, a licensed osteopathic physician, authorized to practice optometry without obtaining a license under the optometry act? The plaintiffs contended that a person licensed to practice osteopathy is not a "physician" within the meaning of the optometry act and that a license to practice osteopathy does not authorize one to practice optometry.

The Arizona law regulating the practice of medicine provides for a board of medical examiners consisting of five members, four members to be graduates of schools recognized by the American Association of Medical Colleges and one to be a graduate of a recognized school of osteopathy. Three forms of certificates may be issued by this board of examiners: first, a certificate authorizing the holder thereof to practice medicine and surgery; second, a certificate authorizing the practice of osteopathy, and third, a reciprocity certificate. All applicants are subject to the same regulations, except that osteopaths, instead of filing a diploma from a legally chartered school of medicine, are required to file a diploma from a legally chartered college of osteopathy. Applicants for certificates as osteopathic physicians or as medical doctors are identified by number only, and identical questions on identical subjects are asked of all applicants. Under this law, the defendant was examined for his license to practice as an osteopathic physician. He took the identical examination taken by those seeking a license to practice as medical doctors and as a result of this examination was issued a certificate by said board of medical examiners to practice osteopathy within the state. The medical practice act section which defines the practice of medicine provides: "Practicing medicine shall include the practice of osteopathy."

It would seem, the court continued, that at all times our legislature has classified osteopaths with medical doctors, until a separate osteopathic board was established in 1941 which set up a somewhat different board of examiners and method of examination but did not materially change the qualifications and requirements. Under the original law the osteopath was authorized to practice medicine and under section 67-2103 of the amended osteopathy act it is provided that the "practice of medicine . . . by persons authorized under the (previous) laws of this state . . . shall in no way be affected by the provisions of this act." Thus, said the court, the legislature in its various acts has provided equal qualifications and requirements in the licensing of medical doctors and osteopaths; has provided that the practice of medicine shall include the practice of osteopathy; has referred to one practicing osteopathy, both in statute and in certificate, as an osteopathic physician; has provided that osteopaths may practice medicine and minor surgery, and, after two more years in a properly approved hospital, major surgery in osteopathically controlled hospitals or institutions. Furthermore, said the court, the narcotics act of Arizona defines a physician as "a person licensed to practice medicine, or osteopathy." To the court it therefore did not seem consistent that the legislature, in exempting "physicians" from the provisions of the optometry act, intended to except medical physicians but not osteopathic physicians. Nor did it seem consistent with reason, the Supreme Court concluded, that the criminal code of Arizona providing penalties for certain acts of a physician would exempt an osteopathic physician or that under the statute of privileged communication the patient of an osteopathic physician would not be given protection identical with that of the patient of a medical physician.

In conclusion, the Supreme Court said: "It seems that through our legislative history and background the word 'physician' has been employed in its generic and broad sense, and the intent to include osteopathic physicians seems to be clear. We cannot say that the legislature intended the word 'physician' in the Optometry Act to include only the medical physician and exclude the osteopathic physician." Accordingly the judgment in favor of the defendant was affirmed.—*Gates v Kilcrease, 188 P. (2d) 247 (Ariz., 1947).*

Dental Practice Acts: Constitutionality of Regulation of Dental Laboratory Technicians.— The state filed a petition to restrain the defendant, doing business as the Serv-U Dental Laboratory, from practicing dentistry without a license. From a judgment for the plaintiff, the defendant appealed to the Supreme Court of Alabama.

The Alabama dental practice act provides that a person shall be said to be practicing dentistry who constructs or repairs dentures from impressions made by anyone other than a licensed dentist and to be delivered to anyone other than a licensed dentist, "Provided, however, that nothing in this chapter shall prevent . . . any person . . . connected with a commercial dental laboratory from the performance of mechanical work on inanimate objects only in the construction or repair of dentures, . . . or other dental appliances, provided that impressions, casts or measurements for such work shall have been made or taken by a dentist licensed to practice as herein provided for, and that said construction or repair shall be done only on his or her authorization, and to be delivered only to a dentist licensed to practice as herein provided for."

The defendant, a dental laboratory technician, opened the Serv-U Dental Laboratory at Montgomery, Ala., and for some time performed his work under the instructions and authorization of licensed dentists and delivered the finished product to the dentist. Subsequently, however, he began doing certain work, such as repairing and replacing dentures, without instructions or authorizations from licensed dentists, dealing directly with those for whom the work was done and charging and collecting a fee therefor.

The defendant argued that the burden was on the state to prove that he was practicing dentistry as defined in the act and contended that proof that he repaired or duplicated existing dentures without the use of any impressions, or without the use of a model or cast made from an impression, was insufficient to prove the practice of dentistry, which was alleged to consist solely of the manufacture or delivery of dentures from a model or cast made from such impression. He insisted that the duplication or repair of existing dentures, without the use of any impression, or model or cast made from such an impression, did not constitute the practice of dentistry as defined by the statute.

To adopt such a rigid and literal construction of the statute forces a result which we think the legislature never intended, said the Supreme Court. The defendant admitted constructing dentures without instruction or authorization from a licensed dentist on models or casts prepared from existing dentures, which in turn had been made on a model or cast made from an impression taken by a licensed dentist. The dentures made by defendant were, in legal effect, the same as if the models used by him had been made from impressions taken by licensed dentists in the first instance. And they were made without instructions or authorization from a licensed dentist and were delivered, not to a licensed dentist, but directly to the person for whom made. We cannot cast aside our common sense in trying to arrive at the intent of the legislature, the Supreme Court continued. If there are reasons for requiring that dentures made from models or casts made from an impression be made only on the instructions or authorization of licensed dentists, the same reasons, unquestionably, require that the methods employed by the defendant should likewise be employed under the instructions or authorization of licensed dentists. The proviso makes it clear that the methods employed by the defendant or the services performed by him, as shown by the record, must be employed or performed only on the instructions or authorization of a licensed dentist, and that the finished product must be delivered to a licensed dentist. We are clear to the conclusion that such was the legislative intent. The methods of procedure employed by the defendant are, we think, but an effort to circumvent the plain intent of the legislature.

The defendant also contended that if the statute prohibits him from doing the work admittedly done by him in the manner shown, then it is unconstitutional and void because it contravenes the Fourteenth Amendment to the Constitution of the United States, and article I, section 6 of the 1901 constitution of the state of Alabama. As we understand it, the Supreme Court said, the defendant's argument in this regard is based on the following reasons: that the construction or repair of dentures in a commercial dental laboratory, or by a technician, by the performance of mechanical work on inanimate objects, is a separate occupation, that the statute prescribes no standards for qualifying to engage in that occupation and leaves to the arbitrary and unbridled discretion of individual dentists whether any person shall be permitted to engage in that occupation; that the right to earn a livelihood by following the ordinary occupations of life is a fundamental, natural, inherent and inalienable right, sacred and valuable, and fully protected by our fundamental laws. Under the police power, said the Supreme Court, the legislature may impose such restrictions on the practice of dentistry as the protection of the public may require. We think that the legislature could have legally prohibited anyone not a licensed dentist from doing the work authorized in the proviso and it is not unusual for a statute to provide that a person performing an act under instructions and with the authority of one duly licensed to do the act is not guilty of practicing without a license. The pertinent section of the Alabama dental practice act does not recognize the operation of a commercial dental laboratory, or any part of that operation, but provides that the construction or repair of dentures and dental appliances is a part of the practice of dentistry. It does permit the dentists to avail themselves of the services of a nondentist and of commercial dental laboratories, provided that the work is done on the dentist's instructions and authorization and that the completed product is delivered to the dentist. All persons not licensed to practice dentistry may engage in this work on exactly the same basis. The section does not deny to defendant, or anyone else so situated, any right guaranteed by the Constitution of either the United States or the state of Alabama. Accordingly, the judgment excluding the defendant from the practice of dentistry was affirmed. —*Weill v. State ex rel. Gaillard, 34 So. (2d) 132 (Ala., 1948).*

Medical Motion Pictures

FILM REVIEWS

A Clinic on Deafness. 16 mm., color, sound, 1,299 feet (one reel), showing time thirty-three minutes. Prepared in 1946 by Samuel J. Kopetzky, M.D., and Ralph Almour, M.D., Otolaryngological Service, New York Polyclinic Medical School and Hospital; New York. Produced by Medical Film Guild through a grant for postgraduate instruction in otology by the Auralgan Research Division. Procurable on loan from Medical Film Guild, 167 West Fifty-seventh Street, New York 19.

This film attempts by animation and actual photography at the operating table to present the known theories and the physiology of hearing, diagnostic methods to determine the hearing range and therapeutic methods, both medical and surgical. The authors present their own theories as to the physiology of hearing and deafness. One concerns itself with the function of Reissner's membrane and the other, the influence of a certain type of vitamin and endocrine administration on deafness. Both are still unestablished.

Apparently the authors would minimize reported results of success of the fenestration operation for otosclerosis. In charts they show results of the operative procedure and those in which the vitamin therapy was employed. The latter material is presented in such a way as to indicate to the viewer a wish to play down the value of the operation and to foster the nonauthentic results of medical therapy. This attitude is expressed even though a great many exposures are devoted to showing enlarged views of the fenestration procedure.

While admittedly the newer modalities of hearing reeducation in form of speech reading, amplification by hearing aids and auditory training have proved extremely valuable in the reeducation of the deaf, little of the film is devoted to this phase. As the film does not have sufficient material to justify its general acceptance, and because it represents one side of a number of questions, it certainly could not be classified as a teaching film to be shown to a group of postgraduates in otolaryngology. For the most part, the photography is excellent.

Modern Trends in Intravenous Therapy. 16 mm., color, silent, 890 feet (one reel), showing time thirty-seven minutes. Prepared in 1947-1948 by Robert L. Petterson, M.D., Department of Anesthesiology, and George L. Wessels, M.D., Allegheny General Hospital, Pittsburgh. Produced by Mervin W. La Rue, Inc., Chicago. Procurable on loan from Abbott Laboratories, North Chicago, Ill.

Preparation of standard intravenous trays followed by the administration of a simple venoclysis are presented. Supplemental injections of drugs through the air filter of a specific type of apparatus, as well as the connection of containers in series, are demonstrated. The use and value of the "venopak" disposable equipment are stressed.

The management of blood donors is discussed and demonstrated, followed by the illustration of the collection, examination and storage of blood and plasma. The freezing of plasma and its preparation for administration are shown. Blood is administered through the "venopak" disposable apparatus.

This film is of value mainly to those interested in the use of a specific type of apparatus and of the "venopak" disposable equipment or in some of the salient facts dealing with a blood bank. The use of the term A. C. D. solution for anticoagulant citrate dextrose solution, U.S.P. XIII, is not of educational value. The insertion of some text dealing with the indications for the use of plasma or blood would enhance the general value of this film. Demonstration of other types of apparatus now employed for modern parenteral therapy would be wise from the teaching standpoint.

Photography is excellent, artistic and colorful, although there is the impression that the substitution of more close-up views of procedures would be more instructive than some of the scenes in which faces of persons distract from the essential point being made. Perhaps elimination of rings on nurses' hands would be less distracting and more professional.

This film is recommended for medical students, hospital administrators, anesthesiologists, nurses and any physicians concerned with blood banks and parenteral therapy.

HIGH SPEED MOTION PICTURES OF THE HUMAN VOCAL CORDS. 16 mm., black and white, silent 750 feet (one reel), showing time thirty-one minutes. Produced by: Bell Telephone Laboratories, Procurable on loan from: Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10.

This film shows an apparatus developed by the Bell Telephone Laboratories for high speed photography (4,000 frames per second) of the human vocal cords. The camera, lighting system and technic used to obtain the mirror pictures of the larynx are illustrated, and a graphic demonstration of the meaning of speed of 4,000 frames per second is shown. Animation briefly describes the position and action of the vocal cords.

Mirror views taken during the production of various vowel sounds of different intensity and pitch are used to demonstrate the normal larynx. Differences in the action of the cords in the trained and untrained voice are shown. The effect on the larynx of changes in resonance produced by the use of helium gas and a closed oral cavity is presented In addition to these fundamental physiologic studies, the cords are shown during whispering, phonation on inspiration, the production of a falsetto note, and during cough. The physiology of phonation is thus illustrated, although attempt is not made to interpret the actions of the cords from the standpoint of controversial concepts of physiology or to draw any conclusions from the photographs themselves.

This film is without doubt an outstanding contribution to medical photography; nevertheless, the distribution of the film need not be limited to a medical audience. It should be suitable for showing to physiologists, otolaryngologists, medical students and lay audiences studying voice and speech problems.

Feeding The Infant During The First Year. 16 mm., black and white, sound, 1,100 feet (one reel), showing time twenty-four minutes. Prepared in 1947 by Alan Brown, M.D., F.R.C.P. (London), professor of pediatrics, Faculty of Medicine, University of Toronto, Canada. Produced by and procurable on loan from Mead Johnson & Company, Evansville 21, Ind.

This is a lecture type film with the use of a few charts based on the author's views of infant feeding. He is pictured standing at a podium delivering a lecture. The content is excellent. The film will be of especial interest to pediatricians and others interested in the subject. It will also be of interest to the author's multitude of former students, both undergraduate and graduate.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARD OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, July 10, page 988.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I & II.* Various centers, Sept. 13-15. Final date for filing application is Aug. 13. Exec. Sec., Mr. Everett S. Elwood, 225 South 15th St., Philadelphia 2. *Part III.* Boston and New York, Autumn. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various Centers, Jan. 21, 1949. Final date for filing application is Oct. 1. *Oral,* Philadelphia, Oct. 10, Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF DERMATOLOGY & SYPHILOLOGY: *Oral. Groups A & B.* Ann Arbor, Oct. 21-23. Final date for filing application is Aug. 2, 1948. *Written.* Ann Arbor, Sept. 9, Sec., Dr. G. M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Oct. 18. Asst. Sec., Dr. W. A. Werrell, 1 W. Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 1949. Final date for filing application is Jan. 1949. Sec., Dr. W. J. German, 310 Cedar Street, New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I.* Various Centers, Feb. 4, 1949. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 1.

AMERICAN BOARD OF ORTHOPEDIC SURGERY: *Part II.* Chicago, January 1949. Final date for filing application is August 15. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 5-8. New York City, Spring, 1949. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Chicago, Oct. 8-9. Final date for filing application is Oct. 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

AMERICAN BOARD OF PEDIATRICS: Seattle, Sept. 10-12. Atlantic City, Nov. 17-19. *Written.* July 30. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines, Iowa.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in *June and November of each year in the hometown of applicants.* Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

AMERICAN BOARD OF RADIOLOGY: Nov. Final date for filing application is Sept. 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W. Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* March 1949. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 12-16, 1949. Final date for filing application is Sept. 1. Sec., Dr. Harry Culver, Route #13, Sunnyside Rd., Minneapolis 4.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis
35:161-368 (Feb.) 1948. Partial Index

Immediate Electrocardiographic Effects of Circumscribed Myocardial Injuries: Experimental Study. R. D. Pruitt and F. Valencia. -p. 161.

Varied Clinical Syndromes Produced by Dissecting Aneurysm. S. Baer and H. L. Goldburgh. -p. 198.

Effect of Local Compression upon Blood Flow in Extremities of Man. M. H. Halperin, C. K. Friedland and R. W. Wilkins. -p. 221.

Functional Pathology of Experimental Immersion Foot. K. Lange, D. Weiner and L. J. Boyd. -p. 238.

Therapy Directed at Somatic Component of Cardiac Pain. S. H. Rinzler and Janet Travell. -p. 248.

*Combined Heparin-Dicumarol Therapy of Myocardial Infarction. Clinical and Pathologic Study. Helen I. Glueck, V. Strauss, J. S. Pearson and J. McGuire. -p. 269.

Determination of Prognosis of Pregnancy in Rheumatic Heart Disease. J. J. Bunim and Jeanette Rubricius. -p. 282.

Newer Concept of Stokes-Adams Syndrome. S. Schnur. -p. 298.

Analysis of Causes of Right Axis Deviation Based Partly on Endocardial Potentials of Hypertrophied Right Ventricle. C. E. Kossmann, A. R. Berger, J. Brumlik and S. A. Briller. -p. 309.

Fluorocardiography (Electrokymography): I. Technical Aspects. A. A. Luisada, F. G. Fleischner and M. B. Rappaport. -p. 336.

Heparin-"Dicumarol" Therapy of Myocardial Infarction.—Combined heparin-"dicumarol" therapy has been used by Glueck and associates in 25 cases of acute myocardial infarction. The control group of 25 patients was obtained by omitting anticoagulants in every other patient with myocardial infarction admitted to the hospital. Supportive treatment was identical in the treated and untreated cases. Although the series of cases is too small, and the variables of the disease itself too wide to make statistical analysis significant, it appears that the use of heparin-"dicumarol" adds no additional hazard to the treatment of acute myocardial infarction. There were 8 deaths in the control series and 3 deaths in the series treated with the anticoagulants. In the 3 treated cases that were fatal, necropsies revealed neither mural thrombosis nor embolism, although 2 of the patients died within forty-eight hours after the onset of symptoms. One patient showed incomplete rupture of the ventricle with hemorrhage into the pericardium. Emboli occurred in 6 of the 25 cases in the control series and possibly in 1 of the 25 cases with anticoagulant therapy.

American Journal of Clinical Pathology, Baltimore
18:101-184 (Feb.) 1948

Medicine's New Frontiers. E. L. Bortz. -p. 101.

Effect of Urethane on Malignant Diseases: Clinical, Hematologic and Histologic Observations on Patients with Carcinoma, Leukemia and Related Diseases. L. Berman and A. R. Axelrod. -p. 104.

Diagnosis of Histoplasmosis in Ulcerative Disease of Mouth and Pharynx. L. A. Weed and Edith M. Parkhill. -p. 130.

*Therapy of Severe Erythroblastosis Fetalis with Repeated and Massive Exchange Transfusions. A. S. Wiener, I. B. Wexler and A. Shulman. -p. 141.

Exchange Transfusions in Severe Erythroblastosis Fetalis.—Wiener and his co-workers report 2 cases in which antepartum Rh tests indicated that stillbirths were inevitable if the pregnancies were allowed to go to term. The pregnancies were terminated prematurely by cesarean section and the infants were treated by exchange transfusion. In the first case an exchange transfusion of 500 cc. of blood was given. When the infant exhibited progress of the disease despite the treatment, a second exchange transfusion was given on the following day, after which the disease was arrested and recovery followed. In the second case an infant weighing only 4½ pounds (2,041 Gm.) at birth received a massive exchange transfusion in which 1,000 cc. of blood was injected and 950 cc. removed. This infant became jaundiced but did not show signs of toxicity, and the jaundice cleared within a fortnight. The gratifying results obtained in these 2 difficult cases most likely can be ascribed to the more complete replacement by Rh-negative cells of the infants' Rh-positive cells which were coated by antibody. Certain simplifications in the technic of exchange transfusion are described which speed up the procedure and make it less tiring to both the patient and the operators.

American J. Digestive Diseases, Fort Wayne, Ind.
15:41-72 (Feb.) 1948

Degenerative Vascular Lesions and Diabetes Mellitus. E. B. Millard and H. F. Root. -p. 41.

*High Serum Acetylcholine Concentrations in Pernicious Anemia and Their Reduction by Effective Therapy. J.C. Davis. -p. 52.

Pteroylglutamic Acid Displacing Agents. G. J. Martin, S. Avakian, L. Tolman and others. -p. 55.

Management of Pruritus Ani in the Armed Forces. M. M. Marks. -p. 56.

Treatment of Pruritus Ani by Local Applications of Aluminum Hydroxide Gel. M. H. F. Friedman, B. F. Haskell and W. J. Snape. -p. 57.

Bacteriology of Diarrheal Diseases. A. J. Cantor. -p. 60.

High Serum Acetylcholine Concentrations in Pernicious Anemia.—According to Davis, continued injections of acetylcholine into dogs caused hyperchromic anemia which was responsive to antipernicious anemia treatment. A relatively simple method recently developed for the estimation of acetylcholine in serum made it possible to determine the concentration of this substance in the serum of anemic human beings. Serum cholinesterase activity was also estimated in anemic as well as apparently normal subjects. Five patients with pernicious anemia in relapse were found to have serum acetylcholine concentrations ranging from 15 to 33 micrograms per hundred cubic centimeters. These values were reduced to from 6.6 to 8.2 micrograms per hundred cubic centimeters, as observed on the fourth to seventh days of effective treatment, with pteroylglutamic acid, liver extract or "ventriculin" (proprietary preparation of desiccated hog stomach). Six healthy persons with normal erythrocyte counts had acetylcholine concentrations varying from 6.6 to 8.2 micrograms per hundred cubic centimeters of serum. Six patients with secondary anemia were observed to have serum acetylcholine concentrations which varied from 6.6 to 9.9 micrograms per hundred cubic centimeters. Serum cholinesterase activity was low only in the severest anemias. The presence of a high concentration of acetylcholine in the serum of patients with pernicious anemia during relapse raises the question whether the excess of this chemical might possibly be the ultimate chemical cause of the disease. This suggestion becomes more of a probability in view of the fact that acetylcholine has been shown to be capable of producing a hyperchromic anemia in dogs which is responsive to all treatments effective against pernicious anemia. Also in favor of this idea is the fact that the effective treatment of pernicious anemia reduces the acetylcholine concentration of the serum to normal before any increase in the erythrocyte count has occurred.

American Journal of Public Health, New York
38:191-318 (Feb.) 1948. Partial Index

Recent Developments in Cancer Control. A. V. Deibert. -p. 191.
Cell Smear Method of Diagnosing Cancer. G. N. Papanicolaou. -p. 202.
Public Health Nursing in Cancer Control Program of U. S. Public Health Service. Rosalie I. Peterson. -p. 206.
Epidemiology of Colorado Tick Fever. L. Florio and Mabel S. Miller. -p. 211.
Post-War Public Health Problems in a Large American City. B. H. Douglas. -p. 214.
City Department of Health Program on Improvement of Mechanical Dishwashing. W. L. Mallmann, L. Zaikowski and D. Kahler. -p. 239.
Test for Detergents. W. G. Walter. -p. 246.
Recent Trends in Vital Statistics Registration Practices. A. E. Bailey. -p. 253.

American Journal of Surgery, New York
75:269-414 (Feb.) 1948

Leiomyoma Within the Substance of Sphincter. J. D. Charles and R. McCarty. -p. 290.
Primary Postoperative Hemostatic Prophylactic Dressing in Anorectal Surgery. M. C. Pruitt. -p. 292.
Relation of Functional to Organic Diseases of Anus, Rectum and Sigmoid Colon. H. C. Schneider. -p. 296.
Evaluation of Anorectal Complaints. L. E. Brown. -p. 303.
Pyribenzamine: Its Role in Treatment of Pruritus Ani. F. M. Frankfeldt. -p. 307.
Rational of Therapy in Pruritus Ani. Rachelle Seletz. -p. 313.
*Modern Surgical Treatment of Hemorrhoids and New Rectoplasty. A. G. Carmel. -p. 320.
Surgical Treatment of Chronic Ulcerative Colitis. G. W. Ault. -p. 325.
Chronic Diarrheas. J. S. D'Antoni. -p. 332.
Evaluation of Roentgenologic Diagnosis of Lesions of Rectum and Sigmoid. W. W. Green. -p. 348.
Treatment of Complete Prolapse of Rectum. H. T. Hayes, and H. B. Burr. -p. 358.
Diagnosis and Treatment of Papillary Adenomas of Rectum. G. E. Binkley and D. A. Sunderland. -p. 365.
Diagnosis and Treatment of Mucosal Polyps of Rectum and Colon with Early Malignant Change. N. W. Swinton. -p. 369.
Extrarectal and Extrasigmoidal Masses: Proctosigmoidoscopic Interpretation and Evaluation. J.C.M. Brust. -p. 380.
*Primary Resection of Colon and Rectum with Particular Reference to Cancer and Ulcerative Colitis. O. H. Wangensteen and R. W. Toon. -p. 384.
Posterior Levator Space Abscess. H. Courtney. -p. 405.

Treatment of Hemorrhoids and New Rectoplasty.—Carmel stresses that patients with extensive hemorrhoids pose a problem. If all the involved tissues are removed contractures are prone to follow. If all the abnormal tissue is not removed, the symptoms may not be eradicated completely or early recurrence may ensue. Contributions toward the solution of the dilemma include the creation of anal flaps in prolapsed strangulated hemorrhoids, suturing of the superior cut edge of the mucous membrane to the proximal fibers of the external sphincter muscle and creation of three or four isthmuses by suturing the cut mucous membrane to the corresponding cut skin and employing available external tags to aid in forming the isthmus while allowing the rest of the wounds to granulate. The author employs sliding skin grafts and relaxation incisions and occasionally anusotomy to aid in filling defects of the anal canal and to prevent contractures. After the hemorrhoidal tissues have been removed a graft is prepared by making an incision in the perianal skin about 1.5 to 2 cm. lateral to one or more of the wounds made by the dissection of the external hemorrhoids. At each end of this incision a radiating cut is made, thus creating a segment of skin detached at all its edges and attached only by its deep surface and capable of being slid without tension well up into the anal canal to the level of the cut edge of the mucous membrane. The medial edge of this skin graft is sutured to the superior portion of the external sphincter muscle and to the mucous membrane, which is not pulled down but rather the skin is pulled up to it. Thus, the anal canal becomes relined by tissue of ectodermal origin and the mucocutaneous border is reestablished at the proper level. Sometimes the incision which is made lateral to the anal margin releases the tension sufficiently to allow the skin to be pulled up to cover the defect completely, making it unnecessary to add the radiating cuts.

Primary Resection of Colon and Rectum.—Wangensteen and Toon review the experience at their clinic with restoration of intestinal continuity after excision of primary cancer of the rectosigmoid and rectum. They conclude that for all lesions in the rectosigmoid area 14 to 20 cm. from the anus the conservative operation affords the patient as satisfactory a prospect of cure as does the abdominoperineal operation. For lesions in the lower rectal segment, at 8 cm. or less from the anus, the conservative operation is not a good operation for primary rectal cancer, because it does not deal effectively with the invisible lateral spread of cancer as does the more radical abdominoperineal resection. In low-lying lesions a fairly high incidence of local recurrence strongly suggests that salvage of the rectal sphincters is accomplished at the risk of failing to cure the cancer. For suitable lesions in the midrectal segment, over 8 cm. from the anus, the conservative operation appears to be as satisfactory as the abdominoperineal; however, for fixed lesions, the abdominoperineal operation, undoubtedly the most radical operative procedure available, offers some advantage. Experience with low anastomosis is reviewed in a miscellany of indications in which the lesion together with a portion of the rectum was excised with reestablishment of intestinal continuity. The authors also recount the experience with primary restoration of intestinal continuity after excision of subtotal lengths of the colon and rectum for patients having chronic ulcerative colitis. The importance of preservation of the internal sphincter for the maintenance of fecal continence cannot be overemphasized. A satisfactory anastomosis made by the suture method 3 to 4 cm. above the pectinate line assures complete continence.

American Review of Tuberculosis, New York
57:115-204 (Feb.) 1948

Tuberculosis in Europe After Second World War. J. Holm. -p. 115.
Tuberculosis in South America. H. O. Puelma. -p. 129.
Tuberculosis Problem in the Philippines. Role of Philippine Tuberculosis Society and Other Agencies and Present Postwar Organization. M. Canizares. -p. 149.
Tuberculosis in Australia. E. Bogen. -p. 155.
Streptomycin-Resistant Tubercle Bacilli: Effects of Resistance on Therapeutic Results in Tuberculous Guinea Pigs. W. H. Feldman, A. G. Karlson and H. C. Hinshaw. -p. 162.

Arkansas Medical Society Journal, Fort Smith

44:199-216 (Feb.) 1948

Trends in Medical Education. H. C. Chenault. -p. 199.
*Nitrogen Mustard Treatment in Chronic Myelogenous Leukemia. W. H. Siddon and B. B. Wells. -p. 203.
Diagnosis of Respiratory Virus Infections. J. T. Culbertson. -p. 206.
Round Table of Committee on Maternal and Child Welfare. I. I. Jones. -p. 208.

Nitrogen Mustard in Myelogenous Leukemia.—Siddon and Wells review the present status of nitrogen mustards (beta-chloroethylamines) in the treatment of cancer. They report 3 cases of chronic myelogenous leukemia in which patients were treated with methyl-bis (beta-chloroethyl) amine hydrochloride. The results arouse no great enthusiasm for this form of therapy. It is suggested that the combination of roentgen therapy and nitrogen mustard treatment may be expected to produce more beneficial effects than either of the two when applied alone.

Bulletin New York Academy of Medicine, New York

24:73-134 (Feb.) 1948

Psychologic Aspects of Obesity. Hilde Bruch. -p. 73.
Studies in Intermediary Metabolism Conducted with Aid of Isotopic Tracers. D. Stetten Jr. -p. 87.
Penicillin Treatment of Syphilis with Some Remarks in Retrospect of Syphilotherapy Over One Hundred Years. H. N. Cole. -p. 97.
Surgical Management of Diabetes Including Amputations. G. H. Pratt. -p. 111.

24:137-206 (March) 1948

Renal Tubule Work: Its Significance for Clinician. L. H. Newburgh. -p. 137.
Disturbances in Electrolyte Metabolism in Man and Their Management. D. C. Darrow. -p. 147.
Metabolism in Old Age. N. W. Shock. -p. 166.
Use of Androgens in Men. C. G. Heller and W.O. Maddock. -p. 179.

Canadian Medical Association Journal, Montreal

58:227-316 (March) 1948

Surgical Use of Streptomycin. H. S. Morton. -p. 227.
Chronic Brucellosis: Diagnosis and Treatment. E. P. Scarlett. -p. 230.
*Examination of Sputum for Tumor Cells. W. H. Mathews. -p. 236.
Intestinal Obstruction. W. H. Cole. -p. 241.
*Diagnosis of Congenital Heart Disease. J. D. Keith. -p. 247.
Treatment of Menopause. L. J. Harris. -p. 251.
Meningitis in Childhood. N. Silverthorne. -p. 255.
Sequelae of Local Exposure to Cold. D. R. Webster. -p. 258.
Estimation of Serum Acid Phosphatase in Diagnosis of Metastasizing Carcinoma of Prostate. E. H. Bensley, Phyllis Wood, Sallie Mitchell and Betty Milnes. -p. 261.
Obscure Causes of Heart Failure. F. G. Allison. -p. 265.
Diagnosis and Treatment of Ménière's Symptom Complex. P. E. Ireland. -p. 269.
Plasma Proteins in Heart Failure. S. J. Shane. -p. 274.

Examination of Sputum for Tumor Cells.—Mathews states that examination of sputum for tumor cells as an aid in the diagnosis of bronchogenic carcinoma is not a new procedure. Prior to 1935 sporadic attempts to use this method of examination had little success except in occasional instances where fragments of tumor were expectorated. In that year Dudgeon and Wrigley first reported good results, and subsequently Dudgeon in 1936 and Barrett in 1938 reviewed the results achieved at St. Thomas's Hospital in London. In 1946 Papanicolaou reported positive results in 22 of 25 cases of proved bronchogenic carcinoma, and in 1947 Woolner and McDonald from the Mayo Clinic recorded positive results in 80 per cent of cases by use of a smear technic. The author reviews examinations of sputum for tumor cells at the Central Division of the Montreal General Hospital in the two year period 1945 to 1947. A positive diagnosis was made in 24 of 33 cases, either proved or reasonably certain of being bronchogenic carcinoma. A false positive diagnosis was made once in each of 2 cases. There were 9 cases in which the sputum was not demonstrated to contain tumor cells, 7 of these being proved by necropsy, biopsy or operation, and 2 cases having a probable clinical and radiologic diagnosis of bronchogenic carcinoma.

Diagnosis of Congenital Heart Disease.—Keith discusses the more commonly seen types of congenital heart disease in both the cyanotic and noncyanotic groups and outlines the cardinal points in diagnosis. He compares the value of the intracardiac catheter and angiocardiography. Both are necessary diagnostic aids in certain cases in which the pathologic process is not clarified by ordinary clinical means. Accurate diagnosis has become exceedingly important now that surgery offers treatment to many of these children.

Connecticut State Medical Journal, Hartford

12:97-192 (Feb.) 1948

On Boeck's Sarcoids. I. Snapper. -p. 99.
Clinical Significance of Changes in Small Intestinal Function. F. J. Ingelfinger. -p. 106.
Results of Treatment of Carcinoma of Body of Uterus. E. T. Bradley. -p. 112.
Radiation Therapy of Carcinoma of Cervix. J. P. Connolly. -p. 114.
Pentothal, Nitrous Oxygen, Curare Anesthesia. J. Brody. -p. 116.
Bilateral Renal Tuberculosis in Pregnancy. H. R. Newman and H. Levine. -p. 119.
Care of Crippled Children in Connecticut. L. Spekter. -p. 120.
Review of Otolaryngology in Connecticut, Particularly in New Haven County. M. H. Merriman. -p. 129.

Gastroenterology, Baltimore

10:177-348 (Feb.) 1948

Protein Hydrolysate Therapy in Peptic Ulcer. Controlled Study. B. Kenamore, W. Lonergan and J. C. Shy. -p. 177.
Recurrence in Duodenal Ulcer Under Medical Management. C. A. Flood. -p. 184.
*Mechanism of Relief of Ulcer Distress by Gastric Vagotomy. L. R. Dragstedt, E. R. Woodward, P. V. Harper and E. H. Storer. -p. 200.
Bilateral Vagotomy in Treatment of Peptic Ulcer. E. N. Collins and C. W. Stevenson. -p. 205.
Gastroscopic Observations in Secondary Syphilis. H. Schwartz. -p. 227.
*Gastroscopic Appearance of Gastric Mucosa Before and After Vagotomy. R. Wolff. -p. 231.
Gastroscopic Differentiation of Benign and Malignant Gastric Ulcer. R. Schindler. -p. 234.
Studies on Mucus in Human Stomach: Estimation of Its Protective Action Against Corrosive Chemicals Applied to Gastric Mucosa and Attempts at Quantitation of Gastric Mucin by Two Chemical Methods. S. Wolf and H. G. Wolff. -p. 251.
Studies on Nocturnal and 24 Hour Gastric Secretion During Injection of Enterogastrone Concentrate in Man. J. B. Kirsner, E. Levin and W. L. Palmer. -p. 256.
Preliminary Observations on Histamine and Insulin Stimulated Gastric Secretion During Injection of Enterogastrone Concentrate in Man. E. Levin, J. B. Kirsner and W. L. Palmer. -p. 274.
Effect of Odors on Appetite. R. S. Ginsberg, M. Feldman and H. Necheles. -p. 281.
Amebiasis: Observations in 833 Cases. M. Ellenberg, J. H. Peyton, J. T. Gilmore and S. Klein. -p. 286.
*Experimental Evaluation of Ligature of Stomach Vessels for Peptic Ulcer. I. D. Baronofsky. -p. 301.
Response of Colonic Mucosa to Local Application of Sympathomimetic and Parasympathomimetic Drugs. M. Shoshkes. -p. 305.

Relief of Ulcer Distress by Vagotomy.—Dragstedt and his associates cite factors which indicate that the relief obtained by vagotomy is not due to anesthesia of the stomach, because the introduction of a solution of hydrochloric acid into the stomach during the first three or four days after the operation reproduces the pain. Trauma to the vagus nerves, including pinching, tying and cutting these structures in the patient under spinal anesthesia, does not produce pain. The sensation of hunger is not abolished by complete gastric vagotomy. Fear of perforation of a peptic ulcer without pain after gastric vagotomy, therefore, is a probably unfounded. The same, however, cannot be said after thoracolumbar sympathectomy. With the increasing employment of this procedure in the treatment of hypertension, more patients are being encountered who have both peptic ulcer and hypertension. There is some evidence that sympathectomy in these cases may cause rapid progression in the ulcer, but at the same time, produce relief of pain so that a painless perforation may occur. There is thus good reason to believe that the sensory nerves involved, both in the characteristic ulcer distress and in the pain produced by the liberation of the gastric content in the peritoneal cavity, are in the sympathetic nerves and not in the vagus nerves.

Gastroscopic Appearance of Mucosa After Vagotomy.—Since resection of the vagus nerves for peptic ulcer causes important changes in gastric physiology, namely, a precipitous decline of secretory activity and a lessening of motor power, Wolff decided on an investigation of the gastric mucosa before and after vagotomy. Eleven patients with peptic ulcer were subjected to gastroscopic examination before resection of the vagus nerves by the transthoracic approach. Eight patients had had roentgenographic evidence of duodenal ulcer and 3 had gastric ulcer. The gastric mucosa had a normal appearance in all but one of the patients with duodenal ulcer, and except for the ulcer craters the patients with gastric ulcer also had a normal mucosa. Repeated gastroscopic examination made eight days to eleven months after vagotomy revealed vast changes. The gastric lumen tended to be flabby, requiring large quantities of air for its inflation, due to loss of tone. Orientation landmarks within the stomach were altered: blunting of the angulus occurred, and obliteration of the antral sphincter was the rule. Ten patients had solid food in their stomachs partially blocking views of the greater curvature even though no examination was done less than fifteen hours after eating. Rugae remained on the greater curve in all cases although they often were shallower and wider apart than in the normal stomach. The mucosa itself was dull, reddened and lacked luster in 7 cases and was of normal appearance in 4. The retention of food may account for deepening in color and loss of brilliance.

Ligature of Arteries of Stomach for Gastric Ulcer.—Baronofsky describes experiments on dogs which demonstrate that ligation of three of the large arteries of the stomach, and additional small ones coming from the gastroepiploic arteries, fails to protect against the histamine-provoked ulcer.

Illinois Medical Journal, Chicago

93:65-120 (Feb.) 1948

Lancaster's Technic of Cataract Extraction: Author's Recent Modifications with Report of 125 Consecutive Cases. K. L. Roper. -p. 81.

Carcinoma of Large Bowel: Analysis of 237 Patients Treated at St. Luke's Hospital, Chicago, 1934-1944. Lucille A. Sprenger. -p. 92.

Successful Use of Penicillin in Treatment of Subacute Bacterial Endocarditis. E. W. Cannady. -p. 94.

Diagnosis and Treatment of External Otitis. P. A. Campbell. -p. 98.

Chronic Amebiasis of Cecum. R. B. White. -p. 102.

Use of Ascorbic Acid on Inflamed Tissue. E. Poser. -p. 106.

Alleged Food Poisoning by Salmonella Group. W. D. McNally. -p. 108.

Complete Pelvic Floor Laceration Six and One-Half Months Pregnancy. C. W. Barrett. -p. 110.

Journal of Immunology, Baltimore

58:109-222 (Feb.) 1948

Changes in Embryonated Eggs Inoculated with Influenza Virus. A. S. Parodi, S. Lajmanovich, F. Pennimpede and N. Mittelman. -p. 109.

Effect of Mixtures of Sulfonamides and Urea Derivatives on Bacterial Growth in Vitro. D. J. Tenenberg, H. M. Tsuchiya, W. G. Clark and Nora Larson. -p. 121.

Nutrition and Resistance to Infection: Effect of Quantitative and Qualitative Protein Deficiency on Bactericidal Properties and Phagocytic Activity of Peritoneal Fluid of Rats. K. Guggenheim and E. Buechler. -p. 133.

Reactivation of Overneutralized Influenza Virus in Chicken Embryos. A. P. McKee and W. M. Hale. -p. 141.

Antagonism of Coliform Bacteria Against Shigellae. S. P. Halbert. -p. 153.

Critical Analysis of Performance of Photronreflectometer in Measurement of Serologic and Other Turbid Systems. E. T. Bolton, C. A. Leone and A. A. Boyden. -p. 169.

Studies on Tularemia: IV. Observations on Tularemia in Normal and Vaccinated Monkeys. L. L. Coriell, Elizabeth O. King and Margaret G. Smith. -p. 183.

Observations on Antibiotic Coaction of Gramicidin and Penicillin on Streptococci and Staphylococci in Vitro. E. J. Foley and S. W. Lee. -p. 203.

*Antibody Response in Human Beings Inoculated With Japanese Encephalitis Vaccine, Chick Embryo Type. J. Warren, J. E. Smadel and A. F. Rasmussen. -p. 211.

Antibody Response to Japanese Encephalitis Vaccine.—Warren and his associates found that Japanese encephalitis vaccines which were prepared from infected mouse brain or chick embryo tissue, and were of adequate potency as measured by the standard mouse protective test, were equally effective in immunizing human beings when the vaccines were administered to soldiers in two doses of 2 cc. each given four days apart. In approximately 30 per cent of the men neutralizing antibodies developed following immunizations with either vaccine. In subjects immunized with 3 cc. of chick embryo vaccine given subcutaneously in doses of 1 cc. on the first, seventh and thirtieth day neutralizing antibody developed with twice the frequency obtained with the first schedule. Similar results were obtained in a small group of persons who received three intracutaneous injections of 0.1 cc. each of vaccine over a period of a month. A recall dose of vaccine administered subcutaneously to 8 persons one year after vaccination elicited a significant rise in neutralizing antibody in 5 cases. A recall dose of 0.1 cc. injected intradermally into another group of 8 previously vaccinated persons resulted in a decided rise in the serum neutralization index of all 8.

Journal of Investigative Dermatology, Baltimore

10:39-90 (Feb.) 1948

Use of Rutin in Hereditary Hemorrhagic Telangiectasia: Case Report. E. P. Cope and R. W. Grower. -p. 39.

Local Therapy with Pyribenzamine Hydrochloride. M. B. Sulzberger, R. L. Baer and H. B. Levin. -p. 41.

*Mycosis Fungoides (Granuloma Fungoides), Tumor Stage, Responding Rapidly to Antimony Preparations: Preliminary Report. J. Garb. -p. 43.

Simple Quantitative Method for Laboratory Assay of Fungicides. A. M. Kligman and W. Rosensweig. -p. 51.

Studies with New Fungistatic Agents: I. For Treatment of Superficial Mycoses. A. M. Kligman and W. Rosensweig. -p. 59.

Study of Distribution of Penicillin in Blister Fluid After Parenteral and Topical Application. A. Dostrovsky, J. Gurevitch and R. Rozansky. -p. 69.

Reactions to Penicillin Therapy for Syphilis. E. W. Thomas, S. Landy and Corinne Cooper. -p. 77.
Iontophoresis of Pyribenzamine Hydrochloride in Pruritic Dermatoses. T. H. Aaron, S. M. Peck and H. A. Abramson. p. 85.

Mycosis Fungoides Responding to Antimony Preparation.—Garb presents the case of a woman, aged 49, who had histologically confirmed lesions of mycosis fungoides in the tumor stage. She was given ten intravenous injections of antimony and potassium tartrate and these were followed by thirty-two intramuscular injections of "stibanose" (diethylaminoethenal salt of sodium antimony gluconate). Soon after this treatment began the lesions showed improvement. After seven months of treatment in the course of which 2.8 Gm. of antimony had been given only a few isolated lesions remained. No new lesions developed during treatment. Since the presentation of this case in October 1947, reports on encouraging results from this treatment in 3 other cases have been received. The author thinks that because of the possible relationship of mycosis fungoides and all the other reticuloendothelioses and hyperplasias and tumors such as Hodgkin's disease, Kaposi's sarcoma, lymphosarcoma, leukemias and parapsoriasis en plaques, the experimental therapeutic use of the antimony preparations in this group of diseases appears to be indicated.

Journal of Lab. and Clinical Medicine, St. Louis

33:135-256 (Feb.) 1948. Partial Index

Rectal Absorption of Penicillin. E. E. Mandel and J. D. Thayer. -p. 135.
Parenteral Nutrition. H. S. Collins, Lisbeth M. Kraft, T. D. Kinney and others. -p. 143.
Studies on Conglutination Test in Erythroblastosis Fetalis. A. S. Wiener and Eve B. Gordon. -p. 181.
Study of Cholinesterase Activity of Blood of Patients with Pernicious Anemia. L. M. Meyer, A. Sawitsky, N. D. Ritz and H. M. Fitch. -p. 189.
Comparison of Methods Used for Hydrolysis of Conjugated Urinary Estrogens. J. T. Van Bruggen. -p. 207.
Studies on Chemotherapy of Filariasis: VI. Some Pharmacodynamic Properties of 1-Diethylcarbamyl-4-Methylpiperazine Hydrochloride, Hetrazan. B. K. Harned, R. W. Cunningham, Sybella Halliday and others. -p. 216.

Journal of Thoracic Surgery, St. Louis

17:1-142 (Feb.) 1948

*Dorsal Sympathetic Ganglionectomy for Intractable Asthma. D. Carr and H. Chandler. -p. 1.
Arteriovenous Fistula of Lung. H. C. Maier, A. Himmelstein, R. L. Riley and J. J. Bunim. -p. 13.
Surgical Treatment of Solitary Lung Metastasis. D. B. Effler and B. Blades. -p. 27.
Extrapleural Pneumothorax. Late Follow-Up of 82 Patients on Whom Ninety-Two Operations were performed. H. Sullivan. -p. 38.
Experimental Study of Effect of Ligation of Pulmonary Veins in the Dog. H. Swan and R. M. Mulligan. -p. 44.
Bronchiectasis in Service Personnel. R. C. Laird. -p. 57.
Pneumopyopericardium. H. W. Meyer. -p. 62.
*Medical Treatment of Acute and Chronic Pulmonary Abscesses. D. T. Smith. -p. 72.
Thoracic Casualties from an Island Campaign in the Pacific. F. Raine and D. B. Jennison. -p. 91.
Traumatic Diaphragmatic Hernia. F. Hughes, E. B. Kay, R. H. Meade Jr., T. R. Hudson and J. Johnson. -p. 99.
Extrapleural Pneumonolysis with Lucite Plombage. D. A. Wilson. -p. 111.
Epidural Anesthesia in Thoracic Surgery. Preliminary Report. Y. F. Fujikawa, A. Neves, C. A. Brasher and W. W. Buckingham. -p. 123.

Dorsal Sympathetic Ganglionectomy for Asthma.—Carr and Chandler treated 5 patients (2 men aged 59 and 29, respectively; 1 boy aged 13, and 2 women aged 25 and 32) who had bronchial asthma with intractable symptoms of long duration by dorsal sympathetic ganglionectomy. Bilateral excision of the third and fourth dorsal sympathetic ganglions was performed on 3 patients and bilateral excision of the second, third, fourth and fifth dorsal sympathetic ganglions was done in the remaining 2 cases. Microscopic examination of the removed ganglions gave evidence of toxic or metabolic degeneration. Observations of reduction of bronchial lumens between attacks of asthma suggest that changes in the condition of the bronchial mucosa and its glands are responsible for intermittent attacks of symptoms, rather than contraction and relaxation of smooth muscle. From the evidence presented by several workers it is difficult to believe that the vagus is a simple bronchial constrictor nerve; it seems more likely that the vagus and sympathetic trunks contain both sensory and motor fibers and that normal bronchial tone or normal function of the mucosa and glands depends on a balance between them. Sensitization to adrenin of structures which normally have a sympathetic nerve supply is suggested as a possible explanation for the effects of sympathetic denervation of the lungs in asthma. Postoperative follow-up of the 5 patients for periods from four to ten years reveals that they were enabled to return to useful occupations. They have gained from 10 to 100 pounds (4.5 to 45 Kg.). Only 2 patients have lost a few days from work because of "asthma" within the last year. All patients report a satisfactory response to small amounts of epinephrine when an impending attack is feared. The patients whose operations have been performed the longest (ten years) have progressively shown the greatest improvement.

Acute and Chronic Pulmonary Abscess.—Smith reports that 135 patients with primary pulmonary abscess were admitted to Duke hospital from 1940 to 1945, inclusive. Of the 36 patients with disease of less than four weeks' duration which was treated medically, 5 died, 19 recovered and 12 improved but were transferred to the surgical department for operation. Among the 24 patients treated medically between the fifth and twelfth weeks of their disease, 1 died, 6 recovered and 17 were to undergo surgical operation. After the third month of the disease medical treatment cured only 4 of 75 patients, while 5 died and in 66 the condition remained chronic. The optimum time for medical treatment is during the first four weeks of the disease, and this must be calculated from the onset of the febrile reaction and not from the time the first purulent sputum is produced. Drainage is an essential part of the treatment; medical drainage is accomplished by posture and is frequently improved by periodic bronchoscopic aspiration. Early medical diagnosis of the pneumonic infiltration which precedes the abscess is essential for successful treatment with penicillin, arsenic compounds or streptomycin. Thirty-five of the 135 cases of pulmonary abscess were classified as pyogenic and 100 as fusospirochetal. Sulfonamide treatment was definitely helpful in pulmonary abscess caused by gram-positive cocci; it gave only temporary improvement in the fusospirochetal types of infection but failed to cure; the abscesses became chronic and did not respond to sulfonamide or arsenical drugs or penicillin. For the early incipient stage of the infection penicillin is the drug of choice, and in the chronic cases the patients may improve after penicillin therapy to a point where they are better surgical risks. If the patient is not improving clinically and the abscess is not clearing steadily, as shown in serial roentgenograms, by the end of the fourth to sixth week of the disease, he should be referred to the surgeon for operation. Inadequate early treatment and prolongation of conservative treatment past the best time for surgical intervention are the chief causes for the high mortality from pulmonary abscess.

Journal of Urology, Baltimore

59:113-166 (Feb.) 1948. Partial Index

Teaching Urology to the Undergraduate. C. McMartin. -p. 113.
Treatment of Renal Insufficiency. G. W. Thorn. -p. 119.
Reflections upon Fertility in Men. R. S. Hotchkiss. -p. 149.
Benign Renal Tumors. J. J. Fuchsman and A. Angrist. -p. 157.
Extreme Renal Displacement Due to Retroperitoneal Tumors. L. F. Greene. -p. 174.
Complications Caused by Stump of Ureter After Nephrectomy. E. Ljunggren. -p. 179.
Transvaginal Ureterorectal Anastomosis with Partial Cystectomy: Case Report. H. D. Wolff Jr. -p. 182.
Comparison of Malignancy of Bladder Tumors as Shown by Cystoscopic Biopsy and Subsequent Examination of Entire Excised Organ. A. L. Dean. -p. 193.
Experiences with Oxycel Gauze in Genito-Urinary Surgery. A. E. Goldstein and A. Hollander. -p. 195.
Preliminary Report of Method of Primary Closure of Suprapubic Prostatectomy Using Oxidized Cellulose. G. D. Stump and R. C. Thumann Jr. -p. 202.
•Sump Drainage in Suprapubic Prostatectomy: Survey of 100 Consecutive, Unselected Cases. L. E. McCrea. -p. 207.
Modified Irrigating Solution for Transurethral Prostatic Resections: Preliminary Report. T. A. Dees, W. D. Steward, E. F. Meares and L. M. Orr. -p. 212.
Hormonal Factor in Heterologous Growths of Human Prostatic Cancer. C. L. Deming and M. S. Hovenanian. -p. 215.
Carcinoma of Prostate with Evaluation of Its Present Day Management. J. C. Birdsall. -p. 220.
Anastomosis of Vas Deferens After Purposeful Division for Sterility. V. J. O'Conor. -p. 229.
Reiter's Syndrome and Focal Infection. A. A. Creecy and F. S. Beazile Jr. -p. 234.
Pyocyaneous Infections of Urogenital Tract with Special Reference to Streptomycin Therapy. J. A. Lazarus, M. S. Marks and L. H. Schwarz. -p. 243.
Effect of Arsenotherapy on Upper Urinary Tract Changes in Infectious Abacterial Pyuria. A. A. Solomon. -p. 252.

Sump Drainage in Suprapubic Prostatectomy.—McCrea asserts that postoperative sump drainage is one of the recent refinements which has contributed both to the further lessening of hospitalization following suprapubic prostatectomy and to the comfort of the patient during convalescence. The principle of the sump for postoperative vesical drainage was originally advocated by Stedman, who introduced a motor suction pump. After mentioning other investigators who have used sump drains, the author says that in 1944 he described a drain which was made of stainless steel and was used for positive vesical drainage following prostatectomy. An improvement of the equipment was later described. This paper presents the latest improvements of such equipment and summarizes the end results in 100 consecutive, unselected cases in which sump drainage was used following suprapubic prostatectomy. There were 4 deaths, 3 of which were caused by cardiac disease. The fourth was due to pneumonia. The remaining 96 patients were discharged from the hospital and resumed their usual life. Vesical sump drainage materially shortened postoperative convalescence. In a recent survey it was found that the average postoperative hospital stay was 32.6 days when rubber tube drainage was used. When sump drainage was used, the postoperative hospital stay in uncomplicated cases was usually eleven to thirteen days. The comfort offered to patients by sump drainage is amazing. To be dry and comfortable during convalescence is ideal for the patient and for the nursing staff. There is a reduction in pneumonia and pyelonephritis. In a recent survey of 58 deaths following prostatectomy in which rubber tube drainage was used, mortalities resulting from pyelonephritis were 15.5 per cent. It was also found that pneumonia was responsible for a mortality of 10.3 per cent. In this series there was not a single instance of pyelonephritis and there was but one fatality from pneumonia. The wound heals rapidly by primary intention except for that small area utilized by the sump. The one disadvantage of sump drainage is that a mechanical contrivance must be understood by the nursing staff. Unless the principles of management of this equipment are understood, the use of sump drainage will be attended with dissatisfaction. The advantages of sump drainage far outweigh the disadvantage.

Nebraska State Medical Journal, Lincoln

33:37-76 (Feb.) 1948

Pulmonary Embolus. E. A. Connolly and A. W. Lempka. -p. 40.
•Primary Atypical Pneumonia. J. M. Neely. -p. 46.
Surgical Management of Acute Intestinal Obstruction. C. W. McLaughlin Jr. and J. H. Brush. -p. 51.
Perforated Peptic Ulcer. H. R. Elston. -p. 55.
Gonorrhea in Male--Modern Management for General Practitioner. E. Davis and L. W. Lee. -p. 60.
Considerations Concerning Gonorrhea in Female. D. C. Vroman. -p. 64.

Primary Atypical Pneumonia.—Neely says that although it is now generally agreed that the disease entity known as primary atypical pneumonia is caused by a filtrable virus, the term atypical pneumonia is retained because there are many instances in which the etiologic relationship cannot be definitely established. The disease is known by many other names such as virus pneumonitis, acute influenzal pneumonitis, acute pneumonitis, acute interstitial pneumonitis and bronchopneumonia of unknown etiology. Reviewing the present status of knowledge on this entity, Neely stresses that it is an interstitial pneumonitis which is caused by a filtrable virus. It is not a new disease. The pathology and clinical manifestations were described following the World War 1 and the Civil War. Physical abnormalities in the chest are usually minimal or absent; roentgen examination of the chest is necessary to establish the exact diagnosis. The mortality is low and complications few. Microscopically, the characteristic changes are thickening of the alveolar walls and ulceration of the terminal bronchioles with diffuse mononuclear cellular infiltration. Treatment is entirely symptomatic, and the sulfanilamide drugs and penicillin are of no value, except to prevent secondary invading pyogens.

Public Health Reports, Washington, D. C.

63:201-232 (Feb. 13) 1948

Negro Mortality: III. Course of Mortality from Specific Causes, 1920-1944. Mary Gover.—p. 201.
•Q Fever Studies in Southern California: I. Recovery of Rickettsia Burneti from Raw Milk. R.J. Huebner, W.L. Jellison, M.D. Beck and others.—p. 214.
Two New Salmonella Types: Salmonella Hidalgo and Salmonella Mission. J. Watt, Thelma M. DeCapito, P.R. Edwards and Alice B. Moran.—p. 223.

63:233-260 (Feb. 20) 1948

Epidemic of Acute Watery Diarrhea in Alabama. J.W. Smillie, Beatrice F. Howitt and G.A. Denison.—p. 233.

63:261-296 (Feb. 27) 1948

Epidemic Tinea Capitis: A Public Health Problem. R.K.C. Lee.—p. 261.
Relative Productivity of Newer Coliform Media. Elsie Wattie.—p. 269.

Q Fever in Southern California.—Seventeen cases of Q fever were observed in Los Angeles County in the spring of 1947. The subsequent observations of 100 additional cases indicated that Q fever is endemic in Southern California. Huebner and others report the recovery of Rickettsia burneti, the causative agent of Q fever, from the raw milk of four widely separated dairies in Los Angeles County. Three laboratories were able to recover the organism: the Q Fever Laboratory, Los Angeles County, Calif.; the National Institute of Health, Bethesda, Md., and the Rocky Mountain Laboratory, Hamilton, Mont. Seven isolations were made from duplicate specimens studied in two of the three laboratories. Specific antibodies for Q fever were demonstrated in the serums of guinea pigs previously inoculated with milk. The failure of such antibodies to appear in uninoculated controls and guinea pigs inoculated with materials other than milk provided evidence against the occurrence of spontaneous infection in the guinea pig colonies Rickettsia-like organisms were cultivated in the yolk sac of fertile hen's eggs from the blood and spleen of guinea pigs inoculated with milk. The cultural, morphologic and tinctorial characteristics of eight such strains were identical with those of R. burneti. Yolk sac antigens prepared from milk strains reacted specifically in the complement fixation test with standard Q fever serums. Serums from California cows and human beings found to contain antibodies for Q fever were tested with antigens prepared from milk strains. Specific reactions occurred in the complement fixation test. While R. burneti was recovered from raw milk, the epidemiologic evidence did not indicate that the drinking of milk was the cause of the majority of cases However, it is a possibility that infected milk may serve as a source of infection to man.

Rhode Island Medical Journal, Providence

31:1-84 (Jan.) 1948. Partial Index

Providence Medical Association 1848-1948. R. Hammond, J. E. Donley and P. P. Chase. -p. 15.
Providence City Health Department, 1856-1948. J. Smith. -p. 34.
Anesthesia in Rhode Island. A. H. Miller. -p. 37.
Fracture of the Upper End of Femur. E. B. Payne. -p. 48.
Psychologic Laboratory at Butler Hospital. G. R. Pascal. -p. 52.

31:85-152 (Feb.) 1948

Pneumococcic Lobar Pneumonia: Review of Cases in Rhode Island Hospital, 1945-1947. R. V. Lewis. -p. 99.
Cholesterol Tolerance. F. J. Burns. -p. 103.
Wilms Tumor: Report of 2 Cases in Same Family. M. A. Chapian. -p. 105.
Pattern was Established. G. W. Wells. -p. 107.
Group Medical Practice. F. T. Hill. -p. 114.

South Dakota Journal of Medicine, Sioux Falls

1:43-90 (Feb.) 1948

Primary Malignancy of Lung. A. Ochsner, M. E. DeBakey and J. L. Dixon. -p. 43.
Hypertension and Diabetes. A. C. Grorud. -p. 48.
Distribution of General Practitioners. W. Duncan. -p. 52.
Treatment of Sequelae of Phlegmasia Alba Dolens J. E. Summers. -p. 55.

Southern Medical Journal, Birmingham, Ala.

41:99-186 (Feb.) 1948. Partial Index

Congenital Bladder Neck Obstructions. M. F Campbell. -p. 99.
Mass Survey of Gastrointestinal Tract. P. C. Swenson. -p. 108.
Epivascular Choroidal Pigment Streaks, Their Pathology and Possible Prognostic Significance, Additional Cases. R. O. Scholz. -p. 112.
Nitrogen Mustards in Treatment of Hodgkin's Disease and Lymphosarcoma. M. Sherry. -p. 118.
Clinical Evaluation of Tetra-Ethyl-Ammonium. G. H. Yeager, J. H. Walker and W. T. Raby. -p. 129.
*Pyribenzamine as Adjunct in Control of Morphine Withdrawal Syndrome. P. Kells. -p. 134.
Important Role of Allergy in Pediatrics. W. A. McGee. -p. 139.
Status Asthmaticus. H. M. Bubert and Sarah Cook. -p. 146.
Basal Metabolic Rate in Diagnosis. Iva C. Youmans. -p. 150.
Some Aspects of Management of Elderly Patient. H. K. Rathbun. -p. 153.
Malignancy of Nasal Sinuses. W. R. McKenzie. -p. 156.
Infiltrating Carcinoma of Bladder: Curability by Segmental Resection. H. J. Jewett and J. F. Cason. -p. 158.
Present Day Trends in Surgical Treatment of Carcinoma of Large Intestine. M. Edwards. -p. 162.
Review of Surgery of Spleen. W. D. Wise and P. C. Phelan Jr. -p. 170.
*New Concept in Treatment of Peyronie's Disease. W. W. Scott and P. L. Scardino. -p. 173.
Surgical Aspect of Infestation with Intestinal Parasites. J. M. Miller and S. J. Thomison. -p. 178.

"Pyribenzamine" as Adjunct in Morphine Withdrawal Syndrome.—Kells suggests that the factor responsible for the symptoms of the morphine abstinence syndrome is an antimorphinic substance elaborated by the body during the period of addiction. Tripelennamine hydrochloride ("pyribenzamine hydrochloride" N.N.R.) is believed to neutralize this substance chemically and thereby alleviate the discomfort of the abstinence syndrome. In addicts taking 1 grain (0.06 Gm.) or less of morphine a day administration of tripelennamine in doses of 50 mg. four times a day may be started at once. In those taking larger amounts the tripelennamine is not given until the daily intake of morphine has been reduced by half. The dosage of tripelennamine is continued for three days following the last dose of morphine. Tripelennamine is given during the next two weeks whenever necessary to alleviate the mild withdrawal symptoms. In cases of long addiction such symptoms may continue for two months. The authors report 3 cases in which treatment with tripelennamine was used. They stress that the drug is but one portion of the total therapeutic procedure and is in no sense a substitute for morphine.

Treatment of Peyronie's Disease.—Largely as the result of the reported clinical effectiveness of the tocopherols in the treatment of certain forms of fibrositis, such as Dupuytren's contracture, Scott and Scardino were prompted to try these substances in the treatment of Peyronie's disease. This disease is known also as plastic induration of the penis or chronic cavernositis. Since January 1947 the authors have treated 23 patients with Peyronie's disease at the Brady Urological Institute. These patients have been observed monthly for five to nine months. Treatment has consisted of the oral administration of a total daily dose of 300 mg. of mixed tocopherols in three divided doses or 200 mg. of synthetic alpha-tocopherol in two divided doses. Penile curvature was present in 20 of the 23 cases. Pain on erection occurred in 12 cases, loss of potentia in 16 and loss of libido in 4. Six patients had complaints referable to Dupuytren's contracture. Like Dupuytren's contracture, Peyronie's disease usually manifests itself first during the latter part of the fourth and early part of the fifth decade. Complete disappearance of curvature was noted in 4 cases, a considerable decrease in 4, a moderate decrease in 10 and no change in 2. Pain disappeared in all the 12 instances in which it had been present. Softening and a decrease in the size of the penile plaque was described as great in 6 cases, moderate in 15 and unchanged in 2. In the 6 patients with Dupuytren's contracture, improvement was observed in 4 cases and no change in 2. The authors recognize that in an occasional instance Peyronie's disease improves without treatment, but they believe that their results with tocopherol therapy cannot be explained on the basis of spontaneous improvement and that continued use of these substances is indicated.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine, Liverpool

41:293-408 (Dec.) 1947. Partial Index

*Studies on Synthetic Antimalarial Drugs: XIX. Effect of Therapeutic Courses of Paludrine on Relapse Rate of Vivax Malaria. W. H. H. Andrews, D. Gall and B. G. Maegraith.-p. 375.

Synthetic Antimalarial Drugs.—The relapse rate of vivax malaria after treatment of patients with certain antimalarial drugs is discussed. Comparison is made between effects of a standard quinacrine therapeutic course and of two different dosage regimens of "paludrine" (chlorguanide hydrochloride) on the relapse rate of vivax malaria. Significant difference was not observed. Effects of single therapeutic doses of "paludrine" followed by one weekly dose for six months are described. Relapse rate of vivax malaria after this treatment was significantly less than with other therapeutic regimens.

British Journal of Dermatology and Syphilis, London

60:1-40 (Jan.) 1948. Partial Index

Diffuse Mesodermal Pigmentation with Congenital Cranial Abnormality. Alice Carleton and Rosemary Biggs. -p. 10.
*Skin Sensitivity to Penicillin Preparations. R.H. Meara. -p. 14.

Skin Sensitivity to Penicillin Preparations.—The 3 cases of skin sensitivity to penicillin preparations reported by Meara illustrate the importance of analyzing reaction to the application of compounds. In 1 case the cutaneous condition was caused by the application of penicillin ointment; in 2 cases exacerbations of fairly longstanding exogenous conditions of the skin were caused by the application of penicillin cream. In all 3 cases penicillin as such was found not to be the noxa concerned. In case 1, skin sensitivity to penicillin existed only when the drug was incorporated in the cream base. In cases 2 and 3 penicillin was not concerned at all, the responsible agents being wool alcohols (sterols) and chlorocresol, respectively.

British Journal of Industrial Medicine, London

4:205-266 (Oct.) 1947

Observations on Toxic Effects of Cordite. J. S. Weiner and M. L. Thomson. -p. 205.
Risk of Fluorosis in Magnesium Foundries. R. G. Bowler, M. Buckell, J. Garrad and others. -p. 216.
Experimental Production of X-Ray Shadows in Lungs by Inhalation of Industrial Dusts: I. Iron Oxide. H. E. Harding, J. L. A. Grout and T. A. L. Davies. -p. 223.
Argyrosiderosis of Lungs in Silver Finishers. H. J. Barrie and H. E. Harding. -p. 225.
Solubility or Distribution Coefficient of Trichlorethylene in Water, Whole Blood and Plasma. Joan F. Powell. -p. 233.
Barrier Creams and Their Evaluation. W. M. Cumming, M. C. Cameron, E. B. Cumming and M. C. Macraild. -p. 237.

British Medical Journal, London

1:135-184 (Jan. 24) 1948

Training of Specialists: Place of Postgraduate Institutes. F. Fraser. -p. 135.
*Smallpox in Staffordshire, 1947; Outbreak at Bilston. C. S. Smith. -p. 139.
Absorption of Vitamin D in Steatorrhea. L. P. R. Fourman and G. H. Spray. -p. 142.
*Superior Mesenteric Arterial Occlusion: Recovery Without Resection. W. G. Hendry. -p. 144.
Chemotherapy of Infected Urines in Paraplegia. P. T. J. C. P. Warner. -p. 146.
Cardiac Murmurs in Infancy. Nancy Cox. -p. 148.

Smallpox in Staffordshire.—Smith describes an outbreak of smallpox which originated with a soldier who travelled from India by air. Several days after reaching home a modified attack of variola developed which was regarded as chicken pox. Of the 30 confirmed cases which developed subsequently, 15 were severe and there were 6 deaths—5 from hemorrhagic smallpox and 1, an unvaccinated confluent case. Vaccination was offered to all known contacts. No endeavor was made to advocate mass vaccination. The public, in panic at the continued incidence of cases, demanded vaccination. More than half the population of the town was vaccinated. Vaccination did not fully protect within the first week of the vaccination period. Many contacts were apparently vaccinated too late in the incubation period. Confluent cases occurred in persons in whom successful vaccination had been carried out nine and eight days before the appearance of the true smallpox rash; in 1 fatal hemorrhagic case successful revaccination of the patient had been carried out twelve days previously. Modified cases occurred where vaccination had been carried out twelve days before the rash appeared. Many persons vaccinated in the military services during the recent war years gave nonimmune reactions.

Superior Mesenteric Arterial Occlusion.—Hendry comments on etiologic and pathologic aspects of superior mesenteric arterial occlusion and presents the history of a man, aged 64, who submitted to surgical intervention because of repeated vomiting of fecal smelling material and tenderness of the abdomen. Laparotomy disclosed 2 to 3 pints (946 to 1,419 cc.) of blood-stained free fluid. In the upper part of the abdomen two loops of jejunum were engorged and contracted; the mesentery was grossly edematous up to the border of the intestine. The bowel showed hemorrhagic infarction and seemed still viable. The abdomen was closed without intervention. Continuous gastric suction was started and fluids were given by mouth. Intravenous dextrose-saline solution was given to attain rehydration. In addition intravenous heparin (50 mg.) was given every five hours for five days. Convalescence was uninterrupted. In retrospect, it was believed that diagnosis could have been made on the basis of the profound shock, partial intestinal obstruction with repeated and progressive vomiting but with good peristalsis and an adequate result from two enemas, and peritoneal irritation evidenced by rebound tenderness and the presence of free fluid. There is little doubt that the shock was due to the escape from the circulating blood of a large quantity of plasma by transudation from damaged intestinal and mesenteric capillaries. Shock and blood-stained intraperitoneal fluid are common observations in these cases.

Edinburgh Medical Journal

54:593-668 (Nov.-Dec.) 1947

November 1847 and Its Sequal: Events Connected with Discovery of Anesthetic Properties of Chloroform by James Y. Simpson, George S. Keith and J. Mathews Duncan. J. Chassar Moir. -p. 593.
Corpus Luteum Hormone. G. F. Marrian. -p. 611.
Skeletal Traction and Anterior Decompression in Management of Pott's Paraplegia. N. M. Dott. -p. 620.
Anticoagulants. J. R. Learmonth. -p. 628.
Anticoagulants. C. C. Burt. -p. 632.
*Thrombophebitis in Pregnancy. G. D. Matthew. -p. 641.
Blood Changes in the Aged. O. Olbrich. -p. 649

Thrombophlebitis in Pregnancy.—Matthew says that the location of veins involved by thrombophlebitis is essentially the same in obstetric and nonobstetric patients with the exception of the deep pelvic veins. In the recently delivered woman the pelvic veins are apt to be the site of involvement. At the end of labor the large venous sinuses of the uterus, and particularly of the placental site, are obliterated by blood clot and if infection occurs, especially by anaerobic streptococci, a process of septic thrombophlebitis is initiated which may spread through the wall of the uterus to involve the ovarian and uterine veins. In this way there is established a deep pelvic thrombophlebitis, a condition which is not always clinically obvious and thus may account for some cases of apparently unaccountable pulmonary embolism. By further extension the thrombotic process may come to involve the internal iliac and common iliac veins and even the inferior vena cava. Moreover, either by an advancing periphlebitis or possibly by spread along the venous wall, the external iliac and femoral veins may be the site of continuous or isolated areas of thrombophlebitis. Pulmonary embolism, fatal or nonfatal, may occur either before or after thrombophlebitis manifests itself clinically. In the 17 fatal cases which occurred in the Simpson Maternity Pavillion during the past twenty years only 7 showed clinical evidence of thrombosis affecting the veins of the pelvis or lower limbs. Treatment with heparin is discussed, but the author finds it difficult to draw definite conclusions. Objectives of heparin therapy are the immediate control of the local thrombosis, prevention of local spread, prevention of recurrence in the original site or elsewhere, and prevention of pulmonary embolism. These objectives were satisfied in all but 2 cases. In both of these embolism occurred, in one after premature interruption of treatment and in the other after an insufficient drug supply made a full course of treatment impossible. Treatment with heparin reduced the period of hospitalization on the average by one week.

Glasgow Medical Journal

29:1-48 (Jan.) 1948

*Progressive Postoperative Gangrene of Skin: Observations on Etiology and Treatment in 2 Cases. A. Lyall and R.D. Stuart. -p. 1.

Course of Bronchiectasis in Children. F.J. Ford. -p. 19.

Clinical Memoranda: Asthma in Child Precipitated by Carbohydrate Dyspepsia. A. Brown. -p. 33.

Postoperative Gangrene.—According to Lyall and Stuart, progressive postoperative gangrene of the skin is the name given by Brewer and Meleney to a slowly spreading gangrenous condition of the skin and subcutaneous tissue arising from an operative wound. The lesion is also commonly termed synergistic gangrene. The authors describe 2 cases of progressive postoperative gangrene. Penicillin was not available when these patients were seen. In both, the lesions failed to respond to sulfonamide drugs or any form of local antiseptic treatment. One patient died, the other recovered after the spreading gangrenous process had been interrupted by repeated surgical guttering. A microaerophilic streptococcus was recovered from the lesions in both patients: in one it was associated with Proteus vulgaris, in the other with Staphylococcus albus initially and later with Staphylococcus aureus. Experiments on guinea pigs and rabbits suggested that each of the three organisms in combination with the associated streptococcus played a synergistic role in the condition. The fact that P. vulgaris has been found to play an intrinsically important part in 1 case of this peculiar form of gangrene suggests that penicillin therapy may be unsuccessful in other similar cases and that adequate surgical intervention along the lines described may then be essential for cure.

Transactions Royal Soc. Trop. Med. and Hyg., London

41:269-426 (Dec.) 1947. Partial Index

Rickettsial Disease in East Africa Transmitted by Ticks (Rhipicephalus Simus and Hemaphysalis Leachi). G. W.A. Dick and E. A. Lewis. -p. 295.

Typhus in Northern Nigeria. T. H. L. Montgomery and F.H. Budden. -p. 327.

Observations on Action of Paludrine on Malarial Parasites. M. J. Mackerras and Q. N. Ercole. -p. 365.

Outbreaks of Sprue During Burma Campaign. F. Ayrey. -p. 377.

Growth of Protozoa in Tissue Culture. IV. Plasmodium Lophurae, Exoerythrocytic Forms, in Vivo and Vitro. I. M. Tonkin and F. Hawking. -p. 407.

Polymorphism in Trypanosoma Simiae and Morphology of Metacyclic Forms. A. T. Culwick and H. Fairbairn. -p. 415.

Infection of Man with Leptospira Bovis in Palestine. S. Btesh. -p. 419.

Archivos Argentinos de Pediatría, Buenos Aires

18:273-330 (Nov.) 1947. Partial Index

*Electroencephalographic Aspects of Infantile Epilepsy. F. Escardó and A. Mosovich. -p. 273.

Electroencephalographic Aspects of Infantile Epilepsy.—Convulsions in infants and children should be considered of epileptic origin unless the contrary is proved by negative electroencephalograms. Escardo and Mosovich obtained electroencephalograms of 8 infants and 42 children and adolescents with either epilepsy or convulsions. The electroencephalograms showed the precise degree of neurologic maturity and neuropsychic organization, the type and origin of convulsions and of convulsive syndromes in infants and children. Persistence of paroxysmal discharges in a definite cortical area in repeated electroencephalograms indicates focal epilepsy. When the discharges come from a given cortical region and follow a movement of cortical propagation they indicate jacksonian epilepsy, which is infrequent in children. The electroencephalographic aspects of nonfocal epilepsy are those showing discharges of rapid frequency in grand mal, of slow frequency in psychomotor epilepsy, of slow and rapid frequency in alternation in petit mal epilepsy and its varied forms, and a combination of tracings of the first and last types when grand mal and petit mal coexist. Electroencephalograms of the first three types call for (1) "epamin" (diphenylhydantoin sodium) and phenobarbital treatment, (2) "epamin" and (3) "tridione" (trimethadione), whereas those showing coexistence of grand mal and petit mal call for combined treatment with drugs indicated for each constituent type of epilepsy. Repeated electroencephalograms are also of value in the differential etiologic diagnosis of several convulsive syndromes in infants and children, especially febrile and nonfebrile convulsions, the so-called infantile eclampsia, the psychic and neurosympathetic forms of epilepsy, disorders of conduct, fainting and spasms. In the cases reported by the authors the electroencephalogram confirmed the clinical diagnosis in 32 cases, clarified the diagnosis in 24 cases and refuted it in 2 cases. The prognosis as to results to be expected from treatment and future behavior of patients in school is good when discharges occur as well organized, regular tracings but poor when they occur as disorganized, irregular tracings.

Chirurg, Heidelberg

17/18:625-672 (Nov.) 1947. Partial Index

Intra-Arterial Administration of Sulfonamide Compounds. G. Jorns. -p. 625.
Question Whether Tannin Treatment Has a Damaging Effect on Burns. P. Ollinger. -p. 629.
Blockade of Sympathetic Nerve in Acute Disturbances of Circulation of Blood. W. Block. -p. 635.

Intra-Arterial Administration of Sulfonamide Compounds.—According to Jorns, satisfactory chemotherapeutic result in bacterial infection of wounds is not always obtained by local administration of sulfonamide compounds. Advancing suppuration calls for oral or parenteral administration of these drugs. The advantages of both methods of administration are combined in the intra-arterial administration of the sulfonamide drugs provided that the method is limited to the vessels which supply the involved area. Intra-arterial administration carries the drug directly to the focus of the infection in high concentration. Untoward reactions can be prevented, since an effective level of the sulfonamide agent in the total blood can be obtained with smaller doses than those required for oral administration. Repeated intra-arterial injections at short intervals are indicated because of the brief duration of the high concentration. At first the author used sulfathiazole which had been slightly acidified according to the method of Brunner. Later he used another preparation without any addition. Injections of even 50 per cent solutions were tolerated without reaction. They proved surprisingly effective in severe suppuration of bones or soft tissue of the upper and lower extremities which could not be controlled previously in spite of adequate therapy.

Minerva Medica, Turin

39:85-102 (Jan. 21) 1948. Partial Index

*New Flocculation Test of Blood Serum in Pulmonary Tuberculosis. (Preliminary Note). G. Di Maria—p. 94.

New Flocculation Test in Pulmonary Tuberculosis.—The test reported by the author is simple, quick and extremely sensitive. It is positive in 95 per cent of cases of pulmonary tuberculosis. Four cubic centimeters of blood is withdrawn from a fasting patient into a syringe containing 0.2 cc. of a 2 per cent sodium citrate solution. The contents are mixed and centrifuged. Mercury sublimate, 0.7 cc. of a 1 per cent solution and 0.3 cc. of 95 per cent alcohol are thoroughly mixed in a graduate 1 cm. in diameter. Then 0.04 cc. of the patient's serum is measured with a pipet of 0.1 cc. capacity and added to the mixture in the graduate. The open end of the graduate is covered with the fleshy tip of the finger, turned upside down and the results observed, preferably in day light. Immediate flocculation, either abundant or moderate, indicates pulmonary tuberculosis, respectively acute or subacute; acute or subacute turbidity is followed by flocculation in all cases. If flocculation occurs within the first 5 minutes in the course of the test it indicates active pulmonary tuberculosis. Flocculation after the first 10 minutes of the test has no diagnostic significance. It occurs in the blood serum of normal persons and in that of persons with well healed lesions of pulmonary tuberculosis. Turbid and hemolyzed blood serums should not be used for the test.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

91:3741-3776 (Dec. 27) 1947. Partial Index

*Result of Bronchoscopic and Bronchographic Examination of 128 Patients with Positive Sputum. C. Dijkstra, C. Enneking and J. Struycken Jr. -p. 3742.
Paranephritic Infection Cured by Treatment with Penicillin. H. Deenstra. -p. 3749.

Bronchoscopic Examination of Tuberculous Patients with Positive Sputum.—Dijkstra and his co-workers performed bronchoscopic examinations on 128 tuberculous patients whose sputum was positive for Mycobacterium tuberculosis. They observed that half of them had specific changes such as tubercles, granulations, caseous deposits or polyp formations in the large bronchi. Another 25 per cent had only hyperemia and swelling. Incidence and type of changes were about the same whether tuberculous cavities were present or not. The use of an enlargement lens is important in the evaluation of the results of bronchoscopic examination.

Nordisk Medicin, Gothenburg

36:2539-2606 (Dec. 19) 1947. Partial Index

Wassermann Test in Congenital Syphilis Treated with Penicillin Together with Heavy Metals and with Arsphenamine or Spirocid. O. Enkvist. -p. 2540.
Hereditary Taint in Patients with Mongolism. R. Marthinsen. -p. 2541.
Roentgen Treatment of Tendovaginitis Crepitans of Forearm Without Immobilization and Without Interruption of Work. Nielsen. -p. 2543.
*Streptomycin in Miliary Tuberculosis and in Tuberculous Meningitis. A. Lichtenstein. -p. 2548.
Congenital Heart Defect with Cyanosis: Surgical Treatment. P. Sandblom. -p. 2560.
*Occurrence of Retinal Eye Complications in Diabetes. I. Möllerström. -p. 2571.

Streptomycin in Miliary Tuberculosis and in Tuberculous Meningitis.—In 4 cases of tuberculous meningitis treated with streptomycin the patients are clinically free from symptoms one to five months after the onset of meningitis. In 3 cases treatment was begun within two days of onset, in 1, nine days after onset. In all cases a vestibular disturbance occurred. In 1 instance this receded. Lichtenstein states that a long observation period is necessary because of the danger of late recurrence. The effect of streptomycin seems to be only bacteriostatic. In his first case the tuberculous meningitis appeared five weeks after the cessation of streptomycin therapy of a typical miliary tuberculosis which seemed to have healed, in another case, during streptomycin treatment of pulmonary tuberculosis. Toxic by-effects of streptomycin are seen especially on the acoustic and vestibular nerves. The significance of dosage and duration of treatment in the origin of toxic injuries and the extent to which they are reversible are not yet known. A purer streptomycin or a new related but less toxic antibiotic must be sought.

Occurrence of Retinal Eye Complications in Diabetes.—Möllerström states that retinopathy in diabetes is characterized by retinal hemorrhages and more or less extensive white foci. In grave cases proliferating processes occur. Examination of 2,166 diabetic patients revealed retinopathy in 112. The cause of diabetic retinitis is not yet known. Insulin treatment is no protection. Invalidizing reduction of vision and occasionally blindness can result. To combat and prevent retinal changes is at present an urgent problem in the care of diabetic patients. Diabetes retinitis may be seen in patients aged between 15 and 20, but in most cases appears at a later age. It occurs more often in patients with increased blood pressure and in those without ketonuria. Its increased frequency is thought to depend on the longer life of diabetic patients today, which allows time for the retinitis to develop.

Praxis, Bern

37:21-38 (Jan. 15) 1948

*Treatment of Puerperal Mastitis with Penicillin. W. Neuweiler. -p. 21.
Chemistry in Study of Life. P. Favarger. -p. 23.
*Toxic Effects of Streptomycin on Inner Ear. A. Montandon and B. Camenisch. -p. 28.

Penicillin in Puerperal Mastitis.—Neuweiler treated women who had puerperal mastitis, with or without formation of an abscess, by intramammary injections with penicillin. Fifty thousand to 80,000 Oxford units of crystalline sodium penicillin in 10 to 20 cc. of isotonic solution of sodium chloride were injected around the focus of inflammation; a few cubic centimeters of the solution were injected directly into the infiltrated area. In cases with formation of abscess, the abscess was emptied by puncture and the cavity of the abscess filled with the penicillin solution. Treatment should be repeated daily for five to seven days. Treatment is almost painless and recovery occurs in a few days with complete restitution and without mutilating scar formation and lacteal fistula. In contrast to the results obtained by local penicillin therapy, intramuscular administration of penicillin is not particularly effective. Penicillin passes into the milk with great difficulty, as was demonstrated by Kästli's test first used for the determination of bacterial growth in streptococcic mastitis in cows. This is the reason for the highly satisfactory results from intramammary injections; they may prevent the occurrence of new growth of bacteria in the tissues due to the necessary disinfection of the lactiferous ducts, which cannot be obtained by the intramuscular route.

Toxic Effects of Streptomycin on Inner Ear.—Montandon and Camenisch report the results of the otologic examination of 10 patients, 6 male and 4 female, between the ages of 11 and 32 years who had been treated with streptomycin for miliary tuberculosis and tuberculous meningitis. The average daily dose of the drug was 3 Gm. given by the intramuscular route; it was reduced to 2 Gm. or even to 1.5 Gm. after eight to ten days of the treatment. Four of the patients were given additional intraspinal injections of 0.10 to 0.25 Gm. streptomycin. The excitability of the labyrinth was diminished in 9 of the patients, and in several of them there was total inexcitability to caloric and rotary stimuli, suggesting grave damage to the vestibular passages in the absence of nystagmus or other manifestations of disturbance of the posterior labyrinths. There was a definite relation between the dose of the drug and the intensity of its vestibular effects: only mild disturbance or none resulted from the administration of doses of 2 Gm.; in several instances bilateral total areflexia to caloric and rotary stimuli corresponded with medium doses of 3 Gm., and complete paralysis of the two posterior labyrinths occurred in 1 case. In another case normal vestibular reactions were demonstrated by caloric and rotary tests before the initiation of the treatment, while postrotary hyporeflexia with crossed dysreflexia of Barré type was observed four months later when treatment was terminated. These observations on a small scale confirm those on a larger one by Fowler at the Presbyterian Hospital in New York. Streptomycin seems to exert a damaging effect on the cochleovestibular apparatus and primarily on the vestibular nerve. The average daily dose of 3 Gm. of the drug by intramuscular route seems to be near the limit of toxicity with regard to the central nervous system, and the intraspinal doses of 0.25 Gm. may be even more harmful. Complete and careful examination of the audition and of the function of the labyrinth should be performed before and after each dose of 3 Gm. with streptomycin.

Presse Médicale, Paris

56:73-84 (Jan 31) 1948.

*Not Manifest Dystrophias; Alimentary Deficiencies and Disturbances of Hematopoiesis. (Clinical and Experimental Facts). G. Mouriquand, Mrs. V. Edel, K. Chmelo and J. Zathurecky. -p. 73.
Effect of BAL (British Anti-Lewisite) on Accidents Associated with Arsenic and Gold Treatment. C. Huriez, R. Merville, A. Taquet and B. Steenhouwer. -p. 74.
Medical Treatment of Abscess of Lung. R. Benda. -p. 75.

Disturbances of Hematopoiesis from Alimentary Deficiencies.—According to Mouriquand and his coworkers, often but not always hematologic disturbances may become manifest because of alimentary deficiencies. On the contrary, medullary disturbances or lesions may result nearly always from prolonged alimentary deficiencies (not only from ascorbic acid avitaminosis but from complex alimentary deficiencies). These disturbances of bone marrow may not become manifest, except for the intervention of "revealing factors." Only a transitory deviation from the normal number of red blood corpuscles resulted in normal guinea pigs from repeated blood-letting by cardiac puncture (two to four punctures at intervals of eight to ten days) Anisocytosis, anisochromia and an occurrence of erythroblasts in the blood in addition to fairly pronounced anemia resulted from repeated blood-letting in guinea pigs which were placed on a diet deficient in ascorbic acid. The same disturbances resulted from repeated blood-letting in rats which were placed exclusively on a buttermilk diet. Rats on a varied and balanced diet tolerated the repeated blood-letting well. Clinical experiences were confirmed by these experiments. Patients with alimentary deficiencies should be placed on a balanced diet rich in proteins, and treatment should consist in the administration of iron, folic acid and ascorbic acid in order to prevent severe disturbances of the blood. It should be remembered that prolonged treatment is required for restoration of the bone marrow to normal.

Strasbourg Medical

107:385-398 (Nov. 15) 1947

*Repercussions of Gastric Resection for Ulcers on Formed Elements of Blood. G. Faller and J. Kuhlmann. -p. 385.
Evaluation of Terrain in Pulmonary Tuberculosis. P. Weiller. -p. 387.

Effect of Resection for Gastric Ulcer on Blood.—Faller and Kuhlmann say that although it has been charged that gastric resection may result in pernicious anemia, they themselves have never observed this form of anemia after resection for gastric ulcer. In order to obtain information about the late effects of gastric resection on the blood, they made follow-up studies on patients who were operated on between 1935 and 1940. The resections usually involved from three fifths to three fourths of the stomach. Follow-up examinations were made on 53 patients. In about half of this number a mild anemia was observed. In comparison of the tendency toward anemic states in those who had ulcer of the lesser curvature with those who had pyloroduodenal ulcer, it was found that the tendency was three times greater in the former than in the latter. The anemia observed, however, was never of the pernicious type. The anemias could be effectively counteracted by the administration of iron preparations.

Book Notices

A Manual of Pharmacology and Its Applications to Therapeutics and Toxicology. By Torald Sollmann, M.D. Seventh edition. Cloth. Price, $11.50. Pp. 1132. W. B. Saunders Co., W. Washington Square, Philadelphia 5, 1948.

This book has become well known to student, teacher and practitioner. First copyrighted in 1917, it is a standard teaching and reference book. Unlike some other reference books, it is easily read and has always been filled from one end to the other with meaty information that can be put to practical use. The new edition is completely revised, and the format is changed to make it even more readable. For those who are interested in therapeutics, up-to-date and practical information abounds; for those who are interested in animal experimentation, the book is indispensable. That which is no longer of real importance has been omitted, and that which is new has been included and described so that its full value and limitations are readily apparent. The book can be recommended for every one, including medical students, medical practitioners, pharmacists and nurses, who is interested in any phase of therapeutics. Of course it contains detailed information that is not necessary for pharmacists and nurses, but nevertheless they will find this an excellent reference source. As for physicians, the usefulness of this book can best be expressed by stating that it should be in the library of every medical student and on the desk of every physician.

Human Ancestry from a Genetical Point of View. By R. Ruggles Gates, F.R.S. Cloth. Price, $7.50. Pp. 422, with 36 illustrations. Harvard University Press, Cambridge, Mass., 1948.

The author, who is widely known as a biologist and anthropologist, reviews here the origin and history of the races of mankind throughout the world. He conceives that there have been many divergents from various ancestral stocks. Much of the study has been made at first hand by the author, particularly among the Polynesians and Melanesians. The scholarly character of the study, the excellent bibliography and a comprehensive index make this among the best available books in its field.

The British Encyclopaedia of Medical Practice Including Medicine, Surgery, Obstetrics, Gynaecology and Other Special Subjects. Medical Progress, 1947; Cumulative Supplement, 1947. Editor in Chief: Rt. Hon. Lord Horder, G.C.V.O., M.D., B.Sc., Physician to the King. Fabrikoid. Boards. Pp. 527, with 15 illustrations; 274 with 6 illustrations. Butterworth & Co. (Canada) Ltd., 1367 Danforth Ave., Toronto 6, 1947.

The British Encyclopaedia of Medical Practice keeps its subscribers up to date by the publication of annual volumes and comulative supplements. These are essentially abstracts of important new contributions with occasional reviews of several articles. The books listed here supplement the original twelve volumes.

Stone Walls and Men. By Robert M. Lindner. Cloth. Price, $4. Pp. 496. New York, Odyssey Press, 1946.

The approach to crime from the medical point of view has fascinated many a physician and general reader. The author of this book has taught his subject for some years at Bucknell University, Lewisburg, Pa. He supplements his text with case reports that are as fascinating as modern novels. His chapters concern such aspects of the subjects as the motivation of crime, psychopathy and crime, juvenile delinquency and life in prison. Dr. Lindner is convinced that there is need for far more study of the individual criminal by the methods of modern psychology and psychiatry than has thus far been applied. His approach to crime from the psychologic and sociologic points of view and what he has learned from this approach offer opportunity for application by the responsible authorities.

Prophet in the Wilderness: The Story of Albert Schweitzer. By Hermann Hagedorn. Cloth. Price, $3. Pp. 221, with portrait. The Macmillan Co., 60 Fifth Ave., New York 11, 1947.

Albert Schweitzer: *An Anthology.* Edited by Charles R. Joy. Cloth. Price, $3.75. Pp. 323. Harper & Brothers, 49 E. Thirty-Third St., New York 16; the Beacon Press, Inc., 25 Beacon St., Boston 8, 1947.

Suddenly the story of Albert Schweitzer has achieved worldwide interest. Recent publications include this brief biography and this collection of quotations from his various writings, as well as other works of comment. Schweitzer is unquestionably one of the great minds of our times. His contributions to philosophy, to music and the arts, and his work in a great medical center which he established among the natives of French Equatorial Africa are contributions that demand respect and admiration.

The Neocortex of Macaca *mulatta*. By Gerhardt von Bonin and Percival Bailey. Illinois Monographs in the Medical Sciences. Vol. V, no. 4. Published by the University of Illinois, under the auspices of the Graduate School. Paper. Price, $3. Pp. 163, with 102 illustrations. The University of Illinois Press, Urbana, Ill. 1947.

This is, to date, the only thorough study of the cortex of the most commonly used primate. It has a prologue, seven autonomous chapters and an epilogue. It is written in good prose, with a happy choice of words, preserving familiar terms without loss of precision. Its ninety pages of text include about fourteen pages of tables and clear line drawings schematizing the growth, size and proportion of the brain, its fissural pattern, thickness of layers, survey by serial sections, partial maps by sundry authors and diagrams of interconnections. The frontispiece, in color, conveys the distribution of distinguishable architectural areas and by its tinting suggests how these merge into one another. There is a carefully selected bibliography of some one hundred and fifty entries. But the most important portion of the volume is, as the authors' state, a set of sixty-two collotype plates, each at a magnification of 100 diameters, of a section 20 microns thick, cut practically perpendicular to the surface of the cortex at a place indicated exactly in the figures. Even to the untrained eye these Nissl stains show the resemblance of each cortical area of the monkey's brain to the same area of man's brain as depicted by von Economo, whose terminology the authors have therefore employed. The book will be most useful to those engaged in experimental work on the cortex, who wish to draw conclusions concerning man from observations on Macaca mulatta. As it is likely to remain the standard text for many years, we are particularly indebted to the authors for an anatomy that is fun to read, and to the University of Illinois Press for a volume that is a pleasure to see.

History of the Medical Society of the District of Columbia. Part II, 1833-1944. History Committee: John Benjamin Nichols, Chairman, William Johnston Mallory and Joseph Stiles Wall. Cloth. Price, $5. Pp. 357, with 14 illustrations. The Medical Society of the District of Columbia. 1718 M St., N.W., Washington 6, D. C., 1947.

A volume of five hundred and one pages published in 1909 traced the history of this distinguished medical society from 1817 to 1909. The present volume offers a continuation until recent times and supplements some of the earlier materials. In 1911 the Medical Society of the District of Columbia and the Medical Association of the District of Columbia amalgamated. There are chapters about the contribution to World War I, economic problems and records of the officers of the society and its publications, as well as a complete record of membership.

The Impact of a Children's Story on Mothers and Children. By Martha Wolfenstein. Monographs of the Society for Research in Child Development, Serial No. 42, Volume XI, 1946, No. 1. Paper. Pp. 54. Society for Research in Child Development, National Research Council, 2101 Constitution Ave., Washington 25, D. C., 1947.

Among the newer psychologic technics is work of the type exemplified by this study. The story concerned the birth of a second child in the family. It was tested on 10 children aged 4 years—5 boys and 5 girls—with their mothers. The reactions of the child and the mother were then reported and studied. The study indicated that resistances against the story developed in the mothers and transmitted themselves to the children, which made possible rewriting of the story to meet the needs. Conflicts were apparently created in the children, and other important psychologic observations were also made.

The Contemporary American Family. By Ernest R. Groves and Gladys Hoagland Groves. [New edition of The American Family.] Cloth. Price, $4 50. Pp. 939. J.B. Lippincott Co., 227-231 S. Sixth St., Philadelphia 5, 1947.

This book is a completely rewritten and reset edition of the book published by the authors in 1934 under the title "The American Family." It has become one of the most important reference works in the field that it concerns and is at the same time a most useful textbook in courses in sociology. The authors adopt the point of view that frigidity in the female is due in most instances to poor sex technic of the husband. There is rather too much of simplicity in this and in other medical aspects of the book. The volume is supplemented with a comprehensive bibliography and index.

The Parathyroid Glands and Skeleton in Renal Disease. By J. R. Gilmour, M.R.C.P., Pathologist in Emergency Medical Service; Junior Assistant Director, Bernhard Baron Institute of Pathology, London Hospital, London. Oxford Medical Publications. Cloth. Price, $5 75. Pp. 157, with 25 illustrations. Oxford University Press, 114 Fifth Ave., New York 11; Amen House, Warwick Square, London, E.C. 4, England, 1947.

The monograph based on the study and analysis of 60 unselected cases and 30 selected cases of renal disease deals with the description of and correlation between the histologic and other changes of the kidneys, parathyroid glands and bones. The renal diseases are divided for this purpose into three main classes: primary toxic nephritis, symptomatic toxic nephritis and other renal diseases. Each of the first two classes has several subdivisions. Cases of ischemic nephritis of vascular origin (benign hypertension) are excluded because abnormal enlargements or histologic changes in the parathyroids were not found with these conditions. Macroscopic and microscopic criteria are used to divide the parathyroid glands examined into six types. After recording the methods of standardization and the various standards used, Gilmour discusses the relation of parathyroid weights, their texture and color, and their histologic and cytologic features to urea retention, plasma phosphorus, blood pressure, heart weight, duration and type of renal disease and degree of renal destruction. The coexistence and significance of renal disease secondary to von Recklinghausen's disease as well as a brief review of the literature on parathyroid changes in renal disease are given. Then follow a detailed description and an analysis of the histologic bony changes (osteitis fibrosa) and renal rickets. After a brief discussion of metastatic calcification and calcinosis in relation to renal, parathyroidal and osseous reactions. There follows a chapter on calcium and phosphorus metabolism in their relation to renal rickets. metastatic calcification and calcinosis. In concluding paragraphs the problem of the cause of parathyroid and skeletal changes in renal disease of both adults and children is considered the proximate or immediate cause of the parathyroid hyperplasia, hyperphosphatemia by reduction of blood calcium being the remote cause. An appendix brings a summary of the 90 cases analyzed. The monograph represents a great amount of detailed and painstaking work, which will be appreciated mainly by the pathologist, but which should be useful study material for the clinician. Tabulation of the various standards employed would have helped the reader in understanding more readily the text. The bibliography is representative but not exhaustive

Illustrative Electrocardiography. By Julius Burstein, A.B., M.D., Visiting Electrocardiographer and Chief of the Cardiac Clinic, Morrisania City Hospital, New York, and Nathan Bloom, M.D., F.A. C.P., Associate Professor of Medicine and Chief of the Department of Electrocardiography, Medical College of Virginia, Richmond, Va. Third edition. Fabrikoid. Price, $6. Pp. 309, with 99 plates. D. Appleton-Century Co., 35 W. Thirty-Second St., New York 1, 1948.

The third edition with a new co-author is a complete revision of the text and illustrations, only two of the illustrations of the preceding edition having been retained. The clumsy size of the preceding edition has been replaced by a more conventional size. The book consists mainly of illustrations with explanatory text and some supplementary textual material. Essentially it contains chapters on the fundamentals of electrocardiography, the arrhythmias and electrocardiographic contour. Chapters on phonocardiography and cardiac roentgenology are included. The authors' statement in the preface that this edition takes the specialist through the entire field of electrocardiography is not adequately fulfilled. The book is suited only for the medical student and the beginner in electrocardiography, and even for them it is only fair. The illustrations are for the most part typical. The chapters on phonocardiography and roentgenology are superficial and contribute little even to a beginner. The discussion of the normal electrocardiogram is inadequate. The authors use only one chest lead in their illustrations, either IV_F or IV_R. The present recommendation of the American Heart Association Committee is for three chest leads, and the apex lead is not recommended. The section on multiple precordial leads covers less than a page and is totally inadequate. The comments on the unipolar leads are also superficial.

The best that can be said for this book is that the beginner may enjoy looking at some of the typical illustrations. Certainly no one past that stage would find this book useful or worth while. Even for the beginner, other texts are available which he will find far more useful

Treatment of Some Chronic and "Incurable" Diseases. By A. T. Todd, O. B. E., M.B., M.R.C.P. Second edition. Cloth. Price, $7. Pp. 324. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1947.

The basic premises of Dr. Todd, as stated in the introduction, are sound and stimulating, but his application of these concepts in later chapters is confused and at variance with modern medical knowledge. One is pleased with the author's introductory emphasis that no disease exists as an isolated entity in a single organ or structure; that when one system is affected all others are involved to a greater or lesser extent. The unity of the patient as a basis for therapy, rather than treatment of a disease, is sound clinical thinking. Likewise welcome are the author's insistence on recognition of multiple etiologic factors and his protest against oversimplification of etiologic analysis by continuation of the inadequate idea of specific and single causation.

So far so good. But the elaboration of these ideas as applied to the therapy of the various chronic disorders, such as diabetes mellitus, epilepsy, postencephalitic parkinsonism, arterial hypertension, constipation and cancer is vague, faddish and at times irrational. In avoiding excessive specificity Dr. Todd tends to revert to the old and now largely discarded philosophy of gunshot prescribing. For example, the suggested management of chronic hyperthyroidism includes cortical hormone, high carbohydrate diet, radiation of the thyroid and fluoride salts to "depress hepatic glycogenolysis." No mention whatever is made of thiouracil or its derivatives. Arterial hypertension is stated to be due largely to alimentary dysfunction and defective venous return. It is to be cured with deep breathing exercises, a low fat diet and bitter carminatives! Would that it were so simple. Furthermore, a number of previously secret lead, selenium and sulfur colloidal suspensions are recommended for intravenous administration in the treatment of cancer and the arthritides. The book is a curious mixture of sense and nonsense; sound thinking is overlaid with illogical faddism and downright wishful thinking. It makes entertaining and sometimes amusing reading for the critical reader but, like Dr. Todd's other recent book, "Medical Aspects of Growing Old" (*J.A.M.A.* 135: 433 [Nov. 15] 1947), it is so unsound that it cannot be recommended.

Radio Manual: A Guide to Broadcasting for Mouth Health Education. "Prevention Through Education." Cloth. Price, $4. Pp. 320. Oral Hygiene Committee of Greater New York, 111 E. 56th St., New York 22, 1947.

This book is a collection of radio scripts used in the broadcasting program of the Oral Hygiene Committee of Greater New York, together with a history of the committee and a listing of its component organizations plus a section of the radio broadcasting of mouth health information. Within the narrow limitations of the subject, the broadcasts have achieved rather remarkable variety and interest in the scripts presented. Many of them, however, fail in the fundamental requirement of radio broadcasting, mainly, the necessity of broadcasting to the listener rather than merely at and for him. Information about the American Dental Association is undoubtedly important and of great interest to dentists, but it tends to leave the lay listener indifferent and disposed to tune out the program. In a number of the scripts the information is largely what the dentist would like the patient to know rather than what the patient would like the dentist to tell him.

Doctor Freud: An Analysis and a Warning. By Emil Ludwig. Cloth. Price, $3. Pp. 317. Hellman, Williams & Co., 5 Beekman St., New York 7, 1947.

In this biography Mr. Ludwig is entirely out of his field. What he has produced is not a competent biography but a parade of uninformed prejudices. Compared with other recent works that attempt to present an adequate consideration of Freud's contribution to modern psychiatry and psychology, this book is infantile.

The Endeavour of Jean Fernel with a List of the Editions of His Writings. By Sir Charles Sherrington, O.M. Cloth. Price, $3.50. Pp. 223, with 27 illustrations. Cambridge: at the University Press; New York: the Macmillan Company, 1946.

The name Jean Fernel has a high place in medical science. This book owes its quality not only to the greatness of the subject but also to the fact that the writer is no less an authority than Sir Charles Sherrington. The book is a fine biographic evaluation supplemented by side discourses on other great persons of the period and by adequate biographic references.

The Conduct of Life Assurance Examinations. By E. M. Brockbank, M.B.E., M.D., F.R.C.P. The General Practice Series. Second edition. Cloth Price, 12s. 6d. Pp. 176. H. K. Lewis & Co., Ltd., 136 Gower St., London, W. C. 1, 1947.

Although prepared by a British author primarily for British readers, this book should be of real interest and value to general practitioners in the United States. Physicians specializing in life insurance examinations or in industrial medicine will find many helpful suggestions, based on the wide experience of the author in this particular field. This edition covers the more recent advances in life insurance work with new material and tables on tuberculosis and cancer risks, glycosuria, blood pressure and expectation of life. The text is divided into two sections, the first of which deals with the routine examination and completion of the medical report form, while the second section suggests some of the guiding principles in the examination and possible acceptance of so-called "impaired lives," or substandard risks.

The author is an authority on the heart and cardiovascular system in general. Another book of his, "Diagnosis and Treatment of Heart Disease," already has appeared in a sixth edition. It is not surprising, therefore, that the chapters on the cardiovascular system in his book on life insurance medical examinations are among the most valuable and significant. The book has a well organized table of contents covering all twenty-six chapters of the two sections, a brief list of general references and an index of subjects. Although a few minor typographic errors are present in the text, the material on the whole is well prepared and printed.

The Gifted Child Grows Up: Twenty-Five Years' Follow-Up of a Superior Group. By Lewis M. Terman and Melita H. Oden, in association with Nancy Bayley, Helen Marshall, Quinn McNemar and Ellen B. Sullivan. Volume IV, Genetic Studies of Genius. Edited by Lewis M. Terman. Cloth. Price, $6. Pp. 448. Stanford University Press, Stanford, Calif.; Oxford University Press, Amen House, Warwick Square; London, E. C. 4, England, 1947.

This is the fourth volume in Professor Terman's magnificent study of the gifted child that has now moved into a second generation. He follows his children with high intelligence quotients into their occupations, their family life and their social and political attitudes. In the field of study comprehended by this work, there is no more important research.

Chronic Structural Low Backache Due to Low-Back Structural Derangement. By R.A. Roberts, B. Sc., M.B., Ch. B. Cloth. Price, 45s. Pp. 105, with 137 illustrations. H.K. Lewis & Co., Ltd., 136 Gower St., London, W.C. 1, 1947.

This book represents keen observations and intensive study on a subject that involves a small, though important, part of the body. The author discusses spondylolisthesis and its associated pathologic changes, i. e., neurovascular and visceral symptoms and defects of ossification. Since most of the present writings by gynecologists, urologists, abdominal surgeons, internists and psychiatrists pay little attention either to the pain of spinal origin which may simulate visceral pain or to the neurovascular symptoms which can arise through sympathetic nerve irritation by skeletal lesions, the author believes that there is a need for a radical reassessment of differential diagnoses. In the vast majority of these variations in structure, there is little or no consequent weakening of the skeletal architecture.

The pars interarticularis is situated between the superior and inferior articular processes. Laterally it joins the base of the transverse process. It is only on the neural canal aspect that it is continuous with the pedicle and lamina.

In the lumbar spine of the human being it is the narrowest and most delicate part of the neural arch, its cross sectional area being less than that of any other part. A nutrient artery enters either anteriorly or posteriorly. It can be termed the vital pivotal center in the architecture of the vertebra for the interaction of the powerful muscles and ligaments of this region.

Roberts's study began as an attempt to understand more clearly the roentgenologic interpretation of these defects and a search to explain the great discrepancy between the small number diagnosed in the living and the high incidence of over 1 in 20 found anatomically. The author quotes several writers on the research that has been made to explain the defects which are found in the ossification of the pars interarticularis of the vertebrae. Willis reported over 5 per cent of these defects in 1,520 skeletons; Shore 6 per cent in Bantus; Congdon 5 per cent in American aborigines; while Stewart found as many as 25 per cent in Eskimos.

The once popular diagnosis of "toxic sciatic neuritis" included all cases of ruptured intervertebral disk. There is no more justification for suspecting infection in overstrain in the lower part of the back than there is in internal derangement of the knee joint, tennis elbow or march fracture.

The diagnosis of an anxiety state as opposed to the mere presence of anxiety symptoms should be made only when anxiety symptoms are abnormally intense, and above all when they are abnormally persistent....It is wise to exercise caution before diagnosing an anxiety state unless one or all of the following signs are present: pallor, drawn face, dilatation of the pupils, flushing, sweating, tachycardia, fine tremor and consistently brisk reflexes, particularly in the arms.

Detection of the condition is neither difficult nor a sign of shrewdness. One trick in particular is fallacious, that of marking out tender spots and observing whether they change; they frequently change in patients with recognized and accepted lesions.

Two of the most generally mentioned motives are the desire to gain compensation in civilian life and the desire to escape military service. Our accusations against the unfortunate backache might have a boomerang effect, were the patient more aware of things and we not so sheltered by our privileged position. The main purpose of treatment, apart from relieving symptoms, should be to strengthen the vulnerable part of the spinal structure.

Diseases of the Joints and Rheumatism. By Kenneth Stone, D.M., M.R.C.P., Physician, B.R.C.S. Clinic for Rheumatism and Physical Treatment, Kensington. Cloth. Price, $6.50. Pp. 362, with 57 illustrations. Grune & Stratton, 381 Fourth Ave., New York 16, 1947.

The author presents a satisfactory exposition of his subject and adequate coverage of the material. The book is intended for students. The author aims to present a guide to those postgraduate students who intend to engage in the special study and practice of rheumatology. He makes a pertinent statement that efficient clinical investigation is impossible without a foundation of knowledge covering the whole field of articular disorders.

He presents his material in two parts: The first deals with disease of the joints and the second with nonarticular rheumatic diseases. He stresses the point that a painful knee is a different problem from a painful shoulder even though they both are caused by the same pathologic process.

The section on experimental fibrositis is interesting. Although it does not present anything new, it is a practical book and easy to read.

Personality in Handwriting: A Handbook of American Graphology. By Alfred O. Mendel. With a foreword by Rudolph Arnheim, Ph.D. Cloth. Price, $3.50. Pp. 375, with illustrations. Stephen Daye Press, 105 E. 24th St., New York 10, 1947.

As the author states in the foreword, "Graphology offers a dramatic example of the battle for scientific truth. Its students range from the soothsayer in the night club to the experimentalist who measures pen pressure in the laboratory .... At the present stage of graphological affairs an open minded and at the same time critical consideration of all available resources is necessary."

Mendel has produced a lucid, well written, convincing volume which takes graphology out of the realm of mysticism and presents it as a scientific approach to the understanding of human personality. The whole book is so well written and the author's style is so simple and convincing that the reader finds that this is not just a book to be read but one that may be studied with pleasure and profit. Nothing is left to the reader's imagination and the deductions and conclusions reached appear logical and are reinforced with much concrete evidence for their validity. This book is highly recommended reading for any one seriously interested in personality study.

Recent Advances in Sex and Reproductive Physiology. By J. M. Robson, M.D., D.Sc., F.R.S.E., Reader in Pharmacology, Guy's Hospital Medical School, University of London, London. With an introduction by Professor F. A. E. Crew, M.D., D.Sc., F.R.S. Third edition. Fabrikoid. Price, $5.75. Pp. 336, with 65 illustrations. The Blakiston Co., 1012 Walnut St., Philadelphia 5, 1947.

The third issue of this volume is the first to appear in seven years. During this time much has been contributed to the field of sex and reproductive physiology. The author has expertly handled this new material in its relationship with the previously developed knowledge to make a cohesive and homogeneous volume for the benefit of the specialist and student of these subjects. Only an author who has had intimate contact through his own personal researches could manage to prepare an authoritative, readable book without being led astray by the confusing mass of data available in the literature. The author is well qualified to fulfil these requirements.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST

CAUSE OF SUDDEN DEATH

To the Editor:—The following are reports of a patient who dropped dead July 31, 1947 while at work in the mines. He had been employed as a miner for thirty-one years. The coroner's report showed that death was caused by coronary thrombosis (no postmortem examination was performed at this time). His family had an autopsy performed and a roentgenogram taken one day later, reports of which follow:

Body: The body was that of a middle aged man, moderately obese. There was no external evidence of injury or disease. The body had been embalmed. Head: not opened. Thorax-Heart: The heart was distinctly but moderately enlarged. All chambers were *involved in this hypertrophy*, and the relative variation was not great. The valves showed no significant *pathology until* the aortic was reached; there was an extreme degree of distortion, sclerosis and calcification. At that time the clinical lesion was stenosis, but the heart had been embalmed for twenty-four hours. The orifices of the coronary arteries were open, and there was no great damage to the ascending aorta. There was moderate sclerosis throughout both coronaries and the anterior branch of the left coronary contained calcified plaques, but no actual occlusion was seen, nor was there any evidence in the heart muscle. Lungs: Both lungs were tightly adherent to the chest wall and could be freed only with difficulty. The upper lobes were studded with small black fibrotic nodules. On both sides there were large areas of fibrosis and exogenous deposits. A major portion of the lung showed the same black pigmentation. The autopsy observations were in accord with the roentgen diagnosis, that is, a third degree pneumoconiosis (anthracosis). Abdomen: The gastrointestinal tract was negative. The liver and spleen showed no distinct pathologic process. There was no passive congestion of the kidneys, and all the organs showed some excessive fat deposits, but this was by no means extreme. Anatomic diagnosis: The anatomic diagnosis was third degree anthracosilicosis, aortic *stenosis* with cardiac hypertrophy and coronary insufficiency. Acute cardiac failure, the precise mechanism being uncertain, was the cause of death.

The roentgenologic report was as follows: Roentgenologic exposure of the chest made approximately one day after death revealed both pulmonary fields to be collapsed. There appeared to be a third degree pneumonoconiosis throughout the collapsed pulmonary field. The shadow of the heart was not well outlined. What are the probable secondary and primary causes of death? Is the heart condition secondary to the anthracosilicosis in the lungs, and do not the lymphatics cause a precipitation of cholesterol and calcium?

M.D., Pennsylvania.

ANSWER.--This reply is governed by the desire to avoid finite diagnostic conclusions. Major cardiovascular involvement is not a prominent feature of silicosis. The proceedings of the fourth Saranac Laboratory Symposium on Silicosis contains this item: "caution should be exercised in reporting causal relationships between the pulmonary fibrosis and disease of the heart since so many silicotics die in the age periods when disease of the heart and arteries are usual." In the immediate situation no precise proof is furnished that exposure to siliceous dusts occurred, but it is recognized that in the geographic area involved such exposure may have been provided. The record as furnished includes the diagnostic note, "third degree pneumonoconiosis (anthracosis)." It is not granted that any such entity exists, but the term, third degree frequently is associated with silicosis including anthrasilicosis. Roentgen films of completely collapsed lungs after embalming scarcely afford opportunity to distinguish between the several stages of silicosis. In those instances in which cardiac hypertrophy is believed to derive from pulmonary silicosis, expectations are for right-sided preponderance, which appears not to be the case in this instance. Death of this person took place "while at work." Silicosis of such severity as to make death from silicosis a major factor would have been accompanied by manifestations likely to have prevented work. Sudden death from silicosis is not expectable. It appears probable that some degree of silicosis did exist. Any uncertainty concerning this could have been cleared up by *microscopic tissue examination. Even if* the characteristic features of silicosis were established, such evidence in itself provides no assurance that this contributed to the cardiac state or caused the death of the miner. Anthracosis alone is of universal occurrence among miners and commonly represents benign pneumonoconiosis without significance. The record provides inclination to accept cardiovascular disease as the essential item in the cause of death. Any precise influence by the probably coexisting anthrasilicosis is unproved. Any *association on a causal basis may reach into* speculation.

SUBSTERNAL PAIN

To the Editor:--(1) If a smoker with angina on effort with only occasional and mild attacks, and with normal physical, fluoroscopic and electrocardiographic observations stops smoking and his "attacks" disappear entirely, what is his prognosis as far as life expectancy is concerned? Am I right in telling him that his spells were just angiospasms, without organic substratum, and that his prognosis is that of a healthy nonsmoker? What are the statistics relative to this problem? (2) In many cases of occasional mild substernal discomfort without any pathologic signs on the most careful physical, roentgenologic and electrocardiographic examination, I find that the substernal pressure appears only at times and that otherwise the patient may perform any amount of exercise, after a sleepless night and a heavy meal, and yet have no signs of myocardial anoxemia or any subjective complaints. Moreover, some of my patients tell me that in order to find out "how much the heart can take" they perform extremely heavy gymnastics without difficulty. However, one of these patients was told by a prominant consultant that he really has coronary insufficiency: "One discomfort in a year makes the diagnosis certain." He then insisted on another cardiologist, incidentally not less prominent; nevertheless, this time the opinion was as follows: "In case of organic substratum your patient would have always his attacks as soon as the same amount of exertion would be performed in the same conditions (heavy meal, etc.)." Who is right? (3) Are there any proved cases of persons who died from typical coronary attacks with negative anatomic pathologic observations? (4) Is seafood cholesterol-poor?

M.D., New York.

ANSWER.--1. It has long been recognized clinically that there appears to be little causal or temporal relationship between smoking and true angina of effort. Contrarily, there is a more apparent connection between tobacco and functional disorders of the heart associated with atypical chest pain which may radiate to the upper extremities, and, frequently, other constitutional symptoms attributable to the tobacco. Nevertheless, in patients with coronary artery disease the use of tobacco may precipitate or aggravate angina of effort, and abstinence from tobacco may bring about an amelioration of pain. The literature also provides a smaller number of illustrations of the permanent relief of angina of effort following withdrawal of tobacco in patients who were never demonstrated to have coronary artery disease. Many practicing cardiologists in their experience have been impressed by the relief of apparent angina of effort following the contradiction of tobacco. Despite considerable laboratory and clinical investigation attempting to elucidate the mechanism of pain production through tobacco, the subject remains controversial. One or both of these mechanisms, singly or in combination, are thought to be operative (1) the heart is called to perform an increased amount of work because of the elevation of heart rate and blood pressure frequently caused by tobacco The need for coronary flow is therefore augmented, and relative coronary insufficiency ensues (2) Nicotine causes active coronary artery constriction by direct action on the vessels. Other factors thought to be contributory, or even solely responsible, are hyperreactivity of the blood pressure, hypersensitivity to tobacco, a direct toxic effect on the myocardium and the development of active ectopic cardiac arrhythmias.

In direct answer to the question, then, one cannot decide at the present time for or against a substratuum of organic disease. The absence of abnormal objective findings does *not* rule out coronary disease. The age of the patient may be prejudicial in one's thinking The provocative exercise test with the electrocardiogram, if [illegible]nctively abnormal, may provide the answer. [illegible]ise, one can only observe this patient for a [illegible]onger time before coming to a more definite [illegible]lusion. One must maintain a certain amount of mental reservation because of the unpredictable hazards related to coronary artery disease, if existent. What one tells the patient in such dubious diagnostic circumstances depends on one's policy in managing patients, and is to be decided by the attending physician.

2. Not every instance of substernal pain or oppression is the result of myocardial ischemia. Many other conditions must be ruled out. Both of these consultants have an element of correctness. Certainly, one attack of chest pain, if it carries with it enough of the known stigmas, can be ascribed to myocardial ischemia with or without myocardial infarction. In attempting to attribute one attack or recurrent attacks of chest pain to transitory myocardial ischemia, besides the nature and distribution of pain, the knowledge of the relationship of the onset of pain to circumstances

SYPHILIS OF CENTRAL NERVOUS SYSTEM

To the Editor:—Please advise further treatment in the following case: A man aged 45 had a positive blood Wassermann reaction December 1946, without evidence of clinical *syphilis or symptoms* therefrom. The diagnosis was substantiated in a number of laboratories and he was given penicillin. He received eight daily doses, 300,000 units per dose, making a total of 2,400,000 units; the penicillin was discontinued because of a severe generalized eruption with involvement *of* the mucous membrane, as well as the entire skin. The patient was then treated with heavy metals and arsenicals. To date he has taken about thirty-five arsenicals and about a similar number of bismuth injections. His blood Wassermann reaction continues to be strongly positive and the spinal fluid Kolmar reaction is positive with the colloidal gold reading as follows: 55532000. Physical examination and neurologic examination are still negative and the patient feels fine and continues to do heavy work each day. We recently gave him 100,000 units of penicillin in saline solution, which quickly produced a return of all sensitivity reaction. As this patient shows some activity in the central nervous system I should like your opinion as to further treatment. Is it necessary to continue with the present treatment; give him hypertherm treatment; or attempt to desensitize him to penicillin? Is streptomycin effective in syphilis of the central nervous system?

ANSWER—Additional treatment in this case hinges on the degree of activity in the central nervous system, since treatment has otherwise been reasonably adequate and there are no symptoms or signs of syphilis. Prognosis in asymptomatic syphilis of the central nervous system depends on detailed study of the spinal fluid, including cell count and Wassermann, total protein and colloidal tests. Since the results of all these tests are not given the discussion must be general and cannot be specific.

Treatment for syphilis has been definitely inadequate in this case if the involvement of the central nervous system is active. With group 1 spinal fluids (increase in cells to about 10 or 12 lymphocytes, slight increase in protein, weakly positive to negative Wassermann reaction and slight disturbance in the colloidal curve) spontaneous regression may be expected. With group

SEVERE RHEUMATOID SPONDYLITIS

To the Editor:—A severe spasm of the neck muscles accurs in a patient with advanced rheumatoid arthritis. The patient is an Italian woman aged 26 with rheumatoid arthritis involving the spine so that " there is complete bony fusion of the sacroiliac joints and of the apophysial articulations of the lumbar vertebra, but with normal x-ray findings regarding the cervical vertebrae." She has had the disease for five years, has a poker back, has lost 40 pounds (18.1 Kg.) (weighs 96 pounds [43.5 Kg.] now) and has some activity at present, as evidenced by a continuous low grade fever and a sedimentation rate of 50 mm. per hour. There is involvement of knees and fingers in addition to the spine. Her chief disability at present, however, is that the muscles in her neck are in spasm so that she has been unable to move her head in any direction (flexion, extension, rotation or any other motion) more than ½ inch (1.27 cm.) for the past four months. That this is not due to bony ankylosis is demonstrated by the fact that the roentgenograms are normal and that under anesthesia with curare (" intocostrin" N.N.R.) she was completely relaxed and the neck was flail, permitting full motion in all directions. As soon as the curare and anesthetic effects were dissipated the spasm returned and has continued to date. She has been cared for by many arthritis specialists to no avail; I have given her (over a period of time) two courses of gold therapy (a total of 1 Gm. each in divided weekly doses), physical therapy (heat, massage and liniments) acetylsalicylic acid in 30 grain (1.94 Gm.) daily doses, a series of neostigmine injections, nonspecific protein therapy and several injections of curare in an attempt to break the torticollis. She has also had general care with vitamins, proteins and iron. A course of roentgen therapy gave some benefit with regard to pain but no relief from this resistant spasm. Any suggestions will be deeply appreciated.

Franklin F. Ham, M.D., Van Nuys, Calif.

ANSWER.—Fortunately in many cases of rheumatoid spondylitis the disease affects the sacroiliac joints and apophysial joints and ligaments of the lumbar and thoracic region and " burns out" before affecting the neck. However, in some cases various structures of the neck also are affected: paravertebral joints ("facets"); paravertebral ligaments and muscles. Muscular involvement may be organic (small scattered regions of actual inflammation) or merely functional (muscular spasm secondary to adjacent inflammation in paravertebral joints). The latter possibility is presumably the basis for the symptoms of the patient in question. Mild degrees of inflammation in apophysial joints cannot be excluded entirely, since roentgenographic evidence of destructive articular changes is only apparent when significant destruction of cartilage or subchondral bone or both has occurred. Unfortunately, when rheumatoid spondylitis severely involves the cervical region, it is often refractory (at least temporarily) to nearly all therapeutic efforts. In most instances passage of time and control of the systemic disease result in subsidence of the symptoms.

Therapeutic efforts to relieve symptoms should be both local and general or systemic. Some suggestions are as follows: 1. Relieve pain temporarily by giving other analgesics or increasing the dose of acetylsalicylic acid. Patients often tolerate 60 to 80 grains (4 to 5.3 Gm.) daily of this or other salicylate analgesics and are thereby more comfortable. 2. For local mechanical support apply a plaster cervical collar extending downward from the chin anteriorly and the occiput posteriorly to cover the top of the shoulders. Irritation of inflamed regions may be notably decreased thereby. The support may be worn from three to twelve weeks or longer if desired. Subsequently a leather or other removable type of cervical collar may be used, and thus maintenance of as nearly normal range of motion as is possible in any particular case is permitted. 3. Further trial of roentgen therapy to the spinal column may be advisable since " some benefit" was noted from its use. Whether full advantage has been taken of this treatment for control of rheumatoid spondylitis, both locally and generally, should be determined by reviewing the amount and type of roentgen therapy given. In a recent paper R.H. Freyberg *(M. Clin. North America* 30: 603 [May] 1946) summarized the usual extent of such treatment. 4. Physical medicine should be employed in order to obtain as nearly normal range of motion and to prevent deformity as much as possible, even though the immediate results (symptomatically) of such treatment may not be as great as might be desired. 5. General measures should be used to improve the patient's resistance against ravages of the disease. More than the normal hours of rest in bed are needed to prevent muscular and nervous fatigue and a consequent increase in symptoms. This is especially important when progression of the disease is difficult to control. In some instances complete rest in bed for several weeks may be advisable. The patient with rheumatoid spondylitis should lie on the back and sleep without pillows on a firm, supported and nonsagging mattress.

STERILITY IN THE MALE

To the Editor:—In The Journal of Nov. 15, 1947, page 746, the answer to a query concerning sterility in a male makes no mention of the value of the follicle-stimulating hormone test *(J. Clin. Endocrinol. 3:529, 1943)*. The patient under discussion had gynecomastia, small testes and azoospermia. In such a patient determination of the urinary excretion of follicle stimulating hormone is necessary to determine whether the lesion is of pituitary or testicular origin. If the excretion of follicle stimulating hormone is increased, the primary lesion is in the testis and further stimulation with a tropic hormone would be of no benefit. If such excretion is normal, the azoospermia is not of endocrine origin. If the excretion is decreased, the primary lesion is in the pituitary. Only in the last eventuality would treatment with a tropic hormone be indicated. Unfortunately, no such hormones are of proved value in stimulating spermatogenesis in man, and they may even be detrimental because of antihormone formation.

Harry F. Klinefelter Jr., Baltimore 2.

VITAMIN C IN RHEUMATIC FEVER

To the Editor:—Please give references concerning use of ascorbic acid (1000 mg. intravenously two or three times weekly) in rheumatic fever. This has been advocated for a college student who had rheumatic fever " several years ago." At present signs of reactive infection are absent. What is the rationale of this treatment, its contraindications, and the dangers?

ANSWER—Ten or more years ago Rinehart and associates published papers (Rinehart, J.F.; Connor, C.L., and Mettier, S.R.: Further Observations on Pathologic Similarities Between Experimental Scurvy Combined with Infection and Rheumatic Fever, *J. Exper. Med.* 59:97 [Jan.] 1934) on vitamin C deficiency as a possible factor in rheumatic fever. In their experimental animals a combination of injection and vitamin C deficiency produced lesions similar in type and distribution to those of rheumatic fever. Other pathologists in reviewing this material were less impressed by the similarity.

In the light of this experimental work Faulkner (Faulkner, J. M.: The Effect of Administration of Vitamin C on the Reticulocytes in Certain Infectious Diseases, *New England J. M.* 213:19 [July 4] 1935) studied the effect of large doses of vitamin C (200 to 300 mg. per day) in 27 patients with rheumatic fever and observed no influence on the course of the disease.

The present belief is that adequate doses of vitamin C are as essential in the diet of patients with rheumatic fever as in any other acute or subacute disease, but that massive doses above the normal requirements have no specific effects.

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SURGICAL AND RADIATION THERAPY FOR CARCINOMA OF THE CERVIX

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and
LEON J. MENVILLE, M. D.
New Orleans

The added safety of radical surgical treatment for carcinoma of the cervix, and the recent proposals urging its more extensive use, have made it necessary that the respective merits of methods of controlling the disease be subjected to analysis. Despite their limitations, both radical surgical treatment and radiation therapy have progressively established their value over the course of the last forty years, and sufficient data have accumulated to permit definition of the most promising therapeutic policy by objective consideration of the evidence. In the present report the salient factors bearing on this question will be reviewed.

A satisfactory plan of treatment must be based on knowledge of the pathology of the disease and of its paths of dissemination. A number of studies on autopsy and surgical material have enabled us to specify minimum requirements for a satisfactory plan of treatment (Kundrat, Baisch, Pankow, Martzloff, Pearson, Warren). It has been shown that uremia, general exhaustion, hemorrhage, intestinal obstruction and sepsis are the principal causes of death among untreated as well as treated patients, the anatomic mechanism and clinical background for each of these lethal factors must be sought in the study of patients, and proper corrective measures instituted. Since the disease is almost exclusively confined to the pelvis, the therapeutic effort should be directed to the extirpation or destruction of carcinoma in the uterus itself, the vagina, the parametrium and the group of pelvic nodes referred to as nodes of the first stage; these include the ureteric, obturator, hypogastric, principal node (Leveuf and Godard) and common iliac nodes. These requirements are satisfied by radical abdominal hysterectomy of the type proposed by Emil Ries or by combined intracavitary radium therapy and external roentgen therapy. The radical hysterectomies practiced by Wertheim and by Schauta and their followers have a lesser scope but have proved rather successful in the control of the disease. Occasional cures have been reported after cauterization of the local tumor, simple amputation of the cervix and total hysterectomy either by the abdominal or the vaginal route, but none of these procedures can be given serious consideration in a discussion of effective therapeutic measures, unless supplemented by rather thorough irradiation.

Survival for five years without evidence of the disease is the accepted criterion for assessing the efficacy of methods of treating cancer. Yet there has been repeated infraction of this rule in recent publications urging major changes in policies of treatment. Shorter periods of observation do not permit reliable conclusions as to the permanency of control, while in longer periods the effect of extraneous factors becomes significant. Thus deaths from intercurrent disease and loss of patients from observation cast too great an influence on the relation between the number of patients treated and those known to be well, if the chosen period is unduly long. Since carcinoma of the cervix presents many clinical variations, a great deal of deliberate or involuntary selection is practiced. This has necessitated that statistical evaluation of results be performed only under rather stringent rules. Those proposed by Winter early gained wide acceptance, and similar ones were adopted by the Radiologic Sub-Committee of the League of Nations. Unless otherwise specified, the absolute salvage rate will be used in all our comparisons. By this is meant the proportion of patients alive and well at the end of five years out of the entire number of applicants, whether treated or not. The absolute salvage rate of a clinic is indicative of its minimum achievement and is considered the only reliable means of comparing the work of different institutions or different methods of treatment. However, inequalities in the initial clinical material persist—that is, the proportion of cases of

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Read before the Section on Radiology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

From the Department of Radiology, Charity Hospital of Louisiana at New Orleans and the Tulane University of Louisiana School of Medicine.

Because of lack of space this article has been abbreviated in THE JOURNAL by omission of the bibilography. The complete paper will be found in the authors' reprints, which the authors will be pleased to send on request.

advanced disease varies in different institutions. For this reason several schemes have been proposed for classifying the cases on admission. Of these the League of Nations classification is the one most widely employed and will be used exclusively in our tabulations.

The historical evolution of treatment has been traced in valuable papers by Schmitz, O'Brien and others, and the topic will not be rehearsed here. Progress in the results of treatment for carcinoma of the cervix is well illustrated by the experience at Mayer's clinic, in Tübingen, which is typical of many others. The data (given by Reichenmiller) have been expressed graphically in charts 1 and 2.

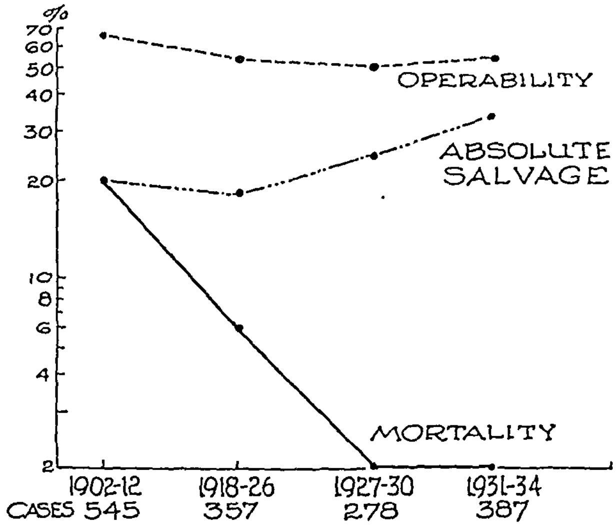

Chart 1.—Progress in the treatment of carcinoma of the cervix (Mayer, Tübingen, 1902-1934).

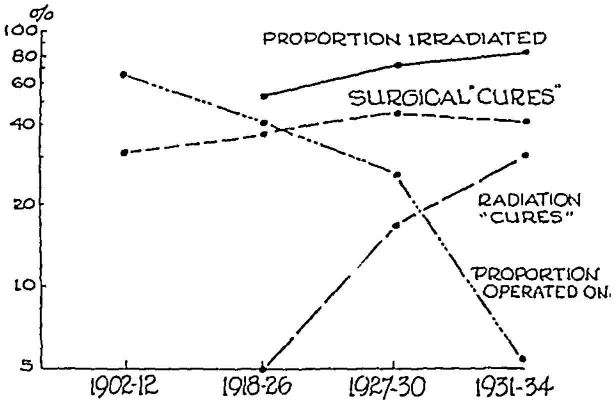

Chart 2.—Trend in the therapy of carcinoma of the cervix.

It can be seen that the quality of the clinical material, as shown by the operability rate, has, if anything, deteriorated. Still, there has been a sharp rise in the absolute cure rate simultaneous with a decided drop in the mortality from treatment. Chart 2 exemplifies the general trend of treatment until recent years. There has been a gradual increase in the proportion of irradiated patients with a reciprocal decline in the proportion of those submitted to radical surgical treatments. The salvage in the surgical group has remained unchanged since the early part of the century, while the radiation salvage has shown progressive improvement. Nevertheless, many gynecologists have continued to practice the operative treatment, and have maintained it at a high level of efficiency.

Table 1.—*Results of Radical Surgical Therapy for Carcinoma of the Cervix*

A. Abdominal Hysterectomy		Period	Total No. of Patients	Operability Percentage	Operative Mortality, Percentage	Absolute Salvage Percentage
1929	Wertheim-Weibel	1898-1921	2,201	58	16	17
1921	Zweifel-Schweitzer	1910-1915	113	75	8	28
1930	Von Jaschke	1919-1925	130	59	5	23
1922	Hoffmeier (Gasdoulschmitt)	1910-1916	213	59	15	21
1917	Döderlein	1908-1912	265	67	19	21
1929	Mayer	1902-1912	545	53	20	20
1941	Bonney (private patients)	1907-1936	790 (est.)	"62"	14	25 (est.)
1920	Graves		181	65	5	18
1929	Kermauner	1916-1923	976	65	11	26
1929	Stoeckel (Clauberg)	1910-1916	350	69	19	27
1919	Bumm (Schäfer)	1911-1913	234	77	12	29
1918	Franz	1904-1907 1910-1912	263	81	19	28
	Total	(1898-1936)	6,591	58	15	22
1932	Bonney (Private Patients)	1907-1927	133	82	9	31
B. Vaginal hysterectomy (Schauta)						
1930	Peham & Amreich	1901-1920	1,787	56	6	19
	Total		8,374	56	13	21

SURGICAL THERAPY

Radical surgical therapy for carcinoma of the cervix has been used with three objectives in view: (1) as the sole method of treatment, in which case from 50 to 80 per cent of the patients are subjected to operation; (2) as a means of treating the more favorable cases, so that from 20 to 50 per cent of the patients are operated on, and (3) as a supplement to radiation for the earliest stages, when only 10 per cent or less of the patients are operated on. The distinction is important because the operative mortality and the recovery rates are quite different. Table 1 shows what the ablest surgeons of the world have accomplished when the operation is given its widest possible scope. This record of success must be acknowledged as one of the great achievements in the surgical therapy of cancer. Even so there are no longer any proponents of the exclusive use of surgical therapy. Instead, the aim has been to afford each patient the maximum opportunity for recovery with minimum primary risk: in favorable cases, averaging one third of the material, the patients are operated on and often irradiated too, while the rest are treated by radiation alone. This plan has been called "elective therapy" by Stoeckel and appears to be widely practiced in Central Europe. Table 2 demonstrates that "elective therapy" gives significantly better results than those obtained during the strictly surgical era. The modern surgeon, conscious that the patients whom he rejects are not necessarily doomed, can set up extremely rigid criteria for his operative cases. He can exclude all patients on the borderline of operability, the ones who have systemic complications that increase the risk of operation, and also the feeble, the aged and the obese.

If to this careful selection is added perfection of surgical technic, and the advantages of general surgical progress, in the way of improved anesthesia, antibiotics and transfusion and other supportive measures, it is not surprising that the surgeon of sound judgment and good training has every right to practice the operation, confident that his patients run a negligible risk. The control of shock and sepsis and the more restricted selection of patients have made possible the reduced operative mortality rates shown in table 3. There has been a corresponding decrease in the incidence of serious surgical complications. The incidence of urinary fistulas ranges between 2.9 and 12 per cent. Some of these heal spontaneously; others require nephrectomy, and still others can be successfully repaired at the cost of a small mortality. Rectal fistulas are less frequent but more serious. Other complications include infection of the urinary tract, the pelvis and the surgical wound. Bonney reported 4 late deaths (1 per cent) as a consequence of operative sequels. An unavoidable disadvantage of surgical therapy is the removal of part or all of the vagina, which makes marital relations difficult or impossible.

TABLE 2.—*Best Results of "Elective Therapy"*

	Period	Total No. of Cases	Percentage Operated on	Absolute Salvage Percentage
Stoeckel (Lauterwein)	1937	253	36	42
Martius	1926-1936	736	13	37
Stoeckel (Schilling)	1923-1926	465	40	37
Knaus and Wolfram	1935-1936	373	34	35
Lynch (Morton)	1931-1938	264	8	35
Bumm (Philipp)	1923-1925	484	27	34
Schroeder	1927-1930	327	50	34
Van Roy (Plate)	1923-1934	357	27	33
Warnekros (Burkhardt)	1925-1929	473	16	32
Mikulicz-Radecki	1932-1935	307	38	29
Esch (Goecke)	1925-1933	263	10	29
Schlinck and Chapman	1930-1937	258	43	29
Stoeckel (Caffier)	1926-1932	1,314	30	29
Von Peham	1926-1928	244	54	27
Chydenius	1926-1930	226	11	26
Wolfram	1932-1934	447	30	24
Totals	1923-1938	6,791	29	32

TABLE 3. - *Improved Mortality of Radical Surgical Therapy*

		Operations	Mortality Percentage
1929	Weibel-Wertheim	500	9.0
1932	Bumm (Philipp)	131	8.4
1939	Werner	152	7.9
1933	Stoeckel (Schilling)	185	7.0
1934	Stoeckel (Philipp)	109	6.4
1937	Schroeder	329	6.1
1938	Mikulicz-Radecki	159	4.4
1932	Süssmann	526	4.2
1944	Schlinck and Chapman	112	3.6
1941	Knaus	330	1.5
1945	Meigs	65	0
	Total	2,598	5.6
	Stage 1 Cases		
1934, 1944	Taussig (Emmert and Clarke)	106	8.5
1942	Faure	32	3.1
1943	Jones and Jones	36	2.8
1944	Lynch (Morton)	78	2.6
1938	Martius (Erichsen)	41	2.4
1942	Martius and Kepp	54	1.9
1941	Knaus	147	1.4
	Total	494	3.4

Distribution of Recurrences.—According to Bonney, reactivation of the disease following surgical treatment may occur in the pelvis or in distant areas. Among his 430 operative survivors there were 193 recurrences, an incidence of 45 per cent within five years. Three fourths of the recurrences appeared within the pelvis and the balance in distant regions. More specifically, the operative survivors had local recurrences in the vagina, rectum or bladder in 11 per cent; in the soft tissues and bones of the pelvic wall in 22 per cent; in the abdomen and spine, in 8 per cent; in the lungs, in 2 per cent and in other areas in 1 per cent. It is thus seen that failure to control the disease surgically occurs in one third of the operative survivors as a result of renewed activity within the pelvis. Furthermore, 65 per cent of all the recurrences appeared within two years. Schweitzer, Mayer and Weibel reported that 83 to 85 per cent of the recurrences show up within three years. A smaller number of recurrences continue to appear up to the tenth year, and Weibel discovered one sixteen years after operation.

Factors Influencing Recovery.—An effort has been made to correlate the histologic grade of the tumor with the chance for recovery, but observations on this point conflict. Martzloff and Broders showed a definite decline in the recovery rates as the neoplasm becomes more anaplastic. In an analysis of 254 cases Kamnicker could ascribe no prognostic significance to the degree of ripeness of the tumor when the Schauta operation was performed, whether it was used alone or in combination with radiation therapy. A similar conclusion must be derived from the material analyzed by Philipp (52 cases), though in an earlier report he stated that 8 out of 10 patients with low grade tumors without nodes remained well for five years. The age of the patient has been found significant in relation to the operative mortality. Franz had 6 operative deaths among 12 women past 60, none of whom survived five years. Fourteen who were less than 30 years of age had no surgical mortality, and 8 remained well five years. Clauberg reported 31 per cent five year salvage in 51 women past 55 as compared with 50 per cent in 109 younger women. Schweitzer confirmed the inferior results in the advanced age groups, but pointed out that no patient less than 30 years of age remained well for five years. Weibel in an analysis of one thousand operations reported no correlation between the incidence of recurrence and the age of the patient.

The clinical and anatomic extent of the disease affect recovery. Weibel and Kermauner classified their cases after operation into four groups, according to the extent of involvement of the pelvic structures. In the first and second groups were incipient and extensive lesions of the cervix, respectively; in the third, involvement of the parametrium or the pelvic nodes was noted; in the fourth, there was fixation to other structures, making dissection difficult and in some instances requiring resection of the bladder, ureter or rectum. The recovery rates in the combined material were as follows: group A, 206 cases, 62 per cent; group B, 700 cases, 50 per cent; group C, 548 cases, 25 per cent; group D, 167 cases, 11 per cent. Weibel had only 1 recovery among 38 patients requiring some form of resection. Bonney considered invasion of the bladder incurable by surgical treatment and expressed the belief that resection of the bladder is useless. On the other hand, 5 recovered out of 13 in whom he performed grafting of the ureter. According to Martzloff and to Norton microscopic proof of parametrial invasion is a sign of incurability. Extension of the disease beyond the cervix not only impairs the chance for recovery but also increases the immediate mortality. Thus, the mortality was 10 per cent in groups A and B and 20 per cent in groups C and D. A correlation can be established also between the chance for survival and the extent of the disease determined by clinical examination. The following recovery rates were obtained by combining material reported by Schilling, Schroeder, Lauterwein and Caffier: stage 1, 115 cases, 68 per cent; stage 2, 324 cases, 42 per cent; stage 3, 84 cases, 33 per cent. (Compare with radiation results in table 11).

TABLE 4. – *Microscopically Proved Pelvic Node Metastasis And Its Influence On The Surgical Results*

		Cases With Metastases	Well 5 Yr. Percentage	Cases Without Metastases	Well 5 Yr. Percentage	Incidence of Metastes Percentage
1929	Weibel	214	9	786	40	21
1921	Zweifel (Schweitzer)	53	9	190	60	30
1932	Bumm (Philipp)	26	15	191	60	12
1906	Ries	6	(67)	2	(100)	(75)
1941	Bonney	200	21	300	53	40
1941	Winterton-Windeyer	18	22	46	41	28
	Totals	517	15	1,515	51	25
Primary Mortality		19 (438 Cases)		14 (1,134 Cases)		

Metastasis to Pelvic Nodes.--Table 4 exhibits some of the factual data available on the relationship of recovery and carcinomatous involvement of the pelvic nodes.

Whereas half the patients without metastasis remained well five years after surgical treatment, only less than one sixth of those with microscopic proof of metastasis in the nodes recovered. In addition, the presence of metastasis increased the operative risk. This has made some operators abandon routine dissection of the pelvic nodes, which seems to be an error, since dissection has been shown to improve the salvage significantly by about 5 per cent.

Preoperative and Postoperative Irradiation.-Many surgeons have combined roentgen and radium therapy with operation, hoping to improve the results. Adler is convinced of its worth and reported 59 per cent salvage when the Schauta operation is combined with moderate irradiation, as compared with 42 per cent when the operation alone is done. Mayer, Zweifel and others have advocated the combined treatment. In 1934 Lacassagne pointed out that the amounts of radiation employed in combination with surgical treatment were considerably below the doses that could be expected to have a lethal effect on residual cancer cells. He objected that adequate therapy by radiation would be handicapped if recurrences appeared later. This line of reasoning has been repeatedly employed in connection with postoperative therapy in other sites, as a substitute for consideration of the actual facts. The facts prove the value of combined treatment beyond any reasonable doubt. Schinz in 1936 made an analysis of the results reported by ten clinics. His findings were as follows:

Operation	Operation and Radiation
337 patients well out of 882	446 patients well out of 807
Recovery rate 41.0 ± 1.7%	Recovery rate 55.5 ± 1.8%

Difference 14.3 ± 3.66%

The observed difference is nearly four times the standard error, a deviation that could be ascribed to chance only once in a thousand trials. Hence it is proper to conclude that when radiation is added to surgical therapy the results are decisively improved. We have been able to collect the following corroborative evidence:

	Surgical Treatment	Surgical Treatment and Radiation
Masson	221 cases, 40%	217 cases, 56%
Stage 2 (collected cases)	374 cases, 39%	228 cases, 53%
Stage 3 (collected cases)	117 cases, 26%	94 cases, 33%

The stage 2 and 3 cases were collected from authors listed in table 12. The chi square test indicates that the results are significantly improved by radiation in stage 2 and in Masson's cases; the stage 3 cases are in groups too small to yield reliable conclusions.

Lynch and Martzloff have emphasized an additional advantage of preliminary irradiation. Its healing effect reduces infection, and the risk of peritonitis at operation is thereby minimized.

RADIATION THERAPY

As indicated in table 5, irradiation first established its value as a palliative agent in the treatment of advanced disease. In this respect it remains unrivaled and unchallenged today. Not only are symptoms relieved but life is prolonged, as attested by comparison of the survival curves of treated and untreated patients in chart 3. Of greater importance of course is the ability of radiation therapy to produce definitive cures. Between 1908 and 1915 several clinics turned to the exclusive use of radiation therapy, and the success achieved with this safer method (table 6) prompted a nearly complete replacement of radical surgical treatment. Improvements in technic have brought about further gains in the absolute salvage as demonstrated in table 7.

TABLE 5.--*Palliative Effects of Radiation Therapy in 375 Inoperable Cases* *

	No. of Cases	Complete Relief, Percentage	For Over a Year, Percentage	Unimproved, Percentage
Bleeding	342	90	35	7
Discharge	336	60	46	15
Pain	234	53	40	28
Rendered fit for work	231	62	45	38

* Heyman, 1927.

TABLE 6.--*Earlier Results of Radiation Therapy For Carcinoma of the Cervix*

	Period	No. of Cases	Absolute Salvage Percentage
Burnam, Baltimore	1911-1927	1578	17
Döderlein, Munich	1913-1929	2202	18
Eymer, Heildelberg	1913-1928	623	24
Heyman, Stockholm	1914-1931	2104	22
Schmitz, Chicago	1914-1927	488	19
Healy, New York	1915-1925	1574	23
Masson (Mayo Clinic) Rochester	1915-1933	2147	26
Wintz, Erlangen	1916-1932	1539	19
TOTAL	1910-1933	12,255	21

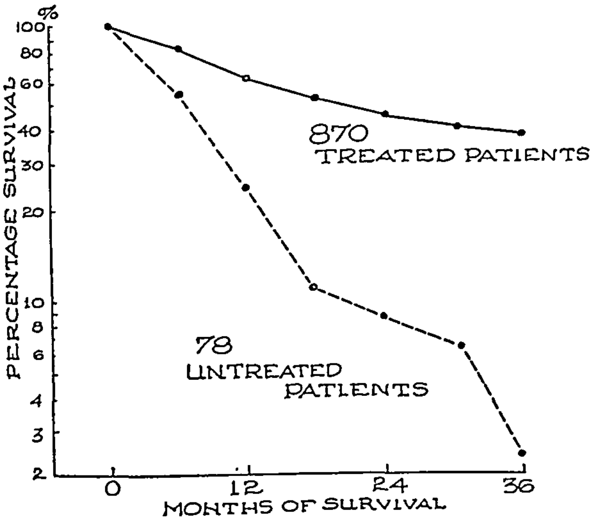

Chart 3.--Carcinoma of the cervix; survival curve, Charity Hospital of Louisiana at New Orleans, 1938-1944.

Mortality.--The principal risk of radiotherapy is exacerbation of sepsis, which may become severe enough to terminate fatally. Other factors related to treatment are exhaustion and embolism. Table 8 illustrates the range of mortality reported in the literature. As in the case of surgical therapy, the mortality is dependent to a large extent on the manner in which treatment is executed. Clinics where excochleation or cauterization of the cervical tumor is practiced routinely report rather high primary mortalities. Feeble and aged patients with intercurrent disease may die of exhaustion if the treatment is carried too aggressively. This has been pointed out by Morton in connection with roentgen therapy. That radiation therapy can be carried out with perfect safety is demonstrated by the report of Waterman and DiLeone, who had 353 consecutive cases without a death.

TABLE 7.—*Results of Modern Radiation Therapy*

		Period	Total No.	Absolute Salvage Percentage
1941	Maisin	1924-1933	440	38
1944	Heyman	1934-1938	1,287	36
1943	Eymer (Ries)	1934-1937	959	36
1941	Hurdon	1925-1933	813	35
1943	Gauss	1924-1937	753	34
1944	Hultberg	1927-1937	378	34
1941	Ward	1929-1933	214	33
1941	Schreiner	1931-1933	449	32
1941	Lacassagne	1929-1933	798	31
1942	Mayer	1931-1934	360	31
1941	Chiewitz	1931-1933	605	30
1941	Healy	1931-1933	422	25
	Total	1924-1938	7,528	33

Morbidity and Sequels.—Immediate morbidity is manifested in the form of radiation sickness, exhaustion or irritative phenomena in the skin, the urinary and the intestinal tracts, and by flare-up of latent infection. Under skilful management these reactions are transient and rarely associated with severe discomfort. Late sequels become apparent as injuries of variable severity. They include ureteral obstruction, claimed to be due to edema or fibrosis, ulcer of the bladder, factitial proctitis, intestinal bleeding and obstruction, and fistulas of the bladder, rectum or intestine; in addition in less than 1 per cent of the cases fractures of the femur or of

TABLE 8.—*Primary Mortality From Radiation Therapy*

	No. of Cases	Deaths	Percentage Mortality
Schroeder, stage 1-2	51	2	3.9
Schroeder; stage 3	202	18	8.9
Caffier	101	8	7.9
Caffier	804	6	0.7
Morton (roentgen therapy)	374	18	4.8
Mikulicz-Radecki	301	9	3.0
Dietel	540	14	2.6
Dietel	120	1	0.8
Heyman	1,017	19	1.9
Ward	626	10	1.6
Regaud	600	9	1.5
Hurdon	1,249	18	1.4
Bowing	981	11	1.1
Eymer and Ries	232	2	0.9
Smith and Dresser	549	5	0.9
Voltz	504	3	0.7
Waterman and DiLeone	353	0	0
Total	8,504	153	1.8

the pelvic bones develop. The most frequent complication is fistulous formation, which arises in the majority of instances in connection with recurrence; that is, from failure to control the disease by radiation. Healy reported 95 fistulas among 2,852 patients treated between 1916 and 1932, an incidence of 3.2 per cent. In early lesions it was 1.4 per cent, in all primary cases 2.5 per cent and in recurrent cases 6.4 per cent. Infection, repetition of treatment and the employment of interstitial foci increased the incidence. These findings were confirmed by Maliphant, who added that the average length of life following the appearance of a fistula was ten months. Recently Taylor and Twombly were forced to abandon interstitial radium therapy because of the high incidence of complications. The perfection of intracavitary radium technics has made fistulous formation from radiation itself a rare accident. Hurdon found only 2 among 700 patients treated at the Marie Curie hospital. Dietel had none among 316 patients. Factitial proctitis and ulcers of the bladder have been practically eliminated in many clinics. Dietel reported 1.26 per cent, Hurdon 2 per cent, and at Charity Hospital there was 1 per cent. In a few clinics the incidence and severity of sequels have been much greater. Smith and Dresser reported late deaths from radiation injuries in 2 per cent of their cases, but, as they declared, at least half were due to injudicious overtreatment. In addition 21 per cent of the five year survivors had complications that could be attributed to treatment. Waterman and DiLeone reported injuries to the urinary tract in 12 per cent of their cases and to the intestinal tract in 13 per cent. As pointed out by Leucutia, these discrepancies are related to the variation in the methods of treatment practiced. The following factors tend to increase the incidence of undesirable sequels: Employment of large roentgen ray fields, especially with supervoltage, giving unnecessary irradiation to the intestine, bladder and rectum; administration of the same air dose to all patients, disregarding the geometric relations in the individual case; cross firing the cervix itself with several roentgen ray fields before or after heavy radium therapy; concentrating the treatment in a brief space of time; improper distribution of radium foci; injudicious repetition of treatment, and employment of interstitial radium therapy.

Permanency of Healing.—Comparison of the results of surgical therapy and irradiation at five years discloses no reason for preferring either, but the claim has been advanced that the incidence of recurrence is greater after five years among irradiated patients. For this reason we have gathered some pertinent data in tables 9 and 10. No significant differences can be demonstrated in the absolute salvage obtained by radiation and by surgical treatment after ten years. Over the span of a decade deaths from intercurrent disease assume significance; as a consequence Paterson has suggested that the ten year rates should be computed on an actuarial basis. When this is done the risk of dying from cancer in the ten years succeeding treatment is about 75 per cent.

TABLE 9.—*Therapeutic Results at 10 Years*

		No. of Cases	Percentage Salvage
Radical Surgery			
1941 Bonney		660*	20
1932 Stoeckel		198	20
	Total	858	20
" Elective Therapy"			
1944 Schlinck and Chapman		89	27
Radiation			
1938 Ward and Sacket		359	17
1946 Paterson and others		205	22
1945 Waterman and DiLeone		309	22
1942 Hurdon		227	23
1945 Smith and Dresser		267	28
	Total	1,367	22

* Estimated from his operability rate.

Permanency of healing can be determined by the ratio of ten to five year survivors (Kimbrough and Tompkins). This ratio averages 75 per cent in cases of irradiation and is approximately the same in operative cases, though information on this point is rather incomplete. Such finding is contrary to expectation; the ratio should be significantly higher in the surgical groups. Operative patients have a better life expectancy at the time of treatment. They include a greater proportion of favorable lesions; their mean age is lower, and they are otherwise selected because of superior physical status and greater freedom from complications. All these factors should militate against equality of survival. Consequently, equal ratios mean greater success with the inherently poorer material handled by radiation. The incidence of recurrences among the five year survivors was determined by Lauritzen in a group of 222

TABLE 10.—*Permanency of Healing*

			10 Year Survivors	5 Year Survivors	Ratio (Percentage)
Radiation Therapy					
1933	Burnam		110	150	73
1933	Lauritzen		86	115	75
1938	Kimbrough and Tompkins		57	71	80
	Lynch		34	41	83
	Ward and Sackett		62	85	73
1945	Waterman and DiLeone		69	100	69
1945	Smith and Dresser		119	158	75
		Totals	537	720	75
Radical Surgery					
1929	Stoeckel (Clauberg)		39	53	74
1941	Bonney		131	167*	78
		Totals	170	220	77

χ^2 = 5.890, N = 8, P>50%

*Bonney reported 201 survivors among 500 cases followed five years. His ten year series numbered 115 cases; adjustment was made accordingly.

"cures" followed at Radiumhemmet for periods up to eighteen years. He estimated that the total chance for recurrence after the fifth year is about 12 per cent, and after the tenth year less than 5 per cent. In his series no recurrences were observed after twelve years, but isolated cases are described showing recidivation after the twentieth year.

Factors which Influence Recovery.—Of the numerous factors that have been analyzed only a few can be considered. The age of the patient has been shown to have no consistent relation to the possibility of cure. The same may be said for the grade of the tumor (Bowing and Fricke, Healy and Frazell, Jones and Jones, Wetterdal, Chambers and Gulik). Healy and Cutler and Maliphant showed better results with anaplastic tumors, whereas Glucksmann reported greater salvage in the more adult type. It is probably true that the response of tumors to radiation cannot be predicted reliably by histologic classification prior to treatment. On the other hand, the study of serial biopsies reveals important information, greater use of which will no doubt place the therapy of carcinoma of the cervix on a more rational basis. Histologic changes in the tumor during the course of irradiation have been described by Arneson and Stewart, Warren and his co-workers and others. Glucksmann has placed the analysis of serial biopsies on a quantitative basis and has found that the changes observed constitute an important prognostic aid. Recently Ruth Graham described the changes in serial vaginal smears during the course of treatment using the Papanicolaou stain. She found that the cellular changes give a good indication of the reaction to radiation in the individual tumor. It would seem, therefore, that with increased knowledge of these methods dosage could be modified to suit the individual case, and prompt recognition of the cases that will do badly with radiation may become possible.

Clinical Extent of the Disease.—All series show that the chance for recovery is inversely correlated to the extent of the disease as determined by clinical examination. Table 11 includes cases reported by Schreiner, Heyman, Hurdon, Maisin, Eymer and den Hoed. These authors have been chosen because untreated patients make up a negligible fraction of their material (less than 3 per cent for the total); hence the question of selection can be ignored. In addition a variety of technics is represented, and the individual series are large enough to exclude the distortion produced by a run of favorable or unfavorable cases. Since all these patients were treated prior to the 1937 revision of the League of Nations classification, it is likely that a similar compilation in the future will show lower rates of salvage for stages 3 and 4.

Infection.—The studies of Ducuing, Goldscheider and Garcia and Schlosser have demonstrated that infection is a frequent and serious handicap to treatment and that it significantly impairs the results. Goldscheider gave a recovery rate of 12 per cent in 341 cases with fever, whereas the rate was 52 per cent in 568 afebrile cases. The impressive results achieved in the absence of infection are illustrated in table 11. When it is realized that septic complications of importance are present in one fifth to one third of all cases, it becomes apparent that effective measures to combat infection constitute one of the essential needs.

Efficiency of Treatment.—Complete radiation therapy is not possible in all cases. Factors like infection, urinary obstruction with renal damage, severe debility, intercurrent disease, lack of cooperation on the part of the patient, extremely advanced lesions and anatomic variations like vaginal stenosis and occlusion of the cervical canal interfere with the administration of adequate treatment. These difficulties have been discussed by Lacassagne, Buschke and Cantril and others. Approximately 60 to 80 per cent of the patients seen at most clinics ordinarily receive what is considered full treatment. Naturally the patients completely treated have a better chance for recovery (table 11). The results obtained must be interpreted in the light of the degree of selection that made them possible, but they reveal nevertheless what can be accomplished when favorable circumstances prevail and constitute an inducement for overcoming the obstacles that prevent attaining the same results in all cases.

TABLE 11.—*Results of Radiation Therapy in Relation to Clinical Stage*

	Stage 1		Stage 2		Stage 3		Stage 4		Total	
A. Relative salvage	No.	%	No.	%	No.	%	No.	%	No.	%
Heyman (1934-1938)	102	67	623	46	366	24	133	10	1,224	37
Hurdon (1943)	48	83	201	59	512	33	148	8	909	37
Schreiner	32	75	77	53	186	43	152	1	447	32
Maisin	5		143	47	270	34	18	17	436	38
Eymer (Ries)	72	67	51	49	63	38	97	17	283	40
den Hoed	20	75	49	51	74	24	14	7	157	37
Totals	279	72	1,144	49	1,371	32	562	8	3,456	37
B. Afebrile cases										
Goldscheider	47	85	153	70	307	46	61	16	568	52
C. Fully treated cases										
Healy and Twombly	61	57	130	40	174	22	6	0	371	34
Paterson and others	6	83	60	52	45	38	13	8	124	44
Garcia and Menville	42	83	103	61	150	33	14	7	309	38
Dobbie	16	75	57	63	45	29	8	0	126	49

Nodes: It is impossible to obtain conclusive information on the effectiveness of radiation in the presence of metastasis to nodes, since only exploration of the pelvis before and after treatment could disclose (incompletely) the status of the nodes. Despite this difficulty it has been stated categorically that radiation cannot control metastases. But indulgence in such assertion is not vindicated by indirect evidence. The fact that some patients with proved metastases have not been cured by radiation is irrelevant; it lacks significance when one realizes that the same is true in surgical cases, and yet we have proof that a few recover after extirpation of the nodes. It has been contended also that radiation has failed in the treatment of metastases in the neck, and therefore it cannot reasonably be expected to succeed in the pelvis. This is incorrect. Anatomic circumstances permit thorough ablation of the cervical nodes without sacrificing vital structures; hence radical dissection is frequently the treatment of choice. But this does not mean that radiation is wholly ineffectual. Under suitable circumstances permanent control of histologically verified metastases has been obtained consistently enough to justify reliance on radiation therapy alone.

The salvage attained by radiation in consecutive admissions is presumptive evidence that some cases with metastases are controlled (Smith and Dresser).

In an analysis of Pankow's material, correlating clinical classification and histologic changes after operation, Taylor has pointed out that 76 per cent of stage 3 cases have microscopic evidence of carcinomatous invasion of the lateral parametrial edge or of the pelvic nodes. If one assumes that radiation cannot affect the disease in these areas the salvage in stage 3 cases should rarely exceed 24 per cent. But 1,827 stage 3 cases collected from eleven reports show a salvage averaging 38 per cent (Laborde, Wilkins, Martius and the authors in tables 7 and 11). Departure from expectation is too great to be attributed to chance ($X^2 = 22.175$; $N = 10$; $P < 2\%$). Therefore the assumption must be wrong.

Taussig performed iliac lymphadenectomy in 175 stage 2 cases and found metastases in 27 per cent. He noted a reduction in their incidence as the dosage of preoperative roentgen therapy was increased. His first 70 cases showed definitely superior results when compared with cases in which treatment was by radiation alone during the same period. But with improvements in radiation therapy the advantage has not been maintained in the cases reported later by Emmert and Clarke.

In Morton's cases in which lymphadenectomy was done metastatic nodes were found in 11 of 28 patients who had no roentgen therapy prior to operation, and in 4 of 35 patients who had preoperative roentgen therapy, despite the fact that the latter had clinically more advanced lesions. The difference is statistically significant ($X^2 = 6.65$; $P = 1\%$); consequently the preliminary irradiation has produced a definite effect, and it must be concluded that some of the metastases have been destroyed.

Failure in Early Cases.—Hultberg, Brenier, and Meigs have emphasized that early cases (clinical stage 1, at least) should have the benefit of a hysterectomy to improve the salvage. The incidence of recurrences after irradiation is said to be unduly high, and attention has been called to the presence of apparently viable cancer cells in about one fourth of the cases in which hysterectomy has been done after radium therapy. This observation must depend to a certain extent on the completeness of treatment, but is difficult to interpret in any event. The presence of apparently viable cancer cells is no proof of failure of radiation, since the subsequent behavior of such cells is unknown. The only valid manner of testing the efficacy of treatment is by the five year results. Accordingly, we have made an analysis in table 12 of the results obtained with three plans of treatment in 1,063 stage 1 cases. The possible influence of differences in classification can be excluded, since only cases treated in the same institution over the same period of years are considered. The series have been segregated into two groups, because the salvage for each method of treatment in group A is not consistent with the corresponding one in group B. Whether the groups are considered separately or together, the results of radiation therapy alone and those of the combined treatment do not differ significantly. On the other hand, the salvage in the surgical cases is significantly lower than that obtained with either one of the other two methods. While the routine performance of hysterectomy thus appears to exert no definite improvement in the results, there is no doubt that many lives could be saved if it were employed promptly in technically and clinically operable cases whenever the immediate effects of radiation prove unsatisfactory. Serial biopsies will enable us to make a more dependable evaluation for this purpose than was the case formerly, when we had to rely on clinical findings.

TABLE 12.—*Comparative Results of Surgical Treatment and Radiation, Separately and Combined, in the Treatment of Stage 1 Cases. Same Institution, Same Period of Years**

		Surgical Treatment		Radiation		Combined Treatment		Total	
Group A		No.	%	No.	%	No.	%	No.	%
1936	Chydenius	8	38	4	100	3	100	15	67
1938	Donnes	24	42			46	57	70	51
1938	Martius (Erichsen)	41	59	39	58			80	58
1943	Jones and Jones	36	42	87	58			123	53
	Total	109	48	130	58	49	59	288	55
Group B									
1936	Finlaison	29	52	10	60	21	71	60	60
1937	Schroeder	18	72	4	75		*	22	73
1942	Martius and Kepp			21	67	54	69	75	68
1942	Muller	7	71	22	68	12	75	41	71
1942	Knaus and Wolfram	13	85	20	90	67	81	100	83
1943	Stoeckel (Lauternein)	7	57	11	82	46	76	64	75
1944	Schlinck and Chapman			1		16	81	17	82
1944	Taussig (Emmert & Clarke)	41	81	27	59			68	72
1945	Smith and Dresser (1924 1938)	30	63	206	73	35	54	271	69
1938	Garcia and Menville			46	80	11	91	57	86
	Total	145	69	368	73	262	73	775	72
				t : 2.897 P< 2%					
Totals for Both Groups		254	60	498	69	311	71	1,063	68
						t : 1.348 P > 10%			

*The material is separated into two groups because tests of significance show lack of homogeneity within columns when all elements are considered together. Mean salvage discrepancies between columns was tested by Student's distribution, but only two are indicated in the table: Comparison between radiation and combined treatment in the entire material, and between surgical therapy and radiation in group B.

COMMENT

The foregoing analysis indicates that "elective therapy," the complementary use of surgical treatment and radiation, and radiation alone yield equal absolute salvage, on an average, 32 per cent at five years. Preference for either must depend on the quality of the skill available.

With scrupulous care in technical details the primary mortality and morbidity and the late sequels of either method can be reduced to a satisfactorily low level. Since this is a lethal disease, control of which requires drastic measures, a demand for complete safety is unreasonable.

The risk of failure from inadequate treatment is far more serious than the risk of injury from proper treatment. Hence a small proportion of undesirable sequels must be accepted as the price of effectiveness.

Of the two methods of treatment surgical therapy may be said to have reached the zenith of its perfection. Its best results become apparent when cases are carefully selected. Hence its influence on the absolute salvage is dependent on the composition of the material. On the other hand radiation therapy, while exhibiting the same limitations to a lesser extent, is nevertheless capable of further improvement. This need not wait for the discovery of new principles of treatment, but will issue from the general adoption of the methods shown to possess greatest merit. It must be acknowledged that efficiency in radiation therapy has lagged behind efficiency in surgical therapy. There has been an unfortunate reluctance to profit by the experience of others. We often adhere to deficient technics as a tribute to tradition or as an obligation to expediency. Contrariwise, novel departures from established practice have been undertaken as an exercise in originality with little regard for the consequences. While the trial of new methods usually leads to progress, the desire for improvement must not be allowed to sacrifice advantages already won. Testing new plans of radiation requires special caution, since injuries may not become apparent till months or years have elapsed. Awareness of the intangible factors in radiation therapy made Zweifel remark that proficiency was difficult to acquire. Much of the dissatisfaction recently expressed arises from an unwillingness to peer beyond the deceptive superficial simplicity of the method.

An analysis of the technics of radiation therapy is not possible here, but two certainly satisfy the requirements of effectiveness and safety: the Regaud and the Forsell technics of radium therapy, supplemented by external roentgen or teleradium radiation, using small fields (Paterson, Martius, Silverstone and others, Walker and Taylor). The value of these methods is further enhanced by precalculation of the tissue dose and, according to Glucksmann, by the study of serial biopsies during treatment. More careful appraisal of the individual patient, full use of supportive measures and the suppression of infection and of other obstacles to complete treatment will substantially improve the salvage.

If the worth of a method of treatment is to be judged by universality of scope, low primary risk, relative freedom from disabling complications, unsurpassed absolute salvage, permanency of control and potentialities for improvement, then review of the factual evidence establishes radiation therapy as the treatment of choice for carcinoma of the cervix. The irreplaceable value of surgical therapy today lies in its power to cure in those clinically and technically operable cases that yet remain biologically unsuitable for control by radiation therapy.

SUMMARY

In an analysis of the factual evidence on surgical and radiation therapy for carcinoma of the cervix it is shown that radiation alone and "elective therapy" yield equal absolute salvage—on an average, 32 per cent at five years. The factors that influence control are discussed. Preference for radiation therapy is expressed. It is recommended that the Forsell or the Regaud technic of radium therapy be employed with external roentgen or teleradium therapy through small fields. It is proposed that with precalculation of the tissue dose and the performance of serial biopsies truly refractory cases will be recognized. For such cases prompt resort to radical surgical treatment is urged.

ABSTRACT OF DISCUSSION

DR. KARL H. MARTZLOFF, Portland, Ore.: It is important to realize that surgery and radiology are not competing elements in the treatment of cervical cancer. They should be used either singly or in combination according to the merits of the individual patient's problem. Operation is indicated when the neoplasm is refractory to radiation. However, any one who again advocates a more general application of the radical abdominal operation with its formerly unsavory reputation and in the face of the apparent excellent experience obtained with radiation therapy faces a serious responsibility. Nevertheless, the proposal is made to utilize more generally the radical operation as a curative procedure. To justify this one is obligated to answer some pertinent questions. First, is radiation therapy falling short in such a way that operation theoretically might prove more effective in patients suitable for surgical treatment? Next, can the operation be done with a hazard comparable to or slightly greater than that following adequate radiation therapy? Will the anticipated increased salvage give an expectancy of cure well above that ordinarily obtained by radiation therapy in a similar stage of the disease? The first query is answered by the observation that cervical cancers which have healed after apparent adequate radiation may show identifiable cancer cells in one fourth to one fifth of the operatively removed specimens. Corroborative of this is the clinical remanifestation of cancer in previously healed and apparently adequately radiated cervices about which the radiologic literature is strangely silent. Personal observation, a few reports by critical workers and personal correspondence reveal that among patients in clinical stages 1 and 2 and also possibly some stage 3 patients who have received complete courses of radiation therapy, from 15 to 50 per cent of those who die succumb to recurrence in the previously radiated cervix or proximal part of the vagina. Dr. Garcia has mentioned the lessened mortality that now exists with the radical surgical procedure. It is obvious that with proper therapy, the mortality from a completely radical operation is less than 4 per cent. Schlink and Chapman reported a 3.5 per cent mortality and 62.7 per cent five year cures among stage 1, 2 and 3 patients who were given preoperative radiation. Meigs and myself have had an operative mortality under 2 per cent. In view of the foregoing it appears desirable to operate on any patient with cancer of the cervix if she presents no general or local contraindication for radical surgical treatment. Thereby a cervix and vaginal cuff are removed which under radiation therapy might show a fatal remanifestation of the disease. This, as has been indicated, far exceeds the mortality of a properly performed operation.

DR. J. HEYMAN, Stockholm, Sweden: It would be wise to define what is meant by combined surgical and radium therapy. Some want to apply surgery as a prophylactic method to avoid local recurrences. If this is what is meant by combined surgical and radium therapy, then those who wish to use this therapy have to tell us on what patients we should operate. To me it is obvious that there are only two ways in which to proceed: either not to wait for the primary results of radium therapy but to operate on all patients who after preoperative irradiation are considered operable, or to await the result of primary radium therapy and to operate on all patients clinically cured. I cannot see any other method by which one can define on what patients one wishes to operate. Having analyzed our large series of cases from these two points of view, I have shown in two papers published some years ago that my associates and I could not expect to improve the results which we have gained by radium therapy alone by applying either of these two methods. Another group who make claims for surgical treatment want to operate in early cases. That is to me no problem in the treatment of cancer of the uterus, because we know that we can cure 65 to 80 per cent of our patients in the stage 1 group Perhaps operation could give us better results, but the difference would have no effect of any importance on the absolute cure rate. I also consider that it would be advisable if those speaking of classification would tell us what classification they use. I should like to emphasize that by mentioning the League of Nations classification one may mean two quite different things. The League of Nations classification started in 1929 After about seven years of experience, we had to change that classification and propose a second scheme. These two classifications are different, and the differences are worth noticing. Today the League of Nations classification will include in stage 2 all cases with involvement of the upper two thirds of the vagina and parametrium, whereas in stage 3 only those cases are included in which the lower third of the vagina is involved and the parametrium to such an extent that the lateral pelvic wall is involved That means that patients allocated to group 3 cannot be operated on and the majority of patients referred to as stage 2 can also not be operated on There is a confusion today among the radiotherapists due to the fact that many of them are of the opinion that the only thing worth while is a method. That is not so, gentlemen! In addition to having a method of treatment it is necessary to have sufficient experience with the method which one uses. One can use either this method or that, and one will get good results when one has acquired sufficient experience. It is a bad way to change from one method to another and think that one will get results and not try to acquire sufficient experience. If every one sticks to the method to which he is accustomed and then we come together and compare results, we will find something.

TREATMENT OF MIGRAINE WITH HISTAMINE

Review of One Hundred and Forty-Four Cases

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Histamine has been reported to have a prophylactic and a curative effect on migraine.[1] This drug has been used in the treatment of migraine at the Mayo Clinic since 1937. We are reporting the results of treatment in an attempt to evaluate histamine therapy in the clinical management of migraine.

CRITERIA

The majority of physicians who have carefully observed the syndrome of migraine agree that five factors are fundamental to that syndrome. These factors are: (1) periodicity, (2) cephalalgia, (3) gastrointestinal dysfunction, (4) cortical disturbance and (5) a familial history of migraine. It is generally recognized that all five factors are not necessarily present in any 1 case at all times, although many physicians would not hesitate to classify as migraine certain conditions in which all five factors never have been present. For this study, only those cases were selected in which both periodicity and cephalalgia were present in addition to any one or more of the remaining factors.

The cases included in this study have been divided into two groups: typical and atypical migraine. By "typical migraine" is meant periodic cephalalgia which is associated with any two or more of the following three factors: (1) gastrointestinal dysfunction, (2) cortical disturbance or (3) a familial history of migraine. By "atypical migraine" is meant periodic cephalalgia associated with any one of the three factors.

The term "periodic" is used to indicate that attacks recur at relatively equal intervals, over a prolonged period. The more pathognomonic feature of the periods is the apparent good health of the patient in the intervals between attacks.

"Cephalalgia" means headache. The location of the headache, or the site of greatest pain, need not always be the same in a given patient. It may be quadrantal, hemicranial or generalized.

"Gastrointestinal dysfunction" refers to nausea, vomiting, constipation, diarrhea or abdominal pain arising in the gastrointestinal tract. The term may include any one or more of these manifestations.

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1. (*a*) Butler, S., and Thomas, W. A.: Intravenous Histamine in the Treatment of Migraine: Preliminary Observations, J. A. M. A. 128:173-175 (May 19) 1945. (*b*) Thomas, W. A., and Butler, S.: Treatment of Migraine with Intravenous Histamine, Am. J. Med. 1:39-44 (July) 1946. (*c*) Horton, B. T., and Macy, D., Jr.: Treatment of Headache, M. Clin. North America 30:811-831 (July) 1946. (*d*) Thomas, W. A., and Butler, S.: Intravenous Histamine in Treatment of Migraine, Bull. New York Acad. Med. 22:125-136 (March) 1946.

"Cortical disturbance" refers to transient psychic disturbances, scotomas, paresis or paralysis, or paresthesias which can be accounted for on the basis of localized cortical discharge.

A familial history of headache was not considered synonymous with a familial history of migraine. The same criteria were used for inclusion of migraine in the familial history as for establishment of the diagnosis in each case accepted for analysis and study.

By use of the criteria outlined, it is possible to exclude from the class, migraine, other types of primary vasodilating headache, such as histaminic cephalalgia. The exclusion of histaminic cephalalgia is essential, since histamine is specific in the treatment of that type of headache[2] and inclusion of histaminic cephalalgia in the present statistics would obscure the point at issue. These criteria also exclude the purely psychogenic and nervous tension types of headache.

The element of nervous tension is not always easy to determine, and may be a stumbling block for many physicians in interpretation of the problem. It is often an integral part of the syndrome of migraine. The frequency and severity of the attack of migraine may be determined by the element of nervous tension. It is important to realize this fact when an attempt is made to evaluate the therapeutic agents employed in treatment. Otherwise, erroneous conclusions will be drawn.

In migraine we feel that the pain is vascular in origin, and that there are three phases of the condition to consider.

The first is the vasoconstricting phase. This accounts for scotomas and cortical manifestations. Pain is not a factor of this phase—vasoconstriction, in itself, does not give rise to pain. A vasodilating agent may abort the attack if it is administered during the period of vasoconstriction.

The second is the vasodilating phase. The vasodilation is the immediate cause of the pain. Vasoconstricting agents, such as ergotamine tartrate and dihydroergotamine, if administered in appropriate doses early in this phase, will abort the majority of attacks.

The third is the edema phase. This naturally follows if the vasodilatation persists for any length of time.

It is well to keep these thoughts in mind when the attempt is made to evaluate a given therapeutic procedure.

How does histamine act in such a syndrome? The object of this report is to present a statistical analysis of 144 migrainous persons who have been treated with histamine at the Mayo Clinic since 1937. The mechanism and rationale of the action of histamine and various other aspects of the problem will be discussed in later publications.

MATERIALS AND METHODS

Series 1.—Two series of cases are being presented. The first series includes 124 migrainous patients seen at the Mayo Clinic between January 1937 and May 1945. These patients were treated with histamine and histamine only, in an endeavor to alleviate their symptoms. Histamine was administered by the subcutaneous route, the intravenous route or both routes.

Subcutaneous Administration: In subcutaneous administration a solution containing 0.275 mg. of histamine phosphate per cubic centimeter was used. This solution is equivalent to 0.1 mg. of histamine base per cubic centimeter. The initial dose was 0.1 cc. of the solution. Succeeding doses were increased by 0.05 cc. of the solution. Medication was given twice daily. In the event of the slightest facial flush, headache or subjective discomfort of any type, the dose was decreased by 50 per cent and the program was continued as before. The maximal single dose was 1.0 cc. of the solution. The final dose was the least amount of the drug which would maintain the patient free from migrainous symptoms obtained at any point during treatment. This dose was also the maintenance dose, when maintenance therapy was used. After the maintenance dose had been determined, the patient was dismissed. Administration of the maintenance dose was continued once daily for two weeks, then once every other day for six weeks, and twice weekly indefinitely. This schedule was modified, as seemed necessary, to meet each person's needs.

Intravenous Administration: Two and seventy-five hundredths milligrams of histamine phosphate was added to 250 cc. of isotonic solution of sodium chloride, and the solution was administered intravenously by the drip method, usually for a period of one and a half hours, once daily, in amounts as tolerated by the patient without causing a reaction to the drug. From 0.1 to 1.0 mg. of histamine base was received by the patients with each infusion, depending on the rate at which the solution was administered. Treatment was continued until the maximal therapeutic response for the particular patient appeared to have been obtained, the average period of treatment being two weeks.

Combined Intravenous and Subcutaneous Administration: A few patients treated by the intravenous administration of histamine showed such prompt recurrence of symptoms on cessation of therapy that it was necessary to continue the administration of histamine by the subcutaneous route. Cases in which both methods of therapy were used constitute the "combined" group. When the route of administration of the drug was changed, the dose was determined empirically. In retrospect, it is seen that the migrainous patient tolerates approximately ten times more histamine base when it is administered intravenously than when it is administered subcutaneously.

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[2] Horton, B. T.; MacLean, A. R., and Craig, W. McK.: New Syndrome of Vascular Headache: Results of Treatment with Histamine Preliminary Report Proc. Staff Meet., Mayo Clin. 14: 257-260 (April 26) 1939. Horton, B. T.: The Use of Histamine in the Treatment of Specific Types of Headaches. J. A. M. A. 116: 377-383 (Feb. 1) 1941.

The patients treated by the combined method were dismissed with the same instructions as those given to the patients treated by the histamine desensitization schedule alone.

Total individual doses during the period of treatment varied from 0.20 to 6.29 mg. of histamine base when the subcutaneous method of therapy was employed; from 0.44 to 14.02 mg. of histamine base when the intravenous method of therapy was used, and from 0.31 to 7.74 mg. of histamine base when the combined method of therapy was carried out. Irrespective of the route of administration of the drug, the great majority (111) of the patients received a total dose of less than 5 mg. of histamine base.

Series 2.—This series consists of a special group of 20 patients treated during June, July, August and September 1945. Treatment of this group was undertaken to see whether we could duplicate the results of Butler and Thomas.

The method outlined bu Butler and Thomas[1ab] is as follows: A 1:500,000 dilution of histamine base in isotonic solution of sodium chloride is employed. One milligram of histamine base (500 cc. of the solution) is administered intravenously over a four to eight hour period every other day, for four to eight doses. Epinephrine or ascorbic acid is used to control headache or allergic manifestations occurring during the infusion. "Heartburn" is relieved by the administration of alkaline powders.

Epinephrine and ascorbic acid are two naturally occurring antihistamine substances. Clinically, they are effective histamine antagonists. It has not yet been demonstrated how these substances neutralize the histamine effects, whether they neutralize all the histamine effects or what the quantitative relationships are for such neutralizations. For these reasons, neither substance was administered to any patient in series 2 concomitantly with histamine. Reactions were controlled by modification of the rate of administration of the drug, the total dose for the day or both.

Intravenous Administration: Patients in series 2 received by infusion a 1:500,000 dilution of histamine base in isotonic solution of sodium chloride. The initial dose tolerated by the patients varied from 0.03 to 0.07 mg. of histamine base. The maximal single dose was 1.1 mg. of histamine base. All but 1 of the patients received each treatment in a period varying from one and a half to three hours. Patients were treated every day except Sunday. Treatment was continued until the maximal therapeutic effect for the given patient appeared to have been obtained.

Combined Form of Administration: It had been intended to administer histamine by the intravenous route only in series 2. In 8 cases, the results of intravenous administration were either so unsatisfactory or so transient that subcutaneous administration of histamine also was tried. The same schedule of doses was used as in series 1, except that the initial dose varied from 0.005 to 0.035 mg. of histamine base.

The total individual doses during the period of treatment in series 2 varied from 0.20 to 8.40 mg. of histamine base when the intravenous method of therapy was employed, and from 1.34 to 13.80 mg. of histamine base when the combined method of therapy was used. Thirteen patients received a total dose of less than 5 mg. of histamine base. Three patients received a total dose of more than 10 mg. of histamine base.

RESULTS

Results Presented According to Method of Administration.—Response to histamine therapy has been gaged on the basis of a comparison of frequency, intensity and duration of attacks before and after treatment. The results are reported in four groups in which the response of the patient was graded: none to 25 per cent; 25 to 50 per cent; 50 to 75 per cent, and 75 to 100 per cent. This grouping represents improvement during supervised treatment of the patients at the clinic. The fewest failures and the greatest percentage of unquestionable improvements (75 to 100 per cent improvement) occurred among the patients receiving histamine by both the subcutaneous and the intravenous routes.

When one route of administration alone was used, a greater percentage of patients were benefited by subcutaneous therapy than by intravenous therapy.

There is a group of patients showing less than 50 per cent improvement after intravenous therapy whose degree of improvement seems to increase above 50 per cent when combined therapy is employed. Subcutaneous administration of histamine appears to be effective in a wider variety of cases of migraine than is intravenous administration.

Thirty-three per cent of patients did not respond to histamine administered either subcutaneously or intravenously. Twenty-two and seven-tenths per cent of patients did not respond to histamine administered by the combined method of therapy (5 cases out of 22). The pattern of improvement during treatment is similar in both series of cases.

Results Presented According to Method of Administration and Type of Migraine.—On the whole, there was a tendency toward fewer failures and a greater percentage of significant improvements among patients who had atypical migraine than among patients who had typical migraine, irrespective of the route of administration of histamine.

Significant improvement among persons with typical migraine occurred more frequently during the combined method of therapy than during either subcutaneous or intravenous therapy alone.

Of the 124 patients treated in series 1, 41 were judged to have insignificant (none to 25 per cent) improvement during the period of supervised treatment. Twenty-five to 100 per cent improvement occurred in 83 patients. Adequate follow-up data were available concerning 71 of these 83 patients. In series 2, 5 patients were judged to have insignificant improvement during the period of supervised treatment. Of the remaining 15 patients, adequate follow-up data were obtained from 14.

Recurrence Presented According to Method of Administration.—In series 1, data on recurrence were compiled from information volunteered by the patients. The majority of patients did not spontaneously report recurrences until such attacks again had interfered with their daily routine. In series 2, a a questionnaire was sent to all patients, and the first migrainous manifestations, however mild, were considered to be a recurrence of the syndrome.

A third to two thirds of the patients had recurrences within one month of dismissal, irrespective of the route of administration of histamine.

Of those attacks of migraine which recurred within one month, the fewest followed intravenous therapy, and the greatest number followed the combined method of therapy. Careful study of the latter cases showed that the majority of these patients had discontinued injections of histamine of their own accord, within the first month after dismissal. Apparently, they had been lulled into a false sense of security by their response during treatment.

Of the 5 patients in series 2 whose migraine did not recur within one month, 2 had been treated by the combined method of administration and 1 employed histamine subcutaneously at home. The migraine of the remaining patients in series 2 recurred in two and three months, respectively, following intravenous therapy.

Institution of subcutaneous histamine therapy after recurrence of the migraine syndrome has subsequently relieved, in whole or in part, 3 patients in series 2 who received only intravenous therapy while at the clinic.

The only patients for whom a markedly sustained effect (up to three years' duration) was obtained were patients in series 1, treated by the subcutaneous method. The duration of freedom from migrainous attacks parallels rather exactly the duration of administration of adequate maintenance doses of histamine. Patients free of symptoms after one year or more were still taking histamine subcutaneously once daily or every other day.

Recurrence Presented According to Method of Administration and Type of Migraine.—In series 1, irrespective of the route of adminstration of histamine, typical migraine recurred within three months in the majority of patients, whereas atypical migraine tended not to recur until three to six months had passed. The two patients with atypical migraine in series 2 experienced recurrence within one month.

COMMENT

Evaluation of the treatment of migraine is difficult. The results are not objectively measurable. We are dependent on the statements of the patient, both in making the diagnosis and in gaging the effects of therapy.

The frequent coexistence of other types of cephalalgia in a migrainous person is a difficulty more apparent than real. The migrainous person is peculiarly liable to headache, but if the criteria originally used for the diagnosis of migraine are kept in mind, it is possible to follow the transitional forms of migraine, occurring either spontaneously or during therapy, without being confused by coexisting cephalalgias. Because migraine is a syndrome rather than merely a cephalalgia, this is true even as individual components of the syndrome disappear.

Certain points in the present study deserve special comment. The statistical method is obviously limited when it is applied to so subjective a phenomenon as migraine. It should be emphasized that our choice of patients for analysis and study was rigid. In series 1 (the 124 patients seen at the clinic from 1937 to 1945) we were dependent on the records of these patients as noted by others, who at the time of recording could not have known that the present investigation would be made. Consequently, cases have been excluded from our analysis which additional information might have led us to include. Similarly, in some cases a condition which we classified on the basis of available data as "atypical migraine" may in reality have been typical migraine. We are certain that we have included no nonmigrainous cephalalgias; it is possible, however, that in some instances less severe migraine has been excluded because of lack of complete data.

The majority of patients treated in these two series had more than one type of cephalalgia. The usual concomitant was tension headache. Five per cent of our patients previously had become addicted to the use of opiates, which, in themselves, may cause headache. We should like to say that morphine and all habit-forming drugs have absolutely no place in the treatment of migraine. Although we have reported only the migrainous cephalalgia in these cases, the coexistence of another type of headache lowers the threshold for migrainous attacks and hence increases resistance to therapeutic measures.

Because the majority of our patients came from a long distance and had to stay away from home two weeks or more in order to undergo treatment, it has occurred to us that we might have seen chiefly more severe migrainous cephalalgias. To a certain extent, this probably has been true.

With these points in mind, we may turn to a comparison of our figures with others in the literature. The only detailed reports on the treatment of migraine with histamine are those of Butler and Thomas.[3] These authors administered histamine by both the intravenous and the combined routes; in addition, they used a combination of histamine administered intravenously and histamine-azoprotein[4] ("hapamine" administered subcutaneously. In a series of 75 cases, 88 per cent of the patients experienced partial or total relief of their migrainous cephalalgias. Forty-five per cent of the patients experiencing relief had no recurrence from eight months to two years after treatment. Only 16 of the patients reported on by Butler and Thomas received either histamine or "hapamine" subcutaneously.

These figures are significantly different from ours. When the several points enumerated herein are considered, it is seen that differences in response of the patients during treatment may be more apparent than real. However, it is more difficult to reconcile the two groups of figures on recurrence. The only patients in our series whose migraine eventually did not recur were still taking histamine subcutaneously. In series 2, in which the follow-up study was most complete, 19 or 20 patients have had recurrences, and the twentieth did not report. It has been our experience that although recurrent attacks may be minor at first, they ultimately tend to return to the severity which prevailed before treatment unless more histamine is administered. This apparently has not been true in the cases reported by Butler and Thomas.

Can we attribute the differences in figures on recurrence to variations in technic of therapy in the two groups of cases? We used neither epinephrine nor ascorbic acid concomitantly with histamine, and although our total doses were as large as, or larger than, those of Butler and Thomas, our over-all period of treatment usually was longer. In other words, is the effectiveness of treatment proportional to the size of the total dose of histamine base per unit of time, irrespective of concomitant neutralization of the overt effects of histamine with antihistamine substances? This is a theoretic possibility which deserves consideration.

SUMMARY AND CONCLUSIONS

Records of 144 migrainous patients treated with histamine alone at the clinic between the years 1937 and 1945 have been reviewed. The migraine syndrome in 23 to 33 per cent of the patients was unchanged after histamine therapy, irrespective of the route of administration of the drug. Intravenous administration of the drug was found to be the least effective method of histamine therapy in the treatment of migraine. The syndrome of 33 to 50 per cent of patients with typical migraine and that of 40 to 66 per cent of patients with atypical migraine showed significant improvement during the period of treatment by this method. The subcutaneous administration of histamine was found to be effective in a wider variety of cases of migraine than was the intravenous administration of histamine. Approximately 60 per cent of migrainous patients, irrespective of the type of migraine, showed significant improvement during the period of treatment by this method. The administration of histamine by both the intravenous and the subcutaneous route was found to be the most effective method of histamine therapy in the treatment of migraine. Seventy to 85 per cent of patients with typical migraine and 75 to 100 per cent of patients with atypical migraine showed significant improvement during the period of treatment by this method.

Of the 88 patients who exhibited improvement during the period of treatment and concerning whom follow-up data were complete, 85 experienced a recurrence of migrainous attacks when histamine therapy was decreased below an individual critical level or was stopped entirely. The 3 patients whose migrainous attacks did not recur were still taking histamine at the time of their reports. A tendency was noted for typical migraine to be more refractory to treatment with histamine and to recur sooner after such treatment than atypical migraine.

There appeared to be no constant relationship between the total dose of histamine base and the degree or duration of abatement of the migraine syndrome. There appeared to be no constant relationship between the size of single tolerated doses of histamine base and the recurrence of a migrainous attack. It was found that migrainous patients, in general, tolerate ten times more histamine base in a single dose administered by the intravenous route than in a single dose administered by the subcutaneous route. In migrainous patients there appeared to be a qualitative as well as a quantitative difference between the effects of histamine administered intravenously and the effects of histamine administered subcutaneously.

The use of histamine may prevent some attacks of migraine in some cases. The duration of such an effect seems to parallel the duration of administration of adequate doses of the drug. Adequate dosage varies with the individual patient

Although histamine was not found to be either a specific or a truly curative agent in the migraine syndrome, until such an agent appears, histamine will continue to have a place among the prophylactic measures of value in the clinical management of the migrainous patient.

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3. Butler and Thomas.[1a] Thomas and Butler.[1bd]
4. Butler, S.: Personal communication to the author.

POTENTIATION OF PRESSOR ACTION OF EPHINEPHRINE BY TETRAETHYL AMMONIUM

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In a recent note in THE JOURNAL, Page and Taylor[1] warned against the use of epinephrine in vascular collapse induced by overdosage of, or unusual sensitivity to, tetraethyl ammonium. They observed that tetraethyl ammonium potentiates the pressor action of epinephrine and of angiotonin and postulated that this potentiation may be due to an action on the enzyme systems which destroy these agents or to an "explosive manifestation of sensitization of denervation." There is no doubt that tetraethyl ammonium is capable of potentiating the responses to pressor drugs; it also potentiates responses to depressor drugs. It is necessary, however, to point out the difference between intravenous administration of epinephrine in dogs and subcutaneous administration in human subjects and also to suggest a more likely explanation of the mechanism of potentiation.

When epinephrine is injected intravenously in small doses, the dog under anesthesia responds with a fall of arterial pressure. When larger doses are administered, arterial pressure rises and the buffer reflexes are called into play in an effort to prevent the pressure change. The compensatory mechanisms which are available to combat an acute rise of blood pressure are (1) reflex slowing of the heart, including increased vagal tone and reduced accelerator tone, (2) increased vasodilator tone (the nature and importance of which is not well defined) and (3) reduction of vasoconstrictor tone. If the dose of epinephrine (or other pressor agent) is sufficiently small, these reflex adjustments, particularly the last named, will quickly restore the normal level of pressure. These reflex mechanisms, however, involve autonomic pathways and will be prevented by any agent which interrupts autonomic impulses. It would be predicted that tetraethyl ammonium would potentiate pressor responses to the same degree, and for the same reasons, as destruction of the medulla and spinal cord.

Compensation for the effects of depressor drugs will set off reflex adjustments of opposite nature: cardioacceleration and increased vasoconstrictor tone. These autonomic mechanisms will likewise be blocked by tetraethyl ammonium, and the depressor responses will be potentiated.

The accompanying figures illustrate that the mechanisms predicted do indeed operate in anesthetized dogs. In figure 1 is shown the effect of epinephrine on arterial pressure and femoral arterial blood flow in a dog, before and during a continuous infusion of tetraethyl ammonium. The first dose of epinephrine, 0.01 mg., caused a brief pressor response, for which the animal compensated almost completely. Femoral flow increased, reaching its highest point at a time when the pressure had returned to the initial level; the resistance of the femoral vascular bed was reduced at this point, as the result of reflex inhibition of vasoconstrictor tone. During the infusion of tetraethyl ammonium, epinephrine produced somewhat greater pressor responses. The actual increase and the percentage increase were much greater than in the control period, in part because the pressure rose from a lower base line, but chiefly because the compensatory reflexes had been blocked. After an initial increase in blood flow (a passive response to the increasing pressure before the injected epinephrine reached the femoral vessels), the femoral flow decreased to reach its lowest level at the peak of the pressor response; the resistance of the femoral vascular bed was increased.

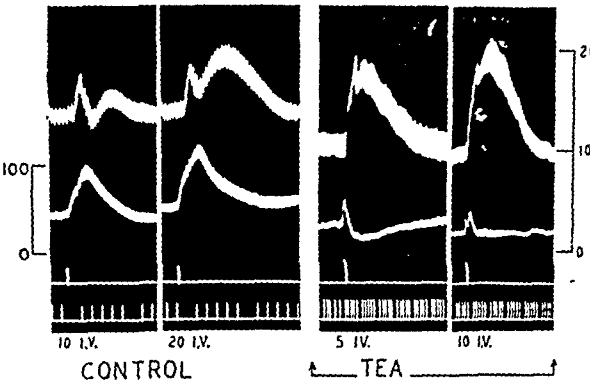

Fig. 1 (dog, 14 Kg., sodium barbital anesthesia).—The upper curve shows carotid arterial pressure (scale at right); the lower curve shows femoral arterial blood flow (scale at left in cubic centimeters per minute). Time in 10 second intervals. At signals, epinephrine was given intravenously (total dose in micrograms). The first two segments are of the control period and the second two during infusion of tetraethyl ammonium, 20 mg. per kilogram of body weight per hour.

Figure 2 illustrates reflex vasoconstriction induced as a result of the depressor response to glyceryl trinitrate. During infusion of tetraethyl ammonium, the depressor action of the vasodilator drug was potentiated, because reflex vasoconstriction in the leg was prevented.

It does not seem necessary, then, to assign the potentiating action of tetraethyl ammonium on the pressor actions of epinephrine and angiotonin to any action on the liver, to inhibition of amine oxidases or to any obscure mechanism of denervation sensitization. The action is completely explained in terms of blockade of compensatory reflexes. It follows that tetraethyl ammonium cannot further potentiate the action of vasoconstrictor drugs when the chief compensatory buffer mechanism, neurogenic vasoconstrictor tone, is already at a minimum. This can be demonstrated in the pithed cat, in which tetraethyl ammonium does

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From the Department of Pharmacology, University of Michigan Medical School, Ann Arbor.

Supported by a grant from the Life Insurance Medical Research Fund.

[1] Page, I. H., and Taylor, R. D.: Sensitization to the Pressor Action of Epinephrine, J.A.M.A., *135:* 348, 1947.

not appreciably alter the pressor action of epinephrine.

The blood pressure responses to tetraethyl ammonium suggest that the normal human subject, unlike the dog, has little vasoconstrictor tone in the horizontal position (except to the skin, where blood flow is probably largely under the control of thermoregulatory rather than pressuregulatory centers); the ability of such persons to compensate for epinephrine action is therefore sharply limited, and tetraethyl ammonium will not produce prominent potentiation. In studies of the action of tetraethyl ammonium on the gastrointestinal tract,[2] epinephrine has frequently been injected subcutaneously in doxes as high as 1 mg., in subjects under the influence of full clinical doses of tetraethyl ammonium. No untoward effects were observed. Absorption from a subcutaneous injection site is so slow that abnormally hypertensive responses to epinephrine are unlikely.

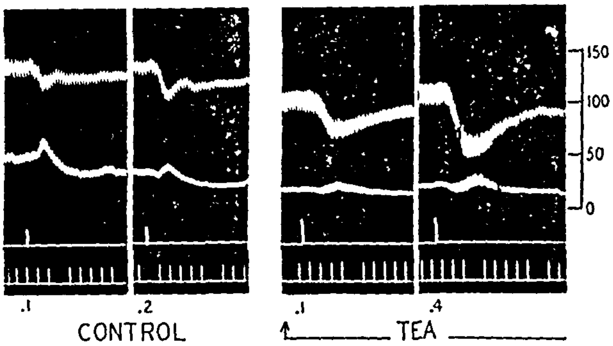

Fig. 2 (same dog as in fig. 1).—At signals, intravenous injections of glyceryl trinitrate were given: 9.1, 9.2, 9.1 and 9.4 mg. total, before and during infusion of tetraethyl ammonium.

Epinephrine should never be given intravenously, with or without tetraethyl ammonium, unless the blood pressure is carefully watched and the dosage adjusted to meet the needs of the patients. In a few subjects who responded to tetraethyl ammonium with severe and prolonged hypotension, the blood pressure was restored to adequate levels and maintained there by the intravenous infusion of epinephrine in dilute concentration. No undesirable hypertensive response occurred, for the infussion rate was, of course, under minute to minute control.[3]

The warning advanced by Page and Taylor should apply to any injection of epinephrine, which should always be given cautiously, and should not imply any special contraindication to or hazard in use of tetraethyl ammonium. Others incurs any special contraindication or hazard.

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[2] Neligh: Lyons, and other: To be published.

[3] Neligh, Hoobler and Lyons: Personal communication to the author.

Assay of Vitamins.—For each of the B-vitamins known to be required for growth of animals, there are thus known several different micro-organisms which also require that vitamin for growth . . . It is from such procedures, used to identify the growth factors essential for the various test organisms, that our present microbiological assay methods have developed.—Snell, Esmond E., Physiological Reviews, April 1948.

RESTORATION OF LONG BONE DEFECTS WITH MASSIVE BONE GRAFTS

CARLO SCUDERI, M.D.*
Chicago

Bone grafts have been utilized successfully for approximately forty years. However, it was not until World War I that bone graft surgery actually reached the plane of efficiency to be of great utilization in the repair of bone disease and bone defects secondary to trauma. At the termination of World War I, America found itself with a large number of persons who required repair of the long bones of the extremities in order to rehabilitate these people back to civilian life. The same was true in the European countries. From this experience many of the basic principles of bone graft surgery were developed to such an extent that little has been added mechanically to the technic of bone graft surgery until the beginning of World War II.

In the interval of approximately twenty years numerous men have perfected certain types of gadgets or pieces of equipment which materially helped in some of the finer bits of carpentry that are frequently necessary for good bone graft surgery. No real epochal progress was made nor was any major contribution proposed until World War II began. At this time as a result of the advent of chemotherapy, orthopedic surgeons had a valuable adjunct to their armamentarium for the repair of bone defects. By the use of the sulfonamide drugs and penicillin, reconstruction work could be done in extremities which had previously had suppuration, with a minimal recurrence of infection in the operative area. It is known definitely from experience in civilian life, prior to World War II, that many successful operations have been done on extremities during and after the termination of World War II which prior to the advent of chemotherapy would have definitely been failures.

With the tremendous advance made in mechanical warfare, and with highvelocity explosives, land mines, booby traps, airplane accidents, jeep accidents and innumerable types of accidents produced by other motor vehicles, there were more casualties during the recent conflict than had ever been known to man.

The Surgeon General's Office deserves the greatest credit for having foreseen the great number of casualties that were to come and for placing in the large general hospitals in the Zone of the Interior men of known orthopedic ability from civilian life to take care of these casualties. In many instances, some of these men remained in one installation for a matter of two, three and four years. Many of their assistants were persons who had remained in the same installation for many months, and frequently the surgical nurses operated every day with the same surgeons, month in and month out. Naturally, with such splendid operative cooperation, these surgical teams did work of a quality and quantity that was previously unknown. Many a man has returned to civilian life after having been injured in World War II owing his entire rehabilitation to the excellent judgment used by the Surgeon General's Office and the fine clinical work by the surgeons in these large installations.

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Read before the Section on Orthopedic Surgery at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

Had it not been for the splendid first aid and emergency treatment that was rendered overseas, a great many of these persons would never have survived the original trauma or, if they had survived, would have lost the extremity and would not have returned to the Zone of the Interior for any form of operative orthopedic reconstruction work except for the fitting of a prosthesis. The medical profession can well be proud of the splendid work done by the men who were in the armed forces.

This paper is on 94 cases in which I personally operated while chief of orthopedic surgery at McGuire General Hospital in Richmond, Va. Four cases were known failures, 3 due to recurrence of infection in the operative field and 1 due to a double fracture of the massive bone graft of the fibula, which later required a second tibial graft. Whether some of these repairs which were considered successful broke down in other installations after the patients had been transferred is unknown to me, but up until the time that the last patient had been under direct observation for at least two months prior to transfer, the recurrent infections were only three. Considering the severity of the damage to the soft tissue, the extent of the bone loss and the fact that all of these injuries were compound wounds, the results are formidable.

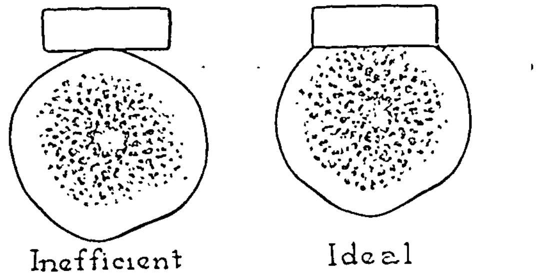

Fig. 1.—The maximum bone contact is desired between the graft and the host bone.

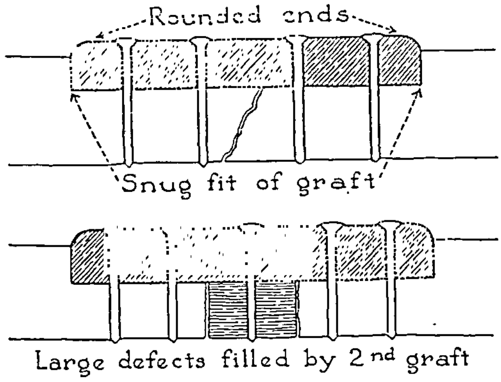

Fig. 2.—A snug-fitting, well morticed bone graft which conforms to the general contour of the injured bone is theoretically and practically most desirable.

PREOPERATIVE REQUIREMENTS

It has long been well known that no form of reconstructive surgical treatment of bone can be performed in the presence of an actual infection. Occasionally men who have attempted this procedure have been successful, but the operative risk is so high that most men have not felt that this is the correct procedure to be undertaken in this type of work. In civilian life, prior to chemotherapy, nine to twelve months were the usual period of time that was permitted to elapse before any bone grafting was performed in a wound that had previously suppurated.

Three preoperative requirements I have felt to be most essential: 1. No drainage should be present in a wound for a minimum of three months prior to the date that bone grafting is performed. 2. Good skin and subcutaneous tissue must cover the operative field where the operative intervention is to be performed; otherwise the bone graft will not survive. In order for the graft to become vascularized and throw out callus and become an integral part of the host bone, it is necessary to obtain its blood supply from the surrounding tissues. If this tissue is scarified and the blood supply is poor, the chances that the bone graft will become revascularized are minimal, and in many instances the bone graft terminates in acting as a foreign body. Fortunately, in most general hospitals in the Zone of the Interior plastic surgeons were available, and large defects could be filled with good healthy skin and subcutaneous tissue by means of

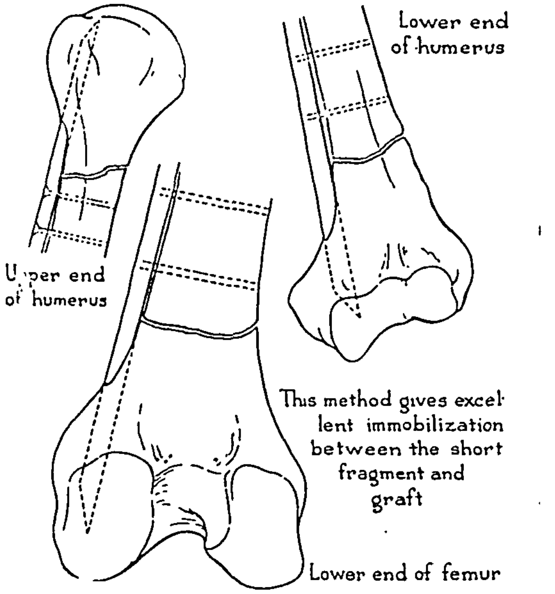
Lower end of humerus
Upper end of humerus
This method gives excellent immobilization between the short fragment and graft
Lower end of femur

Fig. 3.—In fitting a straight graft into the bulbous end of a bone the tunneling of the condyle for the insertion of the graft is efficient. Bone contact and fixation of one end of the graft are thereby easily achieved.

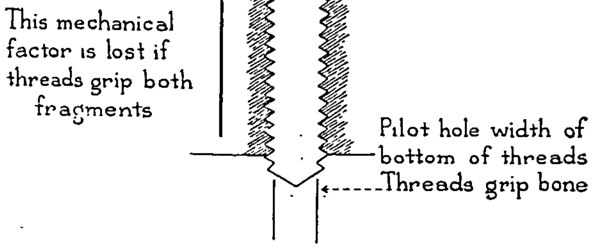
Shank hole width of top of threads
Threads do not grip bone
Vise like action draws bones firmly together
This mechanical factor is lost if threads grip both fragments
Pilot hole width of bottom of threads
Threads grip bone

Fig. 4.—In order to obtain the maximum amount of "drawing together" power of a screw, the threads must engage only the distal fragment of bone.

either a swinging graft from the surrounding area or a pedicle graft from the opposite extremity or the abdomen. Padgett's dermatome has been a most valuable asset in the covering of granulating wounds, thereby shortening the period of wound healing. 3. Adequate chemotherapy is most essential, before and after the operation, in order to insure a sterile field at the time of operation. Penicillin was used in amounts of 25,000 units every three hours, and 90 grains (6 Gm.) of sulfadiazine a day was given in divided doses forty-eight hours prior to surgical treatment and for fourteen days postoperatively, until all the sutures were removed and the skin was found to be healed by primary intention. It was my impression that under the screening of sulfadiazine and penicillin these cases did far better than similar cases in civilian practice.

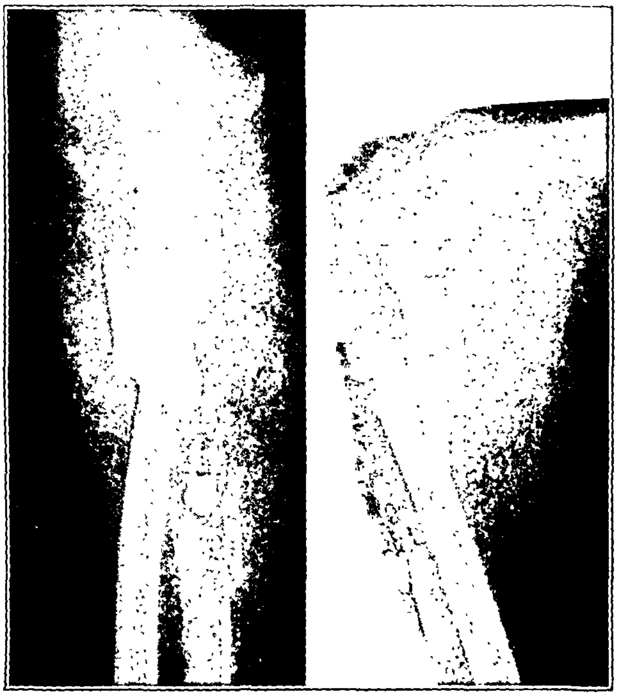

Fig 5.—A private first class, injured Feb. 25, 1945, with resulting malunion of radius and loss of bone substance of the ulna.

TYPE OF BONE GRAFTS USED AND THEIR INDICATIONS

The type of bone grafts used were three, as follows:

1. Tibial bone grafts were used to restore the general configuration of long bones when length of bone and mechanical stability were necessary. In cases in which mechanical strength was important, such as in the shaft of the humerus or the femur, the crest of the tibia was utilized, in spite of the fact that the removal of the crest had the tendency to weaken the tibia. In cases that required length of bone with little mechanical strength, the central portion of the tibia was used from the flat surface. This type of graft was found to be most *suitable for restoration of defects of* the radius and ulna and also for sliding grafts of the tibia.

2. Full thickness fibular grafts were used successfully in a number of cases, up to 8 inches (20.3 cm.) in length being used from the central portion of the fibula. In spite of the fact that numerous men have condemned the fibular graft, stating that it is too large a piece of bone to become revascularized, none of my fibular grafts broke down except in 1 case in which gross infection occurred from the sloughing out of the overlying skin. In some cases the fibular graft was used in conjunction with the tibial graft in order to restore a large defect existing in a femur.

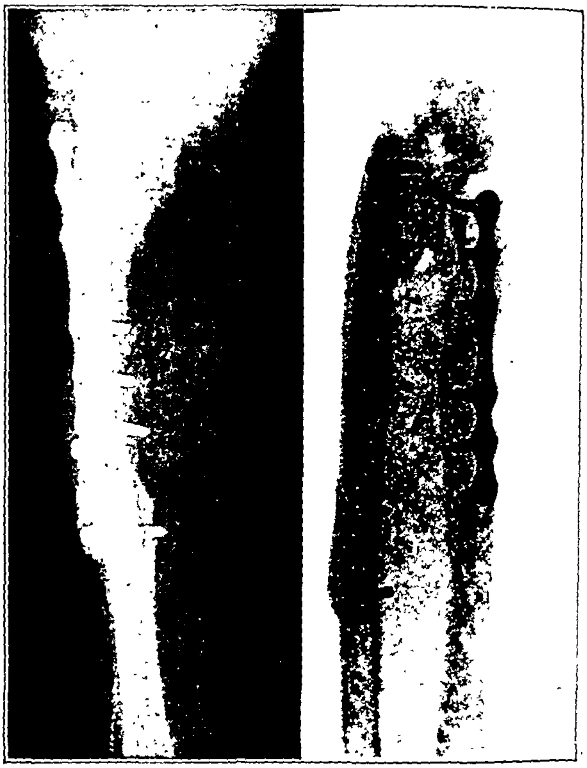

Fig. 6.—Same patient as in figure 5. End result, four and one half months after operation, after a plating of the radius and a *tibial graft* to the ulna.

3. Cancellous bone grafts from the wing of the ilium were used when large bone defects had to be filled or when it was felt that more bone was necessary to restore a long defect in addition to fibular or tibial grafts. These cancellous bone fragments were packed around the bone defect, and it was found that in these cases early callus was produced and a much earlier restoration of healthy bone than with massive cortical bone. However, mechanical stabioity, which is so essential in many cases, was lacking.

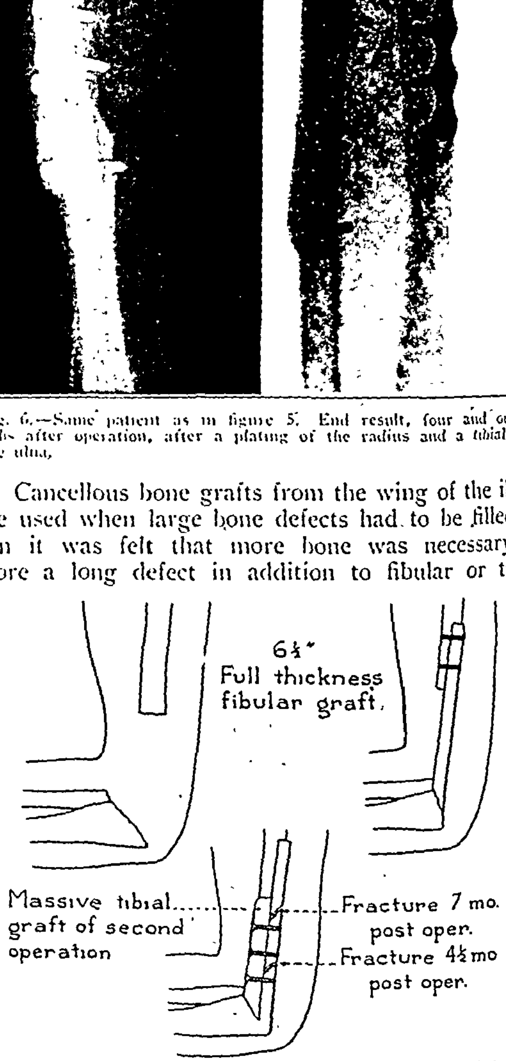
6¼"
Full thickness
fibular graft.
Massive tibial graft of second operation
Fracture 7 mo. post oper.
Fracture 4½ mo post oper.

Fig 7.—A first sergeant, injured June 1, 1944 with loss of 4 inches (10.2 cm.) of humerus, proximal ½ inch (1.3 cm.) of radius and 1½ inches (3.8 cm.) of the ulna

In some cases a combination of the three aforementioned grafts were used, depending on the type of defect that had to be filled and the mechanical stress and strain which the host bone would be subjected to during an active life.

In order to obtain the greatest number of takes in bone grafting, it is most essential to follow a number of basic principles of carpentry plus the basic physiologic principles of revascularization of tissue. If one hopes to obtain early revascularization of bone, it is most important that the grafted bone be firmly fixed to the host bone so that it has a solid base from which the finer vessels can grow and revascularize the contact surfaces of the bone. In addition, the more fresh bone that is brought in contact with the grafted bone, the better are the chances of a successful take. For this reason it is felt to be a most important point that the grafted bone be fitted into a definite well formed bed that fits the conformation of the graft or that the graft be made to fit the conformation of the bed, so that the sides and base of the graft have the maximum amount of fresh bone contact. For the portion of the graft that lies exteriorly, it is essential that good healthy muscle or subcutaneous tissue be drawn over the graft so that the periphery has an opportunity of becoming revascularized as well as the central portion of the graft. No form of stability of the graft to the host bone is as efficient as the use of mechanical screws. The Surgeon General's Office did a splendid job of standardizing the metals and type of screws to be used in the armed forces, and these screws were of uniform chemical composition and of uniform thread and diameter size so that once the mechanical side of the problem was standardized, the fixation of screws became simple.

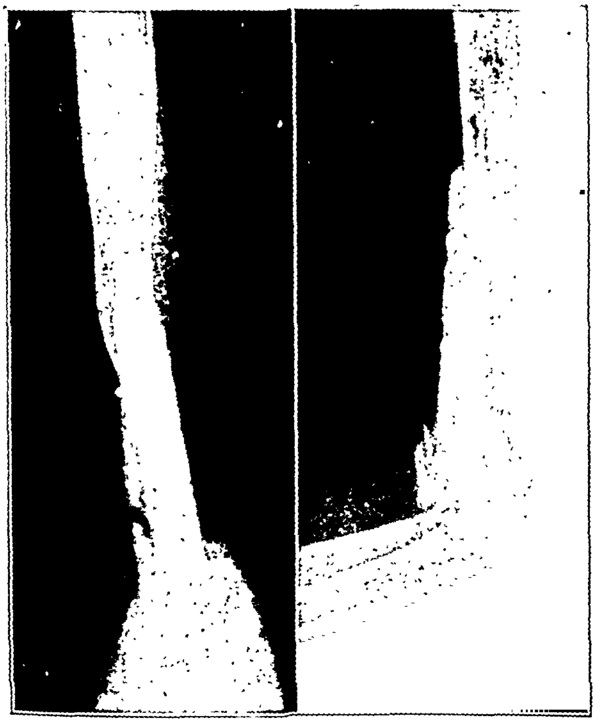

Fig. 8.—Same patient as in figure 7. End result after a double fracture of a full thickness fibular graft, followed later by a tibial graft which successfully stabilized the area End result fifteen months after the fibular graft, and seven months after the tibial graft.

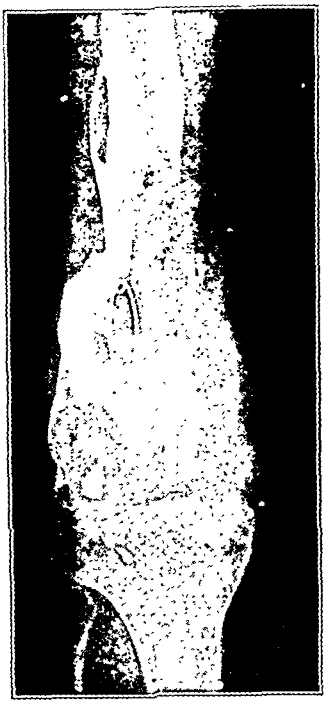

Fig. 9.—A private first class injured Dec. 2, 1944 with loss of bone substance of femur and a septic arthritis of the knee.

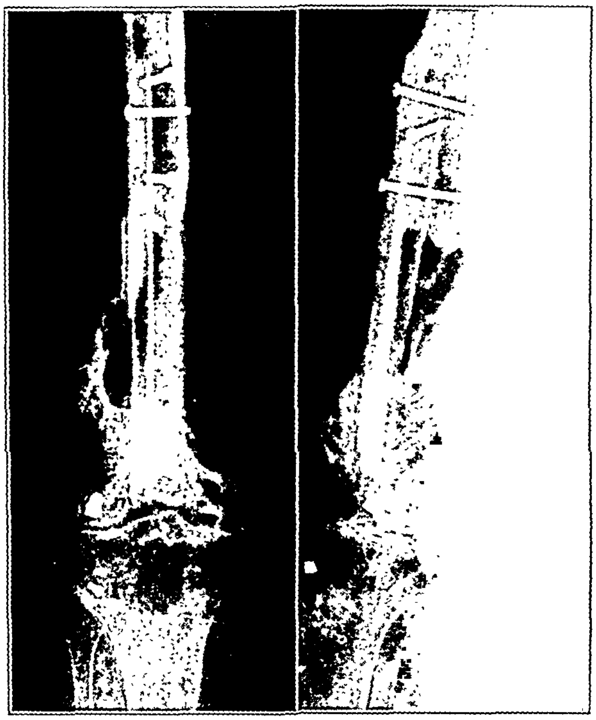

Fig. 10.—Same patient as in figure 9. End result of a full thickness fibular and tibial graft 7 inches (17.8 cm.) long, fourteen months after surgical treatment

The general conformation of the grafted bone must by necessity tend to reestablish the normal contour of the host bone. By so doing there is the least amount of interference with the overlying muscles and tendons during their action in the locomotion of the extremity. Sharp corners are to be avoided, and bulky masses of bone directly below the skin and subcutaneous tissue are most harmful and do not do well as far as revascularization and viability are concerned.

POSTOPERATIVE CARE

The postoperative period constitutes a most critical phase in this type of surgery. Unless careful postoperative immobilization is instituted, the fracturing of the graft or the loosening of the screws occurs all too frequently. This spells failure. It is most important that there be firm, adequate immobilization for a sufficient period. Perhaps no form of immobilization is as satisfactory as plaster of paris. Casts can be molded to the contours of the body and firmer immobilization obtained than by the use of any other form of external fixation.

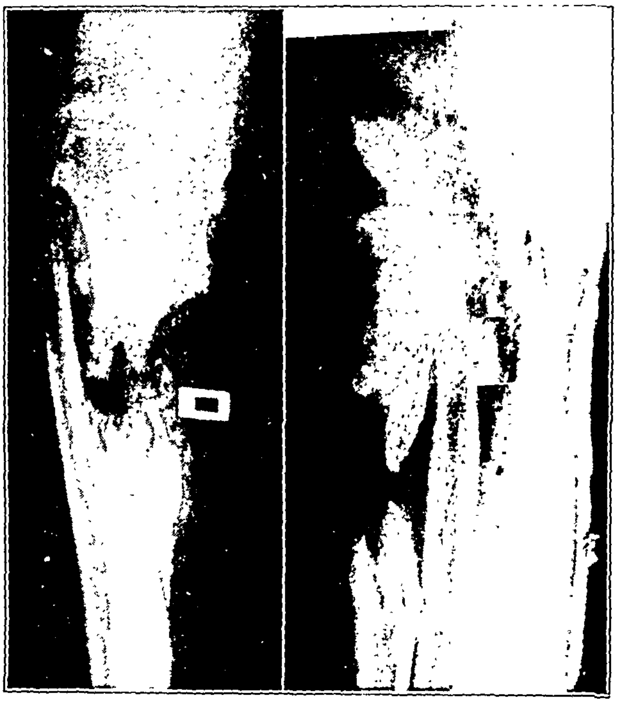

Fig. 11.—A private injured by shrapnel fire with loss of the left leg, lower third of femur. Right leg had loss of 2 inches (5.1) cm.) of tibial substance with intact fibula. A split thickness graft covered the soft tissue defect.

The period of immobilization is much longer than one is apt to believe at first. For this reason it must be remembered that long immobilization is most important and that many a good graft has been lost because of the overenthusiasm and optimism of the operating surgeon.

Where good carpentry has been utilized in performing bone grafts, practically no extraosseous callus becomes visible. The only sign of a take of the graft is the loss of the margins of the graft and the gradual homogenous appearance between the bed of the graft and the host bone. After a period of time this line of separation completely disappears. It requires a great deal of skill and clinical experience to interpret correctly from the roentgenograms and the clinical observations of the extremity whether the graft has taken well enough so that immobilization can cease. It is far safer to err on the side of prolonged immobilization.

CONCLUSIONS

With the advent of chemotherapy, the results of massive bone grafting are far superior to the results prior to the use of sulfonamide drugs and penicillin. More extensive operative procedures can be undertaken with chances of success than could have been undertaken prior to World War II. In order to obtain the best mechanical advantage for the take of the bone graft, it is most important that the maximum amount of fresh bone be brought in contact with the grafted bone and that a snug fit be made between the bed of the host bone and the graft that is to fit into this area. This firm internal immobilization is best obtained by the use of metal screws. Long immobilization in plaster is most advantageous if one is to avoid the all too frequent complication of loosening of the screws or fracturing of the graft. Under no circumstances should a bone graft be placed into scar tissue or covered by skin that does not have a good vascular bed and adequate subcutaneous tissue.

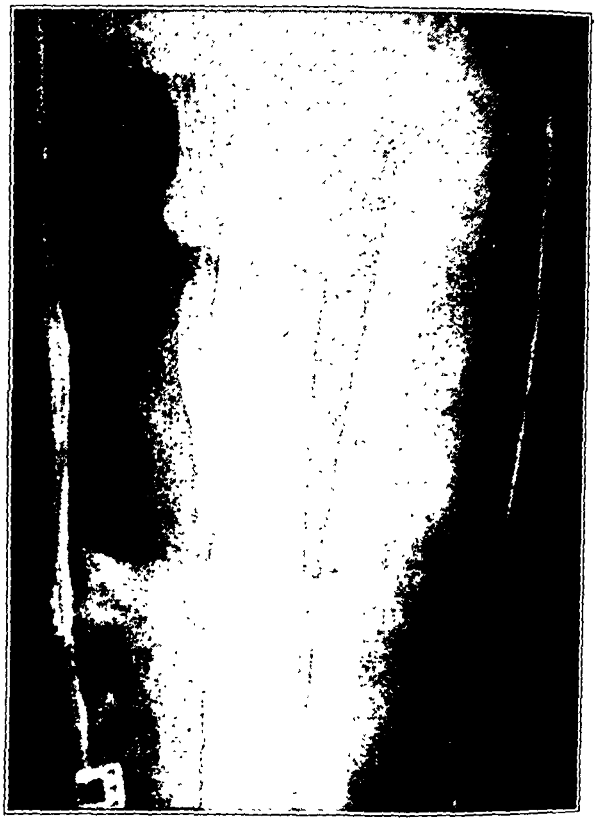

Fig. 12.—Same patient as in figure 11. A 3 inch (7.6 cm.) of fibula was resected and used as an intramedullary bone graft, fixed with two screws to prevent distraction of the freshened tibial fragments. This procedure permitted obliteration of the tibial defect. The dermatome graft was removed, and normal skin and subcutaneous tissue could now be drawn over the bone; the soldier, instead of being 6 feet 3 inches (190.5 cm.) in height was now an even 6 feet (182.9 cm.).

The general conformation of the grafted bone to the host bone is most essential and all sharp corners are to be avoided, as they interfere with the activity of the overlying muscles and tendons and also contribute to the production of excessive scar tissue and unnecessary pain to the patient.

Considering the severity of the wounds and the extensive damage that was produced to the extremities in World War II, the results of bone grafting have been most gratifying.

ABSTRACT OF DISCUSSION

Dr. T. C. Thompson, New York: There is little to add to the clear and comprehensive presentation given by Dr. Scuderi. A series of 94 cases of bone transplantations with only one refracture and three infections is indeed remarkable. Although some of the credit must be given to sulfonamide drugs and penicillin, the high percentage of excellent results indicates that not only were the technical procedures good but the surgical judgment must have been unusually sound. The treatment of uncomplicated nonunion has become a relatively simple matter and one in which one should obtain almost 100 per cent good results. The treatment of the complicated cases with extensive loss of bone and soft tissue test the patience and ingenuity of the best surgeon. I put patience first, for, even though one does not need to wait for many months after infection has subsided, it is most desirable that all the parts of the extremity be brought back to as nearly normal conditions as possible before a reconstructive operation is performed. Not only should the skin be good but all remaining muscle power should be completely developed by maximum functional use of the extremity. It is obvious that Dr. Scuderi does not use the same type in all cases. I agree that firm fixation with a large area of contact between the viable bone and the transplant is most desirable. The technic of making the holes larger in the superficial cortex and using screws long enough to engage the opposite cortex is an excellent way to accomplish this. In some of the most difficult cases, the time required to obtain stability in an extremity without danger of refracture can be shortened and risk of losing a badly damaged extremity can be avoided by the use of a simpler method than a massive bone transplant. After extensive loss of the radius there is pronounced radial deviation of the wrist when the ulna is still intact. Full length cannot be obtained with the use of a massive graft and the bone has to be placed in a scarred bed where the circulation is precarious. I have seen many of these patients in whom the procedure has been a complete failure. Even if it is successful, there are usually little pronation and supination of the forearm and the wrist deformity remains, unless the ulna is shortened at the same time. This problem can be simply solved by making a one bone forearm, accepting the fact that pronation and supination cannot be restored. An osteotomy of the ulna just above the wrist and a transplantation of the wrist and hand to a good position on the end of the ulna will give a cosmetically and functionally good forearm, which is strong in a matter of weeks instead of months. The same thing can be done for a large gap in the tibia, which is almost invariably followed by a varus deformity of the ankle and foot. This deformity can be corrected by a complete osteotomy just above the ankle with transplantation of the foot outward beneath the fibula. Union of the fibula to the tibia above the site of the defect can be readily obtained through an incision which is not through the badly scarred site of injury. Cancellous bone can be added if needed. The perfect alinement obtained in this way allows early weight bearing, and solid healing is obtained in much shorter time than when a massive graft has been used. Attempts to perform technically difficult surgical procedures at the wrong time have resulted in a considerable number of failures. Extensive loss of bone is not an indication for amputation, and certainly attempts to repair such loss should not result in amputation.

Dr. Jesse T. Nicholson, Philadelphia: Dr. Scuderi has had an unusual opportunity to observe a big series of long bone defects. He has discussed well an involved subject in the brief time allotted. The outstanding contribution on the use of autogenous bone grafts for nonunion in long bones that evolved from the first world war was written by the Surgeon General, Norman Kirk. In World War II chemotherapy and antibiotics made surgical treatment possible at a much earlier date after injury and usually prevented a flare-up of infection. This advance not only eliminated infection as a cause of nonunion, but resulted in earlier bone grafting, thus preventing the bone atrophy which so frequently complicated the cases of long-standing infection. The other causes of failure also have been minimized with better immobilization methods, improved bed care, technic of obtaining roentgenograms and ability to combat shock with available whole blood and plasma reserve. Other advantages that favored early successful grafts have been the use of split skin graft to cover soft tissue defects, thereby preventing scarring and obtaining rapid wound healing, then the later substitution of full thickness graft to insure adequate coverage for the proposed bone graft. I cannot agree with Dr. Scuderi on the use of the crest of the tibia as a graft. First as a bone graft it must not be relied on for strength of immobilization. As the graft becomes viable and as creeping substitution (so aptly termed by Dr. Phemister) takes place, the supportive value of the graft is gone. Secondly, it has been my misfortune to inherit subjects from whom a tibial crest had been taken for a graft. Frequently they had had a fracture and even a nonunion of the donor area, or else they had to be kept from weight bearing because of danger of fracture. Often this danger persisted even after the host area had united. Dr. Scuderi's points on the fixation of graft are well presented. The value of small cancellous chips for filling in defects or iliac grafts in the bones of the forearm, metacarpals and metatarsals cannot be emphasized too much. More stress might be put on the preservation of the periosteum of the host bone so that it may be closed, or partially closed, over at least the ends of the graft bridging the defect. Immediate and absolute immobilization is necessary after surgical treatment. I would not even put faith in a tibial crest as support for fourteen days after operation. Dr. Scuderi is correct that no definite time for union of a graft can be given. The roentgen examination is always the answer to the question, "Is there union?"

Dr. Carlo S. Scuderi, Chicago: In response to Dr. Thompson's remarks, I wish to state that it never occurred to me that the ulna could be used to replace the shaft of the radius and give a substantially good forearm. It is an idea that I am going to take home with me, and if the opportunity presents itself, I am certainly going to use it. In regard to Dr. Nicholson's remarks, for brevity of the paper, I did not go into the details about the use of massive fibular grafts. If much strength and length of bone is needed tibial grafts are indicated. Cancellous bone grafts are indicated when large defects are to be filled in conjunction with massive bone grafts. Fibular grafts are indicated when long tubular bone replacement is necessary, such as in the radius, ulna and humerus. I am sorry that time did not permit a more extensive discussion of all the points which we hoped to cover.

WHAT CAN ONE DO FOR THE HARD OF HEARING?

A Panel Discussion

FRANCIS L. LEDERER, M.D., Moderator
Chicago

The Moderator: Each one of you is expected to direct pointed questions and discussions. I hope that this will be the culmination of the problem as a result of the studies that have come about through the military services. I believe that this first showing before a public medical audience of a film produced by the Army will serve as a fair introduction and focus your interest on the problem.

FILMS ON REHABILITATION

Dr. Norton Canfield, Veterans Bureau: The film is the end result of a request of the Surgeon General to provide a pictorial history of the rehabilitative program as carried out in the Army during the War. This film was started about a year and a half ago, before the Army units were rearranged and before the unit which is now in operation at the Army was established at Walter Reed Hospital. The film depicts the course through which these men pass during their rehabilitation program, and is an accurate record of what was done.

"FITTING" THE HEARING AID

QUESTION: What procedures are involved in a really satisfactory hearing aid "fitting?"

Miss Eva Thompson, Philadelphia: In a discussion of hearing aids and "selection," "fitting" or "prescription" of hearing aids, it is essential that the hard of hearing patient be the first consideration. The goal in audiologic rehabilitative procedures is to give the handicapped person some means of maintaining comfortable communication in a gregarious world. This is not a simple thing to do and except in the rare case cannot be done by merely "hanging" a hearing aid on the patient.

Medical and Psychosocial Analysis of Patient.—The first consideration in a really satisfactory hearing aid "fitting" is a complete medical and psychosocial analysis of the patient. As

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no two persons are alike, it is impossible to know to what degree their hearing loss has influenced their personality. Each in his own way has endeavored to adjust to his hearing loss; some by trying to bluff, and others by becoming introverts. However done, the result is always some form of change in personality. The clinical information necessary is of course derived from as complete an audiologic study as possible, consisting of air conduction and bone conduction audiograms, speech reception tests, tuning fork tests, conversational and whispered voice tests and any special tests which may be indicated. The more tests that are done, the more assurance one has of knowing the actual degree and type of the hearing loss. Each test serves a purpose, but the importance of each must be carefully weighed. Some are merely rough screening tests, and others precision tests. None are completely objective, so that it is impossible to divorce the individual patient from his ears. For example, the audiogram gives a picture of the patient's residual hearing for pure tones. The speech reception test tells what he does with this residual hearing, and this will be reflected in his use of a hearing aid. A thorough otolaryngologic and general physical examination is essential, for no patient should be burdened with a hearing aid if medical or surgical treatment can cure the deafness. There is, however, no contraindication to the use of a hearing aid while therapeutic treatment is being carried out. Helpful information relative to the fitting of a hearing aid is the diagnosis and cause of the deafness and the duration, for this sheds light on the prognosis of the case. In selecting the amount of amplification necessary for the case, this prognosis should be considered. The patient's age and the duration of the hearing loss are of extreme importance in regard to tolerance of amplified sound. An elderly person who has had a hearing loss for a period of years will usually have low tolerance for amplified sounds and will lack the patience and resiliency necessary to learn to listen again. This type of patient often expects the hearing aid to bring back the mental alertness of youth, and when this miracle does not occur he blames the hearing aid. Because of these factors in these cases, often it is better to give less amplification than is indicated by the test picture. This is spoken of as "underfitting," a generally poor practice except in the case in which tolerance for amplified sound is low. The condition of the external canals and tympanic membranes must be known, for it is necessary to take an impression of the external canal in order to make an individually molded ear piece. This is absolutely essential if an air conduction hearing aid is to be used, for no universal ear piece is satisfactory. The impression should never be taken in the presence of mycotic infection, exostoses, active suppurative otitis media or a similar condition which might be a contraindication to the use of an air conduction hearing aid. The presence on absence of tinnitus, vertigo and headaches may also be factors in the patient's adjustment to the use of a hearing aid and, consequently, should be considered in the selection of a suitable aid.

Psychologic Preparation of Patient.—If the hearing loss is greater than 30 decibels in the speech frequency range, audiometrically or as tested by speech reception, a hearing aid should be recommended and the patient advised not only of the advantages but also of the limitations of a hearing aid. All too frequently he believes that an aid is going to be a panacea for all his difficulties and that he need merely overcome the feeling that a hearing aid is a stigma of the infirmity of old age. Hearing aids cannot give the patient completely normal hearing inasmuch as only one ear is being used and difficulties, such as localization of sounds, typical of the unilaterally deafened, must be accepted. Then, too, the hearing aid amplifies all sounds, not just speech, and unless these facts have been clearly explained to the patient before the fitting of the hearing aid he will be confused and disappointed and may even refuse to use an aid. For these reasons the psychologic preparation of the patient is imperative in a really satisfactory fitting of the hearing aid. This can be done by an audiologic specialist, an otologist or a psychologist. Rare indeed is the hearing aid salesman who has had adequate training to play this important role. A general consideration of the patient's vocational, social and economic situation is helpful, as this knowledge may shed light on the degree of the handicap in the patient's daily communicative habits. No patient can be made to use a hearing aid if he does not so desire. Cooperation of the patient must be obtained before a successful fitting can be achieved.

Ear Mold.—The next step is the procurement of a well fitting ear mold for the ear on which the aid is to be worn. The impression for this mold can best be done by the otologist. However, it is accepted practice to have it done by trained technicians. With the use of the new acrylic resins it is a fairly simple procedure and lacks the risk that was present with the use of plaster of paris.

Selection of Ear.—If there is an average moderate loss in both ears and the patient can use a telephone with some efficiency the ear not used in telephoning is selected. If there is a disparity between the ears—for example, an average loss in the better ear of 40 to 50 decibels and a loss of 65 or more decibels in the poorer ear—the better ear is selected. The hearing in the aided ear must be above the level of hearing in the better of the two ears, for unless this is accomplished the patient is no better off than he was without the aid.

Testing of Hearing Aids.—The actual testing of hearing aids should be done under carefully controlled conditions which can be kept uniform for all aids tried by the patient. This situation was possible in the service aural rehabilitation centers and can be found in some civilian clinics. It is not present in the salesrooms of the hearing aid companies. The hard of hearing person has an abnormal speech-hearing pattern and consequently needs guidance by a trained specialist in the selection of the best hearing aid for him. Suitable test hearing aids are selected by first deciding the amount of amplification needed, and then whether this amplification should be equal for all frequencies or whether greater emphasis should be placed on the high or the low frequencies. Experience and research work carried out in the service programs and the Harvard University Psychoacoustic Laboratories have shown that for a large majority of patients better speech discrimination is obtained if the frequency emphasis rises approximately 6 decibels per octave. In most of the instruments of modern type this is done by means of a tone control. However, some patients cannot tolerate this type of frequency emphasis. Hearing clinics using a large group of test instruments conform in general to the recommendations of the hearing aid companies. The company's statements can be accepted in regard to the characteristics of the individual models. These test instruments are classified under three main categories. (1) amount of amplification, (2) frequency emphasis and (3) tonal quality. With a knowledge of the degree of the hearing loss and some information about the patient's tolerance for amplified sound, it is a relatively simple matter to determine the amount of amplification needed and whether the test aids to be tried are selected from the minimum gain instruments. The second category is not as simple, for the audiogram gives only an indication of the frequency emphasis needed. Much has been written about selective amplification and "mirroring" an audiogram. Theoretically this can be done, but practically it is impossible with the modern portable hearing aid because of the number of factors which modify the performance of a hearing aid when actually worn by the patient. With the audiogram as a guide, an adjustment is made in the tone control setting, or suitable model instruments with fixed characteristics are selected for testing. The third category, tonal preference, is almost completely unpredictable and is directly related to the psychologic makeup of the patient. The fact must be accepted that the hearing aids of different companies have different tonal quality; for example, some are crisp or sharp, others are mellow, while still others are hollow. It is essential that this quality inherent in the hearing aid be acceptable to the patient, for it is an essential factor in the comfor with which he is able to wear the aid. Only by trying out different makes of hearing aids is it possible to determine the quality that will be acceptable to the individual patient. After the selection of the suitable test aids, some standard method of comparison should be carried out. Ideally there should be a preliminary screening test in quiet and in the presence of noise followed by controlled scientific tests such as the speech reception gain test which gives an absolute figure for the gain obtained in hearing for speech by the use of hearing aids. This test can be carried out simply or in elaborate steps using various intensity levels of speech and ambient noise. Only by means of comparative tests of various types carried out in uniformly controlled situations can the hard of hearing person be assured that he has obtained the best possible hearing aid for his particular type of loss. This aid must be comfortable to wear, it must give the patient the optimum in sound discrimination and must give a gain in speech reception of at least 30-decibels except in the case in which the hearing loss is so moderate that less than 30 decibels of gain is sufficient. The average gain obtained by the patients fitted with hearing aids in the Navy's Aural Rehabilitation Program is 36.3 decibels. If these procedures are carried out and the patient has the assurance that he has obtained the best possible hearing aid "fitting," his adjustment to the use of the aid will be much more rapid and—more important—will probably be successful.

WHAT A HEARING AID IS AND DOES

QUESTION: What must I know about modern hearing aids if I am to prescribe them satisfactorily?

Miss Thompson: I would question the use of the term "prescribe," but whether one uses this term or "selection" or "fitting" it is essential that one should know what hearing aids do, what they are, how they work and whom they are for. A hearing aid is a miniature public address system, consisting of a microphone that converts sound into electrical energy, an amplifier that increases this electrical energy and a receiver that converts this electrical energy back into acoustic energy at a louder intensity. If this amplification is done equally for all frequencies one says that the system has a flat characteristic or has a flat frequency response up to a specified frequency. Only high fidelity systems are capable of doing this. Hearing aids introduce a considerable degree of frequency distortion; that is, they amplify some frequencies to a greater extent than others. However, this frequency distortion can be changed and controlled by means of tone adjustments. Experience has shown that greater amplification in the speech frequency range than in the low frequencies gives better speech discrimination, and consequently, this feature of hearing aid amplification has been used to advantage. Normal hearing cannot be obtained by the use of a hearing aid, for it is impossible to take an abnormally functioning ear such as is found in the hard of hearing patient, and attempt to compensate for this abnormality by frequency distortion amplification. Two abnormal conditions cannot make a normal condition. However, it is possible to approximate this goal, and that is what is done by the use of hearing aids. The amount of amplification can be adjusted by the volume control, the frequency emphasis by the tone control. The basic parts of a modern vacuum tube are the hearing aid transmitter (microphone and amplifier), two batteries, an A and a B battery, and the receiver. The microphones and receivers may be either crystal or magnetic. The receiver may be air conduction or bone conduction. However, in the Navy's Hearing and Speech Clinic it has been found that in the majority of cases the air conduction receiver is more efficient than the bone conduction receiver; consequently, only a small proportion of the hearing aids issued by the Navy have been of the bone conduction type.

Basic Requirements.—A hearing aid should meet certain basic requirements such as those outlined by the Office of Scientific Research and Development. 1. Power: It must have sufficient power to bring audible sounds to the deafened ear. 2. Tolerability: Sound must be brought to the ear without causing pain, tickle, or serious discomfort. 3 Fidelity: In terms of the patient's ability to interpret sound, the hearing aid should make intelligible any clear connected speech. 4. Wearability: The ear piece must be tolerable to wear, and the instrument as a whole must be portable without unreasonable discomfort and inconvenience. 5. Sensitivity and amplification: The aid must make ordinary speech intelligible at conversational levels. Hearing aids meeting these specifications and also the minimum requirements of the Council on Physical Medicine of the American Medical Association carry the seal of approval of the American Medical Association. Only accepted aids should be recommended by the audiologist. A list of these accepted aids can be obtained by writing Mr. Howard Carter, the Secretary of the Council. Information in regard to the degree of amplification, the frequency emphasis, the construction of the instrument and the design of various individual features of specific instruments can be obtained from the published reports of the Council on Physical Medicine of the American Medical Association. These references may be found in the list of accepted aids, which is revised as new aids are approved. Additional information in regard to the selection of suitable test aids for specific types of hearing losses may be obtained from the hearing aid companies. Thorough familiarity with the accepted makes and models of hearing aids that are to be tried by the patient is necessary to do a completely satisfactory hearing aid fitting. In no other field of medicine would a prosthetic appliance be recommended without a complete understanding of all features of not only the prosthesis but also the individual problems of the case.

PSYCHOGENIC LOSS OF HEARING

QUESTION: What help can I expect of electro-acoustic tests in the diagnosis of psychogenic loss of hearing?

Miss Thompson: A full discussion of this question would involve not only a detailed description of modern hearing testing technics and apparatus but also a discussion of types of psychogenic deafness. The recognition of the fact that there is a psychogenic component in at least 15 per cent of our hard of hearing patients reflects a comparatively new trend in medical science, a realization that there is probably no such thing as a purely organic disability; every somatic disturbance tends to produce a psychic change. The otologic problem is the same as that found in any other branch of medicine, that is, to determine the extent of the organic lesion and find out if possible how many of the symptoms can be attributed to psychogenic overlay. Again, much as it would simplify the problem, one cannot divorce the patient from his ears and one is forced to consider him an individual and to the best of one's ability try to find out what he is doing with his ears and what his ears are doing with him. For this reason, as in every branch of medical science, tests have been developed to determine as objectively, as accurately and as scientifically as possible the purely physiologic function of the special sense or organ under observation. In the science of audiology this has been difficult, because of the number of variable factors which are involved. The more of these variables that can be controlled in audiologic test situations the more objective will be the findings and the more information gained about the pathology of the ear. This has been the goal of audiologic research. Though the goal has not been attained, many of the classic tests have been adapted to electroacoustic apparatus and new tests have been developed. Modern hearing tests are essential in the diagnosis of an ear condition as first encountered, the condition of the ear during and following treatment and the prognosis of the case. Practically every patient with an ear complaint, unless the condition is external, has some dysfunction of the hearing mechanism. This dysfunction may be reflected in the patient's reactions, and a psychogenic tendency might be recognized and perhaps abated at this stage, provided that the hearing tests are carefully conducted and accurately controlled and an understanding of the psychologic changes which occur in a person with a mild recent hearing loss are recognized by the otologist. If the possibility of these changes occurring is not recognized by the otologist, a psychogenic overlay or some other form of psychogenic hearing loss may develop. The audiometer is considered by all audiologists the basic apparatus for the testing of hearing. No test has been presented to supplant the audiometric test. All other tests are used to supplement it. The newer ones, such as the speech reception test, give additional knowledge in regard to the individual case. Why in 60 to 70 per cent of cases is there such close agreement between the audiogram and the speech reception test and little or no variation on retests? What is the reason for the discrepancy in the other 30 per cent? Because modern electroacoustic equipment is available, it is now possible to find some of the answers by the use of special tests.

Time does not permit a detailed discussion of all the tests which have been used; hence, only those that have been found helpful in the selection and diagnosis of cases involving possible psychogenic deafness will be considered: (1) repeat audiometric tests showing fairly wide discrepancies; (2) repeat speech reception tests given in conjunction with the audiogram showing little or no correlation with the audiogram or with the previous test; (3) bizarre results of bone conduction test whether the test is conducted with tuning forks or the audiometer; (4) conversational voice and whispered voice tests that do not conform to the speech reception test; (5) Lombard test carried out using full spectrum noise carefully calibrated; (6) Stenger test using two perfectly matched earphones, matched in reference to frequency and intensity, and if possible a calibrated attenuator for each earphone, and (7) the Doeffler-Stewart test, perhaps the newest of the tests that have been helpful in the diagnosis of the psychogenic case. This test is based on the masking effect of noise on speech, but here again the type of noise used, the calibration of the special equipment and the technic of giving the test must be thoroughly understood before the results can be used for diagnosis of psychogenic deafness, but this statement can be made about the use of any electroacoustic equipment. Electroacoustic equipment is not mysterious. Practically all of you drive automobiles and would probably admit that you know little or nothing about mechanics, but you know the purpose of each of the push buttons and the rules and laws of the road. Electroacoustic equipment is not much more intricate provided that one takes time to learn the rules and the laws of the road and respect the push buttons—not only of the equipment but also of the patient with whom one is dealing.

AUDITORY TRAINING

THE MODERATOR: In 1940, Day estimated that well over 70 per cent of the people who got hold of a hearing aid discarded it. I would like to ask Dr. Baker what is meant by auditory training, and what is needed to accomplish it.

DR HERBERT KOEPP-BAKER, Chicago: You are accustomed to thinking in terms of deafnesses, of losses, of disability. To have a thoroughly useful auditory rehabilitation program, you must shift about and take the view that you are not so concerned with what the patient has as with what he has left. Auditory training is best defined as that preparation of the living active organism for using most efficiently what he has left.

Preparatory State.—It is divided into three parts. There is a so-called preparatory state or period in which the patient is helped to understand what will be expected of him when he is being measured for a determination of his loss and also what he is going to do with the amount of hearing he has left. There is reason to feel that before a patient is fitted with an aid a psychologic and a physiologic preparation would have utility for a later time, and by that I mean that he ought to come to understand what amplified sound is like. To many of us, it is not a normal experience, and to the deafened person it is probably even less normal. I suggest, therefore, that to provide controlled managed experiences in listening to amplified sound may be of real value to the person who is being fitted ultimately with an amplification device.

Second Stage.—The second stage of auditory training is a preparation that follows three major steps: telling the patient what he needs to know; helping him to get the facts about what he needs to know, and, about the instrument and, the third step developing an attitude about its use. One may wonder whether that is auditory training, whether the psychosocial preparation that the patient gets for the use of amplification is auditory training. Indeed it is. We physicians are coming to evaluate much more reasonably the place of the central processes in hearing. Hearing is something more than merely the transmission of acoustic energy through the ear channels into the brain. As we have learned in vision, so we are learning in hearing that a great deal of consequence goes on in the central nervous system of the patient; hence an auditory training program concerns itself not only with reestablishing the greatest possible utility of the peripheral and middle and central mechanism, but with establishing a whole new attitude toward the act of hearing.

Third Stage.—The third stage in auditory training is helping the patient to become a skilful user of the aid. By that I mean becoming a specialist in being deaf. I should like to point out here that the fundamental attitude that is established, of course, is one that he is deaf and that his hearing aid will do nothing more than to assist him to use effectively what he has. We do not at any time intend to make a deaf person think that he is normal. What does this third step consist of? It consists essentially of providing the greatest possible control and free experiences in hearing. Some of those can be done in terms of using live situations properly managed, and others can be managed only in a quasilaboratory situation. How practical is this? A few days ago I recommended to a woman who had been fitted with a hearing aid that she learn how to use her radio as a retraining device. It maintains reasonable satisfactory continuous attenuation in a large city. She is able to hear all kinds of speech by amplification. She can sit near or far. My associates and I have prepared a manual that suggests how certain devices of amplification, such as the phonograph and the radio, can be used in the home, and from these devices the patient can learn to make daily and regular adjustment to a hearing aid, which is, after all, a device for amplification.

LIP READING

QUESTION: What is new in speech (lip) reading?

MISS MIRIAM PAULS, Philadelphia: The fundamental objective of aural rehabilitation is to restore ease of communication. This aim is most efficiently achieved when the hard of hearing person is taught to integrate what he hears with what he sees, within the framework of the situation of the moment. This is the role of speech reading. The emphasis is placed on how visual cues supplement auditory cues, for hearing is the easiest and the most natural way to understand speech. The speech reading lessons should be integrated with the auditory training and the two based on a simplified background of phonetics. This in no way implies that speech reading is unimportant. Quite the contrary; it is merely a shift in emphasis. Every hard of hearing person should have instruction in the subject as soon as possible, for it is indispensable. However, its limitations must be recognized. Speech reading can never completely supplant hearing, since much of the speech pattern is next to invisible. The solution for most persons is a combination of a well selected hearing aid and speech reading which will enable them to communicate freely and easily.

PSYCHOLOGIC GUIDANCE

QUESTION: What psychologic guidance and assistance do the hard of hearing and deaf require?

MISS PAULS: Every one working with the deaf and hard of hearing must be a "psychologist" in the broad sense of that overused word, for the basic problem is one of psychosocial adjustment. Everything is hinged on the attitute of the hard of hearing person toward his loss; whether he accepts it calmly and objectively with the quiet determination to conquer it, or whether he chooses to evade the responsibility either by self pity, bluff or rebellion. Group therapy is one of the most effective ways to establish a healthy perspective. In a skilfully conducted class, ostensibly set up to develop skills and give information about ears and deafness and hearing aids, the necessary attitudes are inculcated. Each man profits by the successes and failures of his classmates. A sharing of problems does much to clear the air. It is important that the hard of hearing person accept his responsibility to become a "specialist in deafness," for the more insight and knowledge he has, the quicker and surer is his adjustment.

INSTRUMENTS, METHODS AND PROCEDURES

QUESTION: How can these instruments, methods and procedures be made practical for the practicing otologist?

DR. EDWARD H. TRUEX, Hartford, Conn.: This is not an easy question to answer in a comprehensive manner since, in referring to instruments, methods and procedures the whole complicated system of aural rehabilitation is involved. The system becomes practical for the practicing otologist only to the extent that the various specialized facilities are available to him and to his patients. Aural rehabilitation is composed of several highly technical fields of endeavor into which the average otologist has neither the training nor the time to enter without neglecting his own specialty

Aural Rehabilitation Centers.--To be truly practical for the average otologist, aural rehabilitation centers should be established in strategic locations equipped and staffed to carry out all phases of the work. Such centers do exist at the present time, but they are few in number and are for the most part connected with university teaching programs. The establishment of such centers is an ideal which can be attained only over a period of years, but which usually begins with a small nucleus of interested persons and meager equipment One such nucleus, is the local chapter of the American Hearing Society. Some of these organizations are equipped to carry out a hearing aid selection and an auditory training program. All of them offer instruction and practice in speech reading. With a little effort on the part of one or more otologists, limited facilities such as these can be expanded gradually to cover all phases of rehabilitation. If such an organization is not available or if for some other reason its services are not desired, a group of otologists in a community or the otologic staff of a hospital can combine its efforts to institute a part or all of the measures with which we are concerned. As early as possible in the formulation of a rehabilitation unit speech reception equipment should be acquired. This equipment using either recordings or live voice as the testing medium is attainable at a reasonable cost or can be constructed according to desired specifications by any good radio construction man Personnel needs for the unit at first can be solved by employing a testing technician who has had adequate experience in audiometry and has the ambition and intelligence to progress further. There are several university seminars and well developed functioning centers which offer ample opportunity for him to learn and advance rapidly in his work. On the other hand, if the demands of a newly formed unit warrant, it is possible to employ highly skilled technical help—either men or women—with graduate degrees in speech and hearing conservation. In addition to this type of technical employee, the part time or full time services of a lip-reading instructor will be needed to carry out the pedagogic aspects of the program. The major problem in the formulation of such a unit or clinic concerns the hearing aid samples or supply. In any community only those instruments should be dispensed that have readily available repair and replacement facilities in order to insure the patient uninterrupted hearing. It is possible for any clinic to purchase outright various makes and models of hearing aids, but this is seldom practical from the economic point of view. Any clinic endorsed or actuated by otologists will find the majority of hearing aid agents cooperative. Most of them will be happy to lend the clinic sample instruments and maintain them in optimum working condition, provided that all instruments are given unbiased appraisals in the fitting of each patient. If this system is not practical, two alternatives are left: 1. Arrangements usually can be made for individual hearing aid agents to attend the clinic at specified times to fit patients. In this way supervision can be carried out which will discourage any sales pressure on the part of the agent. Various instruments thus fitted can be tested comparatively on each patient and the final selection made accordingly. 2. The patient can be sent to several different agents with the understanding that no instrument would be purchased without being tested in the clinic. This method does not eliminate the effectiveness of sales personality but does offer the opportunity of testing several instruments in a selective process.

Informing the Patient.—In most communities it is not possible to support such a clinic, and yet the otologist is anxious to be of greater personal assistance to the hard of hearing patient. There are several things that he can do in his office. The simplest measure which will be of great benefit is to devote a few extra minutes to the imparting of information. As a rule most of us recommend that a patient buy a hearing aid, offer him the names of one or more distributors and send him on his way. 1. Be sure that such a patient understands that a hearing appliance does not correct the defect that exists, that it merely amplifies sounds for him to hear. It is not comparable to a precision ground lens which corrects an optical defect in the eye. 2. Warn the patient about noises. An aid will amplify ambient noises as well as the sound that he is desirous of hearing. These noises will disturb him a great deal, especially since he has not heard them for some time. It is important that he not purchase a particular hearing aid just because it is the least noisy one, since it is usual that the instruments which amplify extraneous sounds most loudly also will amplify the spoken voice most satisfactorily. The patient should understand that selectivity is a faculty of his central nervous system and not to any great extent an inherent part of the instrument, that weeks and even months of intelligent usage will be necessary before optimum benefits are attained. 3. He should be advised to take instruction in reading lips if such instruction is available. Do not mislead him into the belief that learning to read lips will be easy or that it will solve most of his conversational problems. On the contrary, he should be informed that it will be an arduous and boring task to become relatively proficient and at best it is only an *adjunct* to his aided or unaided hearing. The few extra minutes devoted to discussing these subjects and answering questions which the discussion evokes will *be of immeasurable benefit to the patient.*

Custom Made Ear Piece.—The otologist actually can go one step further in his office practice without a gross expenditure of time. Optimum reception from an air conduction hearing aid necessitates a custom made ear piece. Ordinarily the impression is taken by the sales agent and the ear piece furnished after the patient has decided to purchase a particular instrument. I believe that the piece should be furnished before any attempt is made to select an instrument, thus eliminating one of the many variables that are encountered in comparatively evaluating different makes and models of aids. The new plastic dental impression compounds permit the otologist to take an impression of the concha and canal with safety and cleanliness in a period of ten minutes. The impression can be sent to any of several laboratories for processing, and the finished "lucite' product will be returned within a few days. Moreover, if the ear piece is furnished, most of the hearing aid companies will deduct its cost from the cost of the instrument purchased. The otologist can go considerably further if he so desires, but in so doing he must be prepared to devote many hours of his time to each patient or must employ technical help as part of his office staff to do the work under his direction. It is entirely practical under these conditions and with speech reception equipment to carry out a system of hearing aid selection and auditory training in private practice.

AURAL REHABILITATION

QUESTION: How much can I expect general otologic treatment to contribute to an aural rehabilitation program?

DR. TRUEX: General otologic treatment is of much greater importance in the prevention of handicapping degrees of hearing loss than it is in the restoration of serviceable hearing to those so handicapped. As a rule, the person whose acuity of hearing is sufficiently poor to warrant rehabilitative measures has little chance of rehabilitation through general otologic treatment. Moreover, the longer the hearing loss has existed the more remote becomes the possibility of significantly improving it by ordinary methods. In this connection it is worthy of note that the vast majority of patients who are in need of aural rehabilitative measures have experienced the gradual increase of the deficiency over a period of years. Hearing loss becomes a decided handicap when it reaches the 30 to 35 decibel level in the better ear. This may be considered the critical level at which a ten decibel change in either direction means the difference between serviceable unaided hearing and a prosthetic device. The removal of aural polyps and the drying up of chronically discharging ears frequently result in the gain necessary to elevate the acuity of hearing to a practical level. Occasionally sinusitis and nasopharyngitis, allergic rhinitis and nasal polyps are important factors in depressing middle ear functions and when adequately treated result in an improvement above the critical level of hearing. The removal of nasopharyngeal lymphoid tissue by surgical treatment or radiation or by a combination of the two often results in a dramatic improvement in auditory function and not infrequently in a return of hearing to normal. These dramatic results are observed almost exclusively in children whose difficulty is due to obstruction of the eustachian tubes. Nevertheless, a conductive or predominately conductive type of hearing deficiency warrants careful attention to the nasopharyngeal lymphoid tissue, particularly if the history suggests repeated otitic inflammation. I think that we all agree that general otologic therapy is of no specific benefit when the deafness results from otosclerosis or when due either to primary or secondary damage to the neural elements. Some of these patients experience a certain psychological benefit from treatment, but such benefit is immeasurable and short lived. Certainly every patient with a handicapping degree of hearing impairment who has some chance of improvement should be treated intensively, but they are few in number. The others should not be obliged to waste time and money in receiving treatment. They should be advised against constantly grasping for miraculous cures. They should be informed that you as an otologist will seek them out if research uncovers anything that promises to help their hearing. Then they should be assisted in implementing their residual hearing through the other methods discussed here today.

SURGERY

QUESTION: What part does surgery play in the rehabilitation of the hard of hearing?

Dr. Truex: Surgical treatment has been firmly established as a method of rehabilitating in certain cases of impaired hearing. I refer, of course, to the Lempert fenestration operation. As more and more trained surgeons become experienced in performing this operation, the greater will be its effectiveness. Moreover, continuing research may increase the scope of this procedure to include a considerably larger proportion of the hard of hearing population and almost certainly will result in a consistently higher percentage of permanent successes. At the present time reports of successful fenestration operations vary from about 30 per cent to over 80 per cent of cases operated on. Some of this large discrepancy can be attributed to overenthusiasm on the part of the surgeon in evaluating his results. Some is certainly due to a careless selection of patients for operation, and some of it, I am sure, can be blamed on the liberties taken by some surgeons in determining success or failure. By far the major part of the discrepancy in my opinion is attributable to the variations in technical skill and experience of the operator. There are few operative procedures wherein success depends on the same scrupulous attention to detail and deftness of the surgeon's hand as does the Lempert fenestration from start to finish. A truly successful fenestration operation is a much more satisfactory method of rehabilitation than is the combination of a hearing aid, auditory training and instruction in lip reading. However, a relatively small percentage of those handicapped by hearing defect can be operated on with a reasonable chance of attaining practical hearing. Evidence of moderate to severe impairment of cochlea function is a definite contraindication to surgical treatment. The same applies to chronically or recurrently infected middle ears. If these cases are eliminated along with those with systemic contraindications both mental and physical, the operation has only limited application. Most of these patients can be eliminated by the otologist without sending them long distances for examination by the fenestrationist. I believe it is unwise to try to "sell" the operation to a patient, since the results for any individual patient are absolutely unpredictable, and it is not without hazard, discomfort and prolonged after-care. It should be borne in mind that those on whom the fenestration might be satisfactorily performed are as a rule easily fitted with an air or bone conduction hearing aid. I believe that the hearing aid should be heartily recommended. The patient inevitably will ask whether there is not something that can be done medically or surgically, whereupon the fenestration operation should be discussed in detail with the utmost honesty. When a hearing aid and lip reading do not serve a patient satisfactorily in his social and economic endeavors or when he has a decided aversion to such measures, the fenestration operation should be suggested. The carefully selected patient has little to lose and much to gain in these circumstances.

COMMUNITY REHABILITATION PROGRAM

QUESTION: What are my responsibilities as an otologist for the organization and establishment of a total rehabilitation program in my community?

Dr. Charles E. Kinney, Cleveland: Any otologist worthy of such a title should be a well versed audiologist. He should keep abreast of advances in the fields of detection of hearing losses, hearing testing and analysis, lip reading and auricular training. These fields are expanding so rapidly that it is impossible for one person to be an expert in all of them—but the otologist in any given community is the logical person to lead in the establishment of a total aural rehabilitation program in his area. Impaired hearing is a pathologic condition and as such is fundamentally a medical problem. America si progressing so rapidly that no physician or group of physicians can pass a resolution to the effect that hearing problems must be left in the hands of medicine and then sit back with their thumbs in their vests. As has already happened in some areas in this country the problem will "pass up" the physician. In addition to the moral responsibility devolving on the otologists of a community to lead in the establishment and running of a rehabilitation program, there is the unlimited interest that may be derived from such an endeavor. To this point, I can speak with experience. This interest can be described under three points, namely: (1) the obtaining of heart-tingling successful results; (2) the chance to offer a replacement in the training of younger otologists for the dramatic complications of mastoid disease that occurred up to twelve years ago and (3) the opportunity to enhance one's personal prestige by delving into a relatively new field.

COMMUNITY RESOURCES

QUESTION: What community resources are available to me, and how can I coordinate them?

Dr. Kinney: Too often the first thought is to go to some political body and get a law passed. The second mistake is to start talking about the erection of a new building with all the expensive electrical gadgets that are being used in some centers. Methods of detecting loss of hearing in children have now developed to the point where it is possible to establish such programs on a completely decentralized basis and still have fairly uniform technics. This fact, coupled with the belief that it is the responsibility of local boards of education to detect sensory impairments in children under their care, makes this approach the logical first step. It is possible to convince any thinking board that the number of pupil failures can be reduced by about 30 per cent when a good functioning program of hearing loss detection is in effect. The cost of reteaching failures is well known, and it is easy to convince a board that such a program will soon pay for itself. Recommended methods of procedure have been published by others and myself and do not need repeating.

Sources of Funds.—As the twig is bent so will grow the tree. Applying this axiom to the hearing problem, many hearing problems among adults will be eliminated by a good hearing conservation program in the schools. The next step is go into the adult field. With a program in effect for conservation of hearing among children there will then be available lip reading and auricular training teachers to be the nucleus for a program among adults. The community fund is a logical financial approach to the adult problem, but in no instance should this remain the only source of revenue. Ten years ago, our program in Cleveland was 100 per cent supported by the community fund, but today this support amounts to only 26 per cent. This other support may come from service organizations such as the Rotary and Kiwanis, from veterans' organizations such as the American Legion and the Veterans of Foreign wars, from any number of fraternal organizations, from civic organizations such as senior and junior chambers of commerce and from individual persons and foundations. As the program for conservation of hearing of adults develops further, there then become available new sources of revenue. An impartial hearing aid advisory bureau is now possible, and we have found that fees charged persons using this service have been graciously refunded to these persons by the local agents who sell them their hearing aid. And, finally, if a university connection is possible, the tuition fees charged students taking up the various phases of this work make up a goodly amount. You will notice that I have eliminated federal, state and city control of such a program. This is desirable.

RESEARCH

QUESTION: What research needs to be done?

Dr. Kinney: Research in the problem of deafness is still a large field. At least fifty problems need much study. I will confine my answer of this question to outlining four important problems. The first of these is a better understanding of the physics of the movement of fluids in a closed container. Then we could better study the function of the perilymph and endolymph.

The work that is being done at the University of Chicago on ossicular movements is an example of fundamental hearing research. The second fundamental research that I would like to mention is of a sociologic nature. Every year in this country several hundred children are born without hearing because of this tendency in their progenitors. If we can inbreed certain desirable traits in our population, it is possible to outbreed this undesirable trait. The third problem that needs much study is the pathology and chemistry of otosclerosis. Although I consider the fenestration operation the greatest otologic contribution in this century, it is still a treatment of the deafness and does not alter the disease. The enthusiastic reports of successful treatment of this disease have been marred by poor hearing testing methods. The fourth problem is in the field of physics. This concerns the problem of sound transmission. Although the principle of microwave transmission was first described during the last century it is just now being developed to the point where it looks as if it may be used in the hearing problem. The Bell Laboratories did wonderful work during the war in the development of methods of destroying our enemies. Let us now use this knowledge in defeating the handicap of deafness.

The Moderator: We have finished our questions, but certainly I have heard some provocative remarks. I know there are experts in the audience, and with due humility we faced you. We were only selected; it was not our own choice, but we hope we have contributed something, and perhaps you would like to ask some questions or add something to this panel discussion.

COMBAT CASUALTIES

Dr. Canfield: The figure that was given on the film as 25 per cent of combat casualties must be clearly understood. By that is meant the men in the war whose deafness came on actually in combat. That means when they were exposed to the gunfire or when they were on the front line. Now, the two large groups that were studied in the Army varied from 38 per cent to about 18 per cent; and that is how that figure of 25 per cent was arrived at. It is believed that it is somewhere between those two. As for the amount of psychogenic deafness among civilians as profound as you saw a picture of on the film, it is probably in much less than 1 per cent of all of the persons who have hearing handicap. I mention this because the film did present a new technic. We do not know precisely the number of civilians with psychogenic deafness, but we do not feel that it is much less than 1 per cent. The 25 per cent was the percentage of men whose hearing actually was depleted in the battle itself, and not the number of men who came from the hearing centers.

PSYCHOGENIC DEAFNESS IN CHILDREN

Question: Are the psychogenic factors in the hearing suppression in children?

Dr. Koepp-Baker: Yes. The character of disturbances of emotional life in children has received emphasis in recent times, particularly on the diagnostic side. Most of us are aware that a number of persons have become sensitive to the fact that many young children seem to hear less than they ought to be hearing with their mechanisms. Hearing and understanding are two different things. Any tests that relate to this dysfunction in children must take into account a larger aspect which is total language function.

IRRADIATION AND ADENOIDECTOMY

Question: Are there any statistical studies on the improvement of hearing following adenoidectomy or irradiation of lymphoid tissue?

Dr. Truex: It just happens that all of us in our routine practice have seen cases of early hearing loss in which the middle ear is involved in children respond dramatically to removal of the adenoids or to irradiation, and as far as statistics which are reliable are concerned, which would cover a large group of children I cannot give you a definite answer more than to refer you to Dr. Crowe's literature on the subject, from Johns Hopkins University.

DEAFNESS IN SCOTLAND

Dr. G. E. Martin, Edinburgh, Scotland: This problem that we have been discussing today is our problem as well. We have given up all thought except under what we call our Administrative Pensions, which is your Veterans Administration. We have given up all thought of carrying it out among adults until we can get our school clinics going. We have been handicapped with a disruption of the whole of the country during the war, but our school clinics are going in many cases and we have also a certain amount of research work going on under the auspices of our Medical Research Council, which is not a government council but is about that, and this research is being carried out by three committees. Unfortunately, I have had to be on the three of them. One is on the question of hearing aids. The second one is on the education of the deaf, and the third is on the surgical and medical aspects of deafness. The report on hearing aids is in print but has not been released to the general public, partly because the Government has stepped in trying to make use of a new hearing aid which is being evolved by the experts on this committee and which is better than any other hearing aid in the market as far as I have seen, and much cheaper. It embodies a new principle, which is simple and makes the hearing aid cheap. That hearing aid, unfortunately, is not in the Government control, and we cannot say much about it because we cannot get hold of it, but the work of that committee will soon be made available. The other two committees are still going on. They are extensive, because the one, for instance, on the education of the deaf not only is composed of otologists, but also teachers, and we are concerned with the question of how best to teach teachers to train the deaf, to teach people to look after these clinics and also to teach otologists to recognize deafness. The third is taking up all the medical and surgical problems of deafness, much of which was discussed this morning with the Lempert operation. We do not call it the Lempert operation of course, but we recognize that the operation has been built up here on a scale such as we have never been able to do it, and the results we have correlated in the most scientific way that we possibly can. You have heard today how some of the figures are up 35 per cent, others up 85 per cent. There must be something wrong in getting these figures together, and that which has behind it, fortunately, unlimited scope and also plenty of money; because it is controlled by the Treasury and cannot be interfered with by the Government. Hence, we hope to have the primary reports of two of these committees out by the end of this year; then one will be able to get down the things much better than in the past.

Clinical Notes, Suggestions and New Instruments

SENSITIVITY TO STREPTOMYCIN

Anaphylactic Shock with Recovery Following an Intracutaneous Test

FRANK L. ROSEN, M.D.
Newark, N.J.

A recent report[1] advises intradermal tests for determination of sensitivity to streptomycin. That this procedure is not without danger is illustrated by the following report of a case.

Report of a Case

F.S., a 21 year old white student nurse in her third year of training, complained for a year of rash and itching of the fingers and dorsa of the hands. There was no history of previous allergic disease except for occasional mild urticaria. Dermatologic treatment, together with a course of roentgen therapy, had brought no relief. She had never received penicillin or streptomycin, but had been exposed to them in the course of her work.

Results of examination were normal except for the fingers and dorsa of the hands, which revealed a vesicular weeping scaling rash, suggesting contact eczematous dermatitis.

On the medical ward of the hospital, Oct. 20, 1947 I injected intracutaneously 0.05 cc. of streptomycin (Merck, calcium chloride complex). The test dose (5,000 units) was taken from a 20 cc. vial made up for 100,000 units per cubic centimeter. The contents of the vial had been given to several patients on the ward in 200,000 unit doses without any untoward reaction.

About two minutes after the test, the patient complained of generalized itching and wheezing and then collapsed, with weak and rapid pulsation. She was given a subcutaneous injection of 0.5 cc. of epinephrine and admitted to the medical service.

She continued to wheeze for about fifteen minutes, was semistuporous and complained of generalized itching and severe cramps in the lower part of the abdomen. About one-half hour after the test both eyelids swelled up. Two hours later her temperature was 101 F., pulse rate 80 and respirations 20. Asthmatic pulmonary findings had now disappeared. The generalized itching and cramps (uterine contractions?) persisted for the next two days, with moderate relief obtained with epinephrine, tripelennamine hydrochloride (" pyribenzamine hydrochloride") and meperidine hydrochloride (" demerol hydrochloride"). The patient returned to duty on October 23.

Subsequent routine allergy tests revealed positive reactions to the following items: dust (moderate), ragweed (decided), alternaria (decided), tobacco (decided), cat dander (slight), aspergillus (slight), kapok (moderate), buckwheat (slight) and green peas (decided). Reactions to passive transfer tests, with 100 units per cubic centimeter of streptomycin injected intracutaneously, were moderately positive. Patch tests with the substances encountered in the patient's environment revealed positive reactions only to soft soap liniment and benzalkonium chloride (" zephiran chloride tincture I to 1,000 [tinted]"). Patch tests with streptomycin were not done.

Comment

No reaction to streptomycin was evident at the cutaneous test site for forty-eight hours; a typical tuberculin type of response then appeared, with a reddened indurated area of 3 by 4 cm. This reaction gradually faded out over a period of one week.

Conclusion

If cutaneous tests with streptomycin are contemplated in nurses and others who handle streptomycin, especially those who have cutaneous lesions due to contact, it is suggested that the usual vial strength used for therapeutic purposes (100,000 to 200,000 units per cubic centimeter) be well diluted. Rauchwerger[1] and his associates suggested 100 units as the cutaneous test dose.

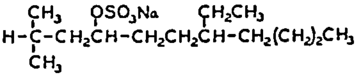
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

SODIUM TETRADECYL SULFATE.--Sodium-2-methyl-7-ethylundecyl sulfate-4.--$C_{14}H_{29}SO_4Na$.--M.W. 316.43. The structural formula of sodium tetradecyl sulfate *may be represented as follows:*



$$H-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{C}}-CH_2\overset{\displaystyle OSO_3Na}{CH}-CH_2CH_2\overset{\displaystyle CH_2CH_3}{CH}-CH_2(CH_2)_2CH_3$$

Actions and Uses.--Sodium tetradecyl sulfate is an anionic surface active agent that has been found to be useful as a wetting agent to increase the surface activity of solutions of certain externally applied antiseptics to which it may be added. It also possesses sclerosing properties useful for the obliteration of varicose veins by intravascular injection of buffered solutions in appropriate concentration. Its rather profound sclerosing action is subject to the disadvantage that injection may produce sloughing and is occasionally associated with greater frequency of leg cramps and pain than with other sclerosing agents. On the other hand, the possibilities of senitization are considered remote and idiosyncrasies or anaphylactoid reactions that have infrequently occurred are mild and of short duration. The possibility of undiscovered toxic effects should be borne in mind, but careful clinical studies to date appear to warrant use of the compound as a reasonably safe sclerosing agent.

Sodium tetradecyl sulfate is subject to the same general contraindications as for other sclerosing agents. See preceding general statement on Sclerosing Agents.

Dosage.--Sodium tetradecyl sulfate is employed for sclerosing therapy of varicose veins in buffered solutions of 1 per cent, 3 per cent and 5 per cent concentrations depending on the size of the veins (amount of hemodilution) to be obliterated. The 3 per cent solution is considered ade-

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· From the Medical Service of Dr. Jerome G. Kaufman, Newark Beth Israel Hospital.

[1] Rauchwerger, S.M.; Erskine, F.A., and Nalls, W.L.: Streptomycin Sensitivity, J.A.M.A. 136: 614-615 (Feb. 28) 1948.

acid (U.S.P. XIII, p. 709). The heavy metals limit (U.S.P. XIII, p. 657) of 25 cc. of the filtrate obtained previously in the melting point procedure is 20 parts per million.

Transfer about 0.3 Gm. of sodium *p*-aminobenzoate, accurately weighed, to a 250 cc. beaker. Add 5 cc. of hydrochloric acid and 50 cc. of water. Mix to obtain complete solution, cool to 15 C. and add about 25 Gm. of crushed ice. Slowly titrate with tenth-molar sodium nitrite, previously standardized against sulfanilamide (U.S.P. XIII, p. 865), until a blue color is produced immediately when a glass rod dipped into the titrated solution is streaked on a smear of starch-iodide paste T.S. When the titration is complete, the end-point is reproducible after the mixture has been allowed to stand for 1 minute. Each cc. of tenth-molar sodium nitrite is equivalent to 0.01591 Gm. of sodium *p*-aminobenzoate: the sodium *p*-aminobenzoate content, calculated on the dry basis, is not less than 98 per cent or more than 101 per cent.

INTERNATIONAL VITAMIN DIVISION, IVES-CAMERON CO., INC., NEW YORK

Tablets Sodium Paba: 50 mg.

WYETH, INC., PHILADELPHIA, PA.

Tablets Sodium Paba: 0.5 Gm.

U.S. patent 2,403,473.

ESTROGENIC SUBSTANCES (WATER INSOLUBLE) (See New and Nonofficial Remedies, 1947, p. 343).

The following dosage form has been accepted:

REED & CARNRICK, JERSEY CITY, N. J.

Solution of Estrogenic Substances in Oil: 1 cc. ampuls and 4 cc., 10 cc. and 25 cc. vials available as 2,000 international units per cubic centimeter, 6,000 international units per cubic centimeter, 10,000 international units per cubic centimeter and 25,000 international units per cubic centimeter in peanut oil. Preserved with chlorobutanol 0.5 per cent.

Tablets Estrogenic Substances: 1,000 international units and 5,000 international units.

LINCOLN LABORATORIES, DECATUR, ILL.

Solution of Estrogenic Substances in Oil with Benzyl Alcohol 2 per cent: 1 cc. ampuls and 15 cc. vials available as 5,000 international units per cubic centimeter, 10,000 international units per cubic centimeter and 20,000 international units per cubic centimeter in sesame oil. Preserved with chlorobutanol 0.5 per cent.

CARROLL DUNHAM SMITH PHARMACAL COMPANY, NEW BRUNSWICK, N. J.

Aqueous Suspension Estrusol: 1 cc. dual syringe cartridges available as 20,000 international units per cubic centimeter. Each cubic centimeter contains isotonic sodium chloride suspension of estrogenic substances, principally estrone, with small amounts of other natural estrogens. Preserved with chlorobutanol 0.5 per cent.

STREPTOMYCIN (See New and Nonofficial Remedies, 1947, p. 150).

The following additional dosage forms have been accepted:

MERCK & CO., INC., RAHWAY, N. J.

Streptomycin Calcium Chloride Complex: 50 cc. vials containing streptomycin calcium chloride complex equivalent in activity to 5 Gm. of streptomycin base.

CHAS. PFIZER & CO., INC., BROOKLYN

Streptomycin Sulfate: Bulk

PENICILLIN (See New and Nonofficial Remedies, 1947, p. 144).

The following additional dosage forms have been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Tablets Penicillin Calcium: 100,000 units with sodium citrate 1 Gm. as a buffer.

Dulcet Tablets Crystalline Penicillin G Potassium Buffered): 50,000 units with calcium carbonate 0.25 Gm. as a buffer.

U. S. trademark 301,66

CHAS. PFIZER & CO., BROOKLYN

Crystalline Penicillin G Sodium: 1,000,000 unit vials.

MENADIONE SODIUM BISULFITE (See New and Nonofficial Remedies, 1947, p. 534).

The following dosage form has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Solution Hykinone: 72 mg., 10 cc. ampuls. Each 10 cc. contains menadione U.S.P. 72 mg. and sodium bisulfite 27.5 mg. in an aqueous solution made isotonic with sodium chloride.

U. S. Patent 2,367,302, U. S. Trademark 383.789

FUNGUS EXTRACTS (See New and Nonofficial Remedies 1947, p. 9).

The following dosage form has been accepted:

ARLINGTON CHEMICAL COMPANY, YONKERS, N. Y.

Fungus Allergens: These preparations are marketed in vials containing 50 mg. of the dried fungi. In addition the items to follow are marketed as extracts for hyposensitization in 3, 5 and 10 cc. vials at concentrations 1:20, 1:33, 1:100, 1:500, 1:1,000, 1:5,000, and 1:10,000. Treatment sets of five 3 cc. vials with one vial at each of the following concentrations 1:10,000, 1:5000, 1:1000, 1:500, 1:100 are also offered.

Extracts marketed in dry form, and in solution form:
Achorion schoenleinii; Alternaria sp.; Aspergillus flavus; Aspergillus fumigatus; Aspergillus glaucus; Aspergillus nidulans; Aspergillus niger; Cephalosporium; Cephalothecium; Chaetomium sp.; Cladosporium; Epidermophyton inguinale; Fusarium; Helminthosporium; Hormodendrum; Microsporum lanosum; Monilia albicans; Monilia sitophila; Mucor plumbeus; Penicillium camemberti; Penicillium chrysogenum; Penicillium digitatum; Penicillium notatum, Penicillium roqueforti; Rhizopus; Trichoderma; Trichophyton gypseum, and Trichophyton interdigitale.

In addition the following stock fungus mixtures are offered in solution form only.

Aspergillus mixture - containing equal parts of A. flavus, A. fumigatus, A glaucus, A. nidulans, A. niger.

Penicillium mixture - containing equal parts of P. camemberti, P. chrysogenum, P. digitatum, P notatum, P. roqueforti.

Trichophyton mixture - containing equal parts of T. gypseum, T. interdigitale, and Epidermophyton inguinale.

Fungus Allergens-Arlington are made according to a standard method, viz, grown in a peptone-cerelose-yeast extract medium, collected by filtration, washed with acetone, and ether and dried.

Fungus Allergen Extracts-Arlington are prepared as follows: (directions for preparation of 1000 cc. of extract 1:20 concentration).

Fifty grams of dried fungus material are suspended in 800 cc. of N/20 sodium hydroxide, and the suspension is placed on the shaking machine for four hours. The suspension is centrifuged and decanted, and the residue is exhausted by successive extractions with N/20 sodium quate for most sites. The average amount to be injected at any one site should be from 0.5 to 1 cc. and at any one sitting, 2 to 3 cc. Not more than 6 cc. of the 5 per cent solution or 10 cc. of the 3 per cent solution should be injected at any one occasion. Repeated injections should be carried out at weekly intervals. The 1 per cent concentration should be used for all small superficial varicosities to avoid possible sloughing that may occur with the use of stronger concentrations for such veins. It is further recommended that not more than 1 cc. of the 1 per cent concentration be used as a test dose on the first injection to detect any possible idiosyncrasy. Treatment should not be instituted or continued if alarming reactions occur.

Tests and Standards

Sodium tetradecyl sulfate occurs as a white, waxy, odorless solid. It is soluble in water, alcohol and ether. A 5 per cent aqueous solution is clear and colorless. The pH of a 5 per cent solution ranges from 6.5--9.0.

Add 3 drops of 5 per cent sodium tetradecyl solution to 1 cc. of ortho-phenanthroline T. S.: an orange-red precipitate forms.

Dissolve 1 Gm. of sodium tetradecyl sulfate in 20 cc. of water and make up to 25 cc., transfer to a 50 cc. Nessler tube. Add 10 cc. of hydrogen sulfide T.S. and allow to stand 10 minutes: No more color develops than corresponds to 20 parts per million of lead *(U.S.P. XIII, p. 657)*.

Dry 2 Gm. of sodium tetradecyl sulfate, accurately weighed, in a vacuum desiccator for 48 hours: the loss in weight is not more than 10 per cent. Weigh, accurately, 1 Gm. of sodium tetradecyl sulfate into a tared platinum dish, add 2 cc. of sulfuric acid and heat gently to avoid spattering until no more fumes of sulfur trioxide are evolved. Repeat this treatment twice, then ignite and weigh. The sulfated ash content is not less than 19 per cent or more than 25 per cent.

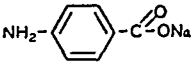
Weigh, accurately, about 0.3 Gm. of sodium tetradecyl sulfate into a suitable flask. Add 2 drops of bromcresol purple T.S., and neutralize with tenth - normal hydrochloric acid. Add slowly, with shaking, 25 cc. of a five-hundredth molar benzidine hydrochloride. Shake well and allow to stand at room temperature for 1 hour. Filter with suction. Test the filtrate for completeness of precipitation. Wash the precipitate with distilled water until the washings are neutral. Dissolve the precipitate by washing 4 times with hot 95 per cent alcohol previously neutralized to bromcresol purple T.S. Titrate the hot alcoholic solution with five-hundredth normal sodium hydroxide using bromcresol purple T.S. as the indicator. Each cc. of five-hundredth normal sodium hydroxide is equivalent to 0.0158 Gm. of sodium tetradecyl sulfate. The sodium tetradecyl sulfate found is not less than 85 per cent.

WALLACE & TIERNAN PRODUCTS, INC., BELLEVILLE, N.J.

Solution Sodium Sotradecol with Benzyl Alcohol 2%: 1, 3 and 5 per cent solution, 20 cc. vials.

U.S. trademark registered.

SODIUM PARA-AMINOBENZOATE.--The sodium salt of para-aminobenzoic acid.--$NaC_7H_6O_2N$.--M.W. 159.12 The structural formula of sodium *p*-aminobenzoate may be represented as follows:



Sodium *p*-aminobenzoate, when dried at 110 C. for 3 hours, contains not less than 98 per cent of $NaC_7H_6O_2N$.

Actions and Uses.--Sodium para-aminobenzoate has been found to exert a depressant action on the metabolism of rickettsiae that is useful for the management of certain rickettsial diseases. It is reported to be of value in the treatment of Rocky Mountain spotted fever, epidemic and endemic (murine) typhus and tsutsugamushi disease (scrub typhus). It has not proved uniformily successful in the treatment of all rickettsial infections, so its ultimate value against other forms of typhus or rickettsial diseases remains to be determined. Its use as a prophylactic is not recommended until more is known of its long term toxic effects in man and its ultimate protective value when administered routinely to persons in endemic areas.

Sodium para-aminobenzoate should not be administered in conjunction with the sulfonamide drugs because of the well known inhibitory effect of para-aminobenzoic acid on the antibacterial effect of these agents. It is not antagonistic to penicillin.

Dosage.--Sodium para-aminobenzoate is administered orally in tablet form. The recommended average adult initial therapeutic dose is 4 to 6 Gm.; this may be followed by doses of 2 to 3 Gm. every 2 hours. Within the first 24 hours of therapy with para-aminobenzoic acid in rickettsial diseases, concentrations of 30 to 40 mg. per hundred cubic centimeters of the drug should be obtained and then maintained in the blood of the patient. If definite improvement is not noted within 48 hours, increase the dose of the drug to a point which will produce a concentration of 40 to 50 mg. of para-aminobenzoic acid in the blood of the patient. Levels above 60 mg. may be dangerous, because para-aminobenzoic acid is not a completely innocuous agent but may produce hepatic and renal lesions. Blood levels range 30 to 60 mg. per hundred cubic centimeters, but since this seems to be more a function of the urinary output than of the dosage, this is usually limited to 500 cc. per day by restriction of fluid intake. Until more is known concerning the possible toxicity of the drug in man the administration of a daily dosage in excess of 30 Gm. for a period of more than one week is not recommended.

Tests and Standards

Sodium *p*-aminobenzoate occurs as a white to a buff-colored, odorless, crystalline powder, possessing a saline taste It is freely soluble in water, slightly soluble in alcohol, very slightly soluble in benzene and chloroform and practically insoluble in ether. An aqueous solution is alkaline to litmus paper.

Dissolve 2 Gm. of sodium *p*-aminobenzoate in 45 cc. of water, and add 5 cc. of diluted hydrochloric acid; a white flocculent, crystalline precipitate of *p*-aminobenzoic acid is formed. (Avoid the addition of excess hydrochloric acid which will redissolve the precipitate.) Filter by suction and reserve the filtrate for the heavy metals test listed hereafter. Wash the precipitate twice with small portions of cold water, recrystallize from alcohol, filter and dry at 110 C.: the *p*-aminobenzoic acid so obtained melts between 186 and 189 C.

Dry about 2 Gm. of sodium *p*-aminobenzoate, accurately weighed, for three hours at 110 C.: the loss in weight does not exceed 7.5 per cent.

Dissolve 50 mg. of sodium *p*-aminobenzoate in 5 cc. of water; add, in order, 0.5 cc. of diluted hydrochloric acid, 0.5 cc. of tenth-molar sodium nitrite and 10 cc. ammonia water containing 0.2 Gm. of β -naphthol: a red color develops.

Place 50 mg. of sodium *p*-aminobenzoate in a test tube containing 2 cc. of water and add, in order, 0.5 cc. of potassium iodide, T.S., 0.4 cc. of diluted hydrochloric acid, and 0.5 cc. of sodium hypochlorite T.S.: a heavy brown precipitate forms (difference from *p*-aminohippuric acid).

An aqueous solution (1 in 10) responds to the tests for sodium, U,S.P. XIII, p. 663.

Transfer about 1 Gm. of sodium *p*-aminobenzoate, dried and accurately weighed, to a 25 cc. Erlenmeyer flask containing 5 cc. of water and add 2 drops of phenolphthalein T.S.: no more than 0.5 cc. of fiftieth-normal sulfuric acid is required to discharge any pink color which may develop.

Transfer about 0.3 Gm. of sodium *p*-aminobenzoate, dried and accurately weighed, to a platinum crucible and ash to a white residue. Cool, add carefully a few drops of sulfuric acid and ignite to constant weight: the weight of the sulfated ash calculated as sodium sulfate is not less than 44.1 per cent or more than 44.8 per cent.

A 0.2 Gm. sample of sodium *p*-aminobenzoate shows no more chloride than corresponds to 0.15 cc. of fiftieth-normal hydrochloric acid (U.S.P. XIII, p. 709). A 0.3 Gm. sample of sodium *p*-aminobenzoate shows no more sulfate than corresponds to 0.1 cc. of fiftieth-normal sulfuric hydroxide until the total volume of the N/20 sodium hydroxide fractions equals 850 cc. Ethyl alcohol (95%) is added to the extract to yield a 14% alcoholic solution, and the extract is filtered through paper pulp until clear. The reaction of the solution is adjusted to pH 8.3 by the addition of either hydrochloric acid, or sodium hydroxide. Tricresol in the proportion of 0.4% is added, and the solution sterilized by filtration through a Berkefeld filter. The finished products are placed on sterility tests, and mouse test according to the methods required by the U.S. Public Health Service.

From this 1:20 extract, necessary dilutions are prepared aseptically with a diluent of sterile phosphate buffer containing 14% alcohol by volume and 0.4% tricresol. The intermediate and finished products are tested for sterility according to the methods required by the U.S. Public Health Service.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following reports. Howard A. Carter, *Secretary.*

ADC AUDIOMETER, MODEL 50, ACCEPTABLE

Manufacturer: Audio Development Company, 2835 Thirteenth Ave S., Minneapolis 7.

The ADC Audiometer, Model 50, is a fixed frequency instrument designed to test a person's auditory acuity by presenting pure tones at 128, 256, 512, 1,024, 1,448, 2,048, 2,896, 4,096, 5,792, 8,192, and 11,584 cycles per second. The apparatus is housed in a wooden case with a sloping control panel in front; the over-all dimensions are 52 by 28 by 20 cm (20½ by 11 by 8 inches) and the weight is given as 15.9 Kg. (35 pounds). It operates on 110 volt, single phase 60 cycle alternating current; modifications are available for other power sources.

The instrument is equipped with both air and bone conduction receivers, a masking tone circuit, a tone interrupter, a microphone, a signal button and a malingering test circuit. A special feature of the instrument is the inclusion of a matched pair of headphones for air conduction testing.

In evaluating this instrument the Council availed itself of detailed reports on electroacoustic performance of the instrument from two other laboratories as well as of a special report by a Council investigator who made a large number of practical tests. The matched headphones were found to be an exceedingly helpful feature. Being able to present the masking tone through one of the two matched receivers is also an advantage. The inclusion of a midoctave tone at 1,448 cycles per second permits extra exploration when circumstances indicate. Dials and controls were found to be conveniently placed and easily read. The Council on Physical medicine voted to include the ADC Audiometer, Model 50, in its list of accepted devices.

LIEBEL-FLARSHEIM FREQUENCY CONTROLLED SW-227 SHORT WAVE DIATHERMY UNIT ACCEPTABLE

Manufacturer: Liebel-Flarsheim Company, 303 West Third Street, Cincinnati 2.

The Liebel-Flarsheim Frequency Controlled SW-227 Short Wave Diathermy Unit generates high frequency electrical energy for the purpose of heating human living tissues in the treatment of disease. The electrical circuit and mechanism for controlling the frequency of Model SW-227 have been inspected and approved by the Laurel Laboratories of the Federal Communications Commission. The apparatus operates on a frequency of 27.130 megacycles and is equipped to apply energy by three different methods, namely, "spaced plate electrodes," "hinged treatment drum" and "inductance cable." The appliance requires 115 volts AC current, draws 11.5 amperes and at full load pulls 750 watts. The unit is finished in ivory or walnut; it measures 108 by 61 by 43.2 cm. (42½ by 24 by 17 inches); it weighs 77.6 Kg. (171 lbs.), and its shipping weight is 108 Kg. (238 lbs.). The apparatus has received the approval of the Underwriters' Laboratories.

The evidence submitted by the firm for power output was obtained on phantom loads. The highest output reported was 330 watts on a lamp load, using air spaced electrodes. With a cable electrode the output was 315 watts, and with the hinged treatment drum it was 250 watts. Using a calorimeter the firm reported a maximum of 310 watts obtained by the cable method. These tests on phantom loads were repeated in the laboratory of the Council and were verified within the limits of experimental error. The diathermy apparatus was sent to an investigator for clinical trial and was reported to give satisfactory service.

The Council on Physical medicine voted to include the Liebel-Flarsheim Frequency Controlled SW-227 Short Wave Diathermy Unit in its list of accepted devices.

ILLE FULL BODY IMMERSION TANK UNIT, MODEL HM-801, ACCEPTABLE

Manufacturer: Ille Electric Corporation, 36-08 Thirty-Third Street, Long Island City 1, New York.

The Ille Full Body Immersion Tank, also called the Ille Hydromassage Subaqua Therapy Unit for Full Body Immersion, is a large metal tank, big enough so that an adult lying in it can stretch out to full length, can perform maximal abduction of both thighs and can abduct the extended arms through a wide range. It is intended to be mounted so that the bottom is considerably elevated above the floor of the room, say to the height of 1 meter, to facilitate the services of the physiotherapist.

The complete unit is shipped within two crates. Crate 1 contains the tank with base, electric hoist, trolley, head rest, water stretcher and body plinth. Crate 2 contains the tank base pipe legs with floor flanges, the stretcher cross bar and cables, the tank pipe fittings, two turbine ejector carriages, two electric turbine ejectors, two turbine motor covers, thermostatic water mixing valve assembly, two dial thermometers, body hammock canvas with brackets, canvas body sling and canvas for head rest. The dimensions of Crate 1 are 295 by 18 by 84 cm. (9 ft. 8 in. by 7 in. by 2 ft. 9 in.); Crate 2 measures 137 by 76 by 76 cm. (4 ft. 6 in. by 2 ft. 6 in. by 2 ft. 6 in.). The combined shipping weight of the two crates is 680 kg. (1500 lbs.).

The Council obtained evidence that this tank unit is well constructed, of satisfactory size and shape to permit hydrotherapeutic procedures to the entire body. Treatment is facilitated by the fact that every part of the patient's body can be reached by the therapist. The motor-driven agitator itself produces a gentle massage, in addition to the manual massage that is possible in a tank of this sort. The tank can be cleaned easily after each treatment. Since both the agitator and the hoist are driven by electric motors, users are reminded that the instructions supplied by the firm regarding avoidance of shock hazards are to be carefully observed.

The Council on Physical Medicine voted to include the Ille Full Body Immersion Tank Unit, Model HM-801, in its list of accepted devices.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 24, 1948.

EDITORIAL ANNOUNCEMENT

The compositors returned to work on Monday, June 28. This issue of The Journal has been prepared in part by the use of Vari-Typer machines.

MORE CONSIDERATION FOR THE FETUS

Not many years have passed since one took for granted that the human fetus is optimally protected and maintained in utero. Attempts were not made to influence the environment of the fetus, because whatever abnormalities developed were believed to be due either to intrinsic causes or, in a smaller number of instances, to extrinsic factors beyond comprehension or control. Syphilis was one of the few exceptions to this rule.

As has happened previously when a subject was ripe for exploration, numerous lines of research are now converging, as if by accident, on pathologic conditions of the fetus. Much valuable information has been acquired; now new and old knowledge can be assembled into a systematic scientific structure.[1] The field includes two mutually related parts, namely, abnormalities of development and diseases of the fetus.

Some recent advances from clinical studies are of immediate significance to the practicing physician: the concept of erythroblastosis as a result of isoimmunization and the occurrence of malformations in infants of mothers who contracted certain virus diseases during pregnancy.

The systematic study of hereditary and experimental malformations in animals, with the methods of descriptive and experimental embryology, has revealed direct information about the actual development of malformations. Prior to these studies speculation dominated consideration of the probable development of a given malformation known only in its final form. Now it is known that in the fetus, as in the adult, previously normal parts may degenerate in various ways which cannot possibly be detected by examination of the result. Congenital defects of the eyes, extremities, intestine or other parts of the body may originate in this manner.

As interest increases in the systematic examination of newborn infants at necropsy, many instances are found in which changes comparable to those in diseases of the adult have occurred before birth. Degeneration, inflammation and scarring occur in the heart, liver, pancreas, kidneys and other organs of fetuses. The greatest handicap in the interpretation in these cases is the inadequacy of the history obtainable from the mother or her physician. Just as physicians have learned recently to inquire about the occurrence of rubella during pregnancy, other significant factors in the history of abnormal newborn infants will doubtless be recognized in the future.

Most of the recent progress from the study of abnormal development in animals and pathologic conditions in newborn infants is not of immediate clinical significance. However, this information is essential for the shaping of a systematic knowledge which must be the rational basis of any progress in the care of the fetus. This is obvious particularly in the fields of mental deficiency and blindness, in which much preliminary work has been done.[2]

The fetus is not as well protected from unfavorable agents as was formerly believed. Nutritional deficiencies, poisons, infections and radiations may be involved. Cooperation of workers in various fields of biology and medicine will lead to more knowledge about these agents and to prevention of their effects. Among the members of the medical profession, pathologists and obstetricians are in key positions. The former should expand their facilities and interest with regard to newborn, as well as stillborn, infants. Obstetricians should supply more detailed information on the course of pregnancies resulting in abnormal infants and should also be prepared to plan the practical application of new results of fetal pathology.

THE BRITISH NATIONAL HEALTH SERVICE ACTS

A special representative meeting of the British Medical Association, held on May 28, adopted the following action:

(1) That, despite the insufficiency of the safeguards to the profession's freedoms and the misgivings of a substantial section of the profession, the Representative Body, anxious as ever that in the public interest a comprehensive health service should be made available to the community, is prepared to advise the profession to cooperate in the new service on the understanding that the Minister will continue negotiations on outstanding matters including terms and conditions of service for consultants and specialists, general practitioners, public health officers and others.

Rider

That the medical profession should accept service under the Act on the understanding that in the event of the amending Act and terms of service being unsatisfactory to the Representative Body, members serving under the Act should then hand in their

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[1] Warkany, J.: Etiology of Congenital Malformations: Advances in Pediatrics 2: 1, 1947. Gruenwald, P.: Mechanisms of Abnormal Development Arch. Path. 44: 398 (Oct.) 1947.

[2] Gruenwald, P.: Mental Deficiency of Prenatal Origin; a Challenge to Preventive Medicine, Am. J. M. Sc. 214: 605 (Dec.) 1947.

> resignations or take such other steps as are considered necessary by the Representative Body.
>
> (2) That the Representative Body urges the profession to maintain its strength and unity in order to mould the service in accordance with the public interest and with enlightened professional opinion and continuously to protect the profession's legitimate freedoms and interests.

According to notices recently published in American newspapers the dental profession in Great Britain still refuses to cooperate with the British government under the act.

In the course of negotiations the British medical profession has succeeded in securing from the Minister of Health a bar on the introduction of a whole time salaried service by regulation and a universal basic salary. The medical profession has failed to secure concessions on questions of the ownership of good will in a doctor's practice and the right of appeal to the courts from decisions of the Minister. The Council of the British Medical Association is convinced that some progress has been made but also that the freedoms of the profession are not sufficiently safeguarded. Under recent decisions the Catholic and other denominational hospitals in Great Britain are freed from participation in the government plan and will not be taken over by the British government as are community hospitals.

The British experiment in socialization of medical practice appears to be a top heavy organization to administer a personal service. The act becomes effective on July 5, and the medical world will watch with interest whether or not this experiment develops any hope of success in achieving its objectives or even in improving on what Britain has had in the way of medical service.

Current Comment

INDEX NUMBER

In this issue of THE JOURNAL appears the Index for Volume 136 of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION covering January, February, March and April. This index should have appeared in THE JOURNAL of April 24, but it was impossible to publish it at that time because of difficulties with the compositors who were not at work. The Index is paged to follow immediately the material that ended Volume 136, and may be bound with the volume so as to make it complete.

ARTHRITIS AND RHEUMATISM FOUNDATION

Elsewhere in this issue appears an announcement of the completion of negotiations which have been going on for some time toward consolidating into a single organization the leading agencies in the attack on rheumatic conditions, including the American Rheumatism Association, the National Arthritis Research Foundation, the Detroit Fund for Crippling Diseases and other groups that have been devoted to combating arthritis. As will be observed, the board of directors of the new Foundation thus far selected represent leaders in industry, philanthropy and medical science whose names carry confidence. The Foundation is organized along the lines of similar groups such as the National Foundation for Infantile Paralysis, the American Cancer Society and the American Heart Association, and it proposes to function in a similar manner. Its objectives include surveys of the problem, graduate education of the medical profession, education of the public, research, fellowships and improved care for those with rheumatic disease. Complete cooperation with the medical profession through county and state medical societies indicates recognition of the importance of medical cooperation in achieving the ends that are sought. The objectives indicated, the persons interested and the approach to the problem merit the support of the medical profession and the public.

THE WORLD MEDICAL ASSOCIATION

Since its organization in Paris in September 1947, the World Medical Association has made great strides. At present the national medical societies of twenty-six nations are members; applications from sixteen more nations are under consideration for admission to membership. The objectives of the World Medical Association have been stated previously in THE JOURNAL. The promotion of closer ties among the national medical organizations and the physicians of the world, the maintenance of the honor and dignity of the medical profession, mutual consideration of professional problems of the medical profession in the different countries and exchange of information on matters of interest to the medical profession, the establishment of proper relations with similar groups (such as the World Health Organization, the United Nations Educational, Scientific and Cultural Organization), improvement of health throughout the world, and the promotion of world peace are aims which merit the support of every physician. At this time through the office of the general secretary, Dr. Louis H. Bauer, surveys are in process concerning the status of the physician in different countries of the world, the standards of medical education, the qualifications and rating of specialists, the extent of recognition of cultist practice, and the advertising of medical products. Also in process of development is a bulletin to be issued periodically reporting the results of the studies that have been mentioned. In the United States a committee has been established to aid the work of the World Medical Association. Since the problems are such as will interest every physician who participates in civic and in medical affairs, opportunity is offered to individual physicians to become Founder Sustaining Members of the World Medical Association. The annual membership dues are $10. Many physicians are subscribing for five years in advance in order to place the World Medical Association promptly on an established basis. Individual members will receive the bulletin of the World Medical Association and certificates of membership in the United States Committee. Many medical organizations such as the American Medical Association and the International College of Surgeons have become associated through organizational memberships and are represented on the Board of Directors of the United States Committee. Many of the great medical industries have indicated their approval by substantial contributions. The House of Delegates of the American Medical Association has given its complete endorsement to this project. Physicians who wish to affiliate with the United States Committee of the World Medical Association may do so by addressing the World Medical Association at its permanent offices in New York City at 2 East 103rd Street. Thus they will share in a worthy cause and thus also they will have opportunity to keep abreast of the manner in which physicians throughout the world are joining to sustain the ethics and the ideals that have animated the medical profession for thousands of years.

RAILROAD TOILET WASTES

The Association of American Railroads requested its Joint Committee on Railway Sanitation to investigate the nature and quantity of toilet wastes discharged from railway passenger cars in both local and transcontinental service. The health problems developed by disposing of excreta on passenger-carrying cars along railroad rights of way and terminals have been studied for many years. The committee formulated a program of investigation and research which was approved by the United States Public Health Service. Studies were made first in several passenger cars of the New York to-Washington and Chicago-to-Washington runs and later in passenger cars in transcontinental services.[1] Observations were made during August, September, October and early November, 1946. Local service data were obtained from a total of thirty separate runs, during which time the toilet habits of 2,000 persons were studied over a total of 6,261 passenger hours and 320,000 passenger miles. Frequency of toilet use, maximum duration of toilet occupancy and frequency of toilet flushing were measured. Total toilet wastes were collected in sealed containers, carried underneath the cars, and the contents studied for dry weight of solids, strength of sewage as compared to ordinary domestic sewage and estimated quantity of sewage spread per mile of track. The last figure averaged 0.00235 pound (dry weight) of sewage solids per mile for a single run. Applying the data to the Pennsylvania Railroad's run between New York and Washington, which is believed to carry the heaviest passenger traffic in the United States, it was estimated that approximately 276,000 pounds (dry weight) of sewage solids were spread per year along 226 miles of road bed, or 0.694 pounds of dry weight per yard per year. For the country as a whole, assuming that passenger coaches travel one billion miles per year, the average estimate is 0.302 ounce on a wet basis per yard of track per year. Collected wastes were tabulated also for the presence of foreign objects. In addition to the usual material found in toilet wastes, foreign objects included men's handkerchiefs, miniature whisky bottles, beer bottles, cigaret packages, cigars and butts, orange peelings and in several cases, women's purses. Bacteriologic or culture studies are not included in this report. However, the communicable disease hazards in this situation are easily apparent. Such hazards would certainly occur during epidemic situations when healthy carriers of epidemic disease might be among passenger groups. The most obvious example of this, of course, would be the spread hazard from endemic or localized epidemic typhoid or dysentery outbreaks through deposit of carrier excreta in streams, water courses and swimming holes along railroad rights of way. In view of the known high virus content in the feces of poliomyelitis patients, convalescents and carriers, a similar epidemiologic hazard in this disease must be considered.

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[1] Technical Report 3 (March 1, 1947) and Supplementary Report, 4 (December 1947): Report on an Investigation Into the Use of Railway Passenger Car Toilets and the Nature and Quantity of the Toilet Wastes, by Sanitation Research Project, Joint Committee on Railway Sanitation of the Association of American Railroads, Operations and Maintenance Department.

FOLIC (PTEROYLGLUTAMIC) ACID AND THE ANTI-PERNICIOUS ANEMIA FACTOR IN LIVER

The observations that folic (pteroylglutamic) acid will control the hematologic symptoms in most cases of pernicious anemia and certain other macrocytic anemias but will not control the neurologic symptoms, as does liver extract, have been reported by several investigators including Spies and his co-workers.[1] These results led the Alabama investigators to conclude that liver extract contains an unknown factor or factors other than folic acid essential for maintaining the integrity of the central and peripheral nervous system in pernicious anemia and, therefore, that folic acid does not replace liver extract in the treatment of pernicious anemia. The foregoing observations also serve to emphasize the incomplete understanding of the functions of folic acid in the organism and its relation to the active principle in liver. The excretion of phenolic substances in the urine is increased in patients with pernicious anemia, and adequate therapy with liver extract reduces the amount toward normal values.[2] This observation in patients may be related to the observation in folic acid-deficient experimental animals that the ability of the liver to oxidize the phenolic substance tyrosine is impaired.[3] Other experimental studies also indicate a general fundamental role of folic acid in the organism in addition to its effect on hemopoiesis, as is manifest by its probable stimulating effect on the production of certain metalloporphyrin cellular enzymes,[4] by its effect in preventing cervical paralysis in young turkeys,[5] by its alleged effect of inhibiting the growth of certain neoplasms[6] and, in patients with sprue, by its favorable effect on absorption from the gastrointestinal tract of such important nutrients as vitamins A and E and even dextrose.[7] The prediction seems warranted that further extension of studies such as those mentioned will lead to the eventual elucidation of the question regarding the relation between folic acid and the active anti-pernicious-anemia factor in liver extract.

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[1] Vilter, C. F.; Vilter, R. W., and Spies, T. D.: J. Lab. & Clin. Med. 32: 262 and 1426, 1947.

[2] Swendseid, M. E.; Wandruff, B., and Bethell, F. H.: J. Lab. & Clin. Med. 32: 1242, 1947.

[3] Rodney, G.; Swendseid, M. E., and Swanson, A. L.: J. Biol. Chem. 168: 395, 1947.

PROTHROMBIN OR "PROTHROMBIN COMPLEX"

Investigators agree that in the process of blood coagulation thromboplastin acting on prothrombin in the presence of calcium forms thrombin, which in turn causes fibrinogen to change to fibrin. Following the separation of these chemical principles into concentrates it was recognized that the reaction between purified substances took place much more slowly than does the reaction in blood plasma.[1] This difference in reaction rate is attributable to the presence of additional substances in blood plasma. In their work with these additional factors one group of workers [2] in this country has chosen to refer to them as part of a "prothrombin complex," with the apparent assumption that for a maximum rate of coagulation these different components must be present in certain limiting concentrations. Other workers prefer to consider these additional factors as accelerators of the original reaction by which a single substance, prothrombin, is changed to thrombin. The accepted interpretation, it would seem, should depend on the extent to which these substances unite to become part of the thrombin molecule: if they all unite in significant amounts to form thrombin, they should be considered as a complex; but if the thrombin consists essentially of a slightly modified form of one of them, this should be considered to be the single prothrombin. The correct interpretation thus becomes dependent on the chemical isolation of the principles concerned and the study of their composition and mode of interaction. Such studies have already been carried out: the isolation of prothrombin from plasma in high yield, apparently as a single component, and its activation to thrombin[3] would appear to show that this is the precursor of thrombin and that other substances may be looked on as accelerators. Accelerators of the prothrombin reaction have been reported by various investigators, but because of differences in procedures employed it is difficult to determine the extent to which these investigators may be dealing with the same substance. The precise delineation of the factors involved in blood clotting and their reactions with each other requires continued work in chemical fractionation, isolation and analysis.

HEBERDEN'S NODES

Heberden, widely known for the eponymic "Heberden's nodes," according to Stecher[1] dispelled the notion prevalent up to this time that these bony enlargements were due to gout. The nodes are now regarded as the most benign form of osteoarthritis, readily recognized and characteristic of this general disease. Examination of the hands of some 7,000 unselected persons from Cleveland City Hospital, of visitors to the dispensaries of two general hospitals and of residents in several homes for the aged revealed that the incidence of both the traumatic and the idiopathic (not preceded by trauma) nodes increased with age.[1] The incidence of traumatic nodes was higher in men than in women, higher in manual workers than in physicians and higher in white manual workers than in Negroes. The differences in incidence of traumatic nodes between various groups of white persons seem to depend on differences in exposure of the fingers to trauma. The incidence of idiopathic nodes is universally low before the age of 60, after which it increases rapidly in white women. About one third of white women are affected if they live long. The condition never attains a high proportion in men. A study of hereditary tendency in a group of sixty-eight affected persons revealed that the mothers of affected women were affected twice as often, and the sisters of the affected women three times as often, as would have been expected in the normal population on the basis of chance alone. Apparently heredity plays an important role in the production of Heberden's nodes in these families. The trait appeared to be inherited as a simple dominant; it was probably recessive in men. Stecher did not find evidence that the production of idiopathic Heberden's nodes is influenced by climate, occupation, diet, housing, environment, habits of living, the general state of nutrition or conditions of health. Two conditions appear necessary for the development of idiopathic Heberden's nodes: a hereditary constitution and intact and normally functioning nerve supply to the hand and fingers. Heberden's nodes constitute a particular form of osteoarthritis with characteristics specific for this disease. Studies of the different forms of osteoarthritis may contribute to a greater knowledge of this common affliction,

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[4] Totter, J. R.; Simms, E., and Day, P. L. Proc. Soc. Exp. Biol. & Med. 66: 7, 1947.

[5] Russell, W. C.; Taylor, M. W., and Derby, J. V.: J. Nutrition 34: 621, 1947.

[6] Farber, S., and others: Science 106: 619 1947.

[7] Darby, W. J.; Jones, E.; Warden, H. E., and Kaser, M. M.: J. Nutrition 34: 645, 1947.

[1] Seegers, W. H.: Lancet **253**: 669, 1947.

[2] Quick, A. J.: Am. J. Physiol. **151**: 63, 1947

[3] Seegers, W. H.; Loomis, E. C., and Vandenbelt, J. M.: Arch. Bio-chem. 6:85, 1945.

[1] Stecher, R. N.: Heberden's Nodes: The Clinical Characteristic of Osteo-Arthritis of the Fingers, Ann. Rheumat. Dis. 7:1 (March) 1948.

Woman's Auxiliary

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The national officers and chairmen of standing committees for 1948-1949 of the Woman's Auxiliary to the American Medical Association are as follows:

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REVISIONS OF BY-LAWS

Revisions of the by-laws, which were presented to the House of Delegates at the twenty-fifth annual meeting in Chicago, June 1948, were adopted as amended. The sections revised will read as follows:

Article VI, Section 6 (constitution)

"To be eligible for election, succession or appointment as president, president-elect, first vice president or director, a member must have served (*a*) as president of the constituent state or territorial auxiliary by virtue of membership in which she is an active member of this Auxiliary, and in addition, (*b*) as an officer or as a chairman of a standing committee, or both, of this Auxiliary for at least two years."

Chapter II, Section 2 (by-laws)

"On the first day of the annual Convention, the Convention shall elect a Nominating Committee of seven members, two of whom shall be from the Board of Directors and five from the Body of Convention members. No more than two members of this Committee shall serve two years consecutively."

Chapter III, Section 3 (president-elect)

Insert between first and second sentences: "She shall serve on all Standing Committees as a member ex officio without the right to vote."

Chapter IV

Section 1—Item 5. Change the word Editorial to Publications; i. e., no. 5 of the Standing Committee will be the Publications Committee, instead of the Editorial Committee.

Section 8—"The Publications Committee shall consist, et cetera."

Chapter V—Official Publication

"The official publications of the Auxiliary shall be the *Bulletin* published by the Woman's Auxiliary to the American Medical Association in which shall be published all official Auxiliary notices and transactions of the Convention and abstracts of the meetings of the Board of Directors, and such other periodicals as are authorized by the Advisory Council to the Woman's Auxiliary."

Chapter VII—Constituent Auxiliaries

"Each constituent auxiliary shall transmit to the Treasurer of this Auxiliary not later than March 15 annually, dues amounting to one dollar for each of its members for the current year, which shall include subscription to the periodicals published by this Auxiliary when authorized by the Advisory Council to the Woman's Auxiliary."

Chapter X—Policy

"All gifts presented to the Woman's Auxiliary must be accepted by the Board of Directors before being announced at the annual meeting."

FUTURE MEETINGS

The twenty-sixth annual meeting of the Woman's Auxiliary to the American Medical Association will be held in Atlantic City, N. J., June 6 to 10, 1949.

The dates of the Conference of State Presidents and Presidents-Elect and the National Chairmen of Standing Committees will be announced as soon as arrangements have been completed.

The registration of the 1948 meeting in Chicago was 841.

Washington Letter

(From Our Regular Correspondent)

July 20, 1948.

Increased Pay for Veterans Professional Personnel

The Veterans Administration announces that about 15,000 physicians, dentists and nurses on its payroll will receive a flat salary increase of $330 annually, retroactive to July 11. The raise was granted in order to give these professional workers, who are exempt from Civil Service provisions, the same treatment accorded other federal employees under the wage increase law enacted recently by Congress. The only Veterans Administration full time doctors to whom the raise will not apply are the relatively few receiving $11,000 or more per annum. Also excepted are member-employees in domiciliary homes, hospital residents, senior cadet nurses in training, part time specialists and consultants in hospitals.

United Mine Workers Extending Rehabilitation of Paraplegic Men

Washington headquarters of United Mine Workers of America disclosed the departure in mid-July of 13 more paraplegic coal miners for rehabilitative care on the West Coast. They entrained at Clarksburg, W. Va., for Permanente Hospital at Vallejo, Calif. Dr. R. R. Sayers, medical advisor of the United Mine Workers Welfare and Retirement Fund, said 75 paraplegic persons are now undergoing physical and vocational rehabilitation in West Coast institutions. To augment Eastern facilities, arrangements have just been completed for use of at least ten beds at the Postgraduate Medical School and Hospital in New York City, said Dr. Sayers. Also participating in the program are the Institute for Rehabilitation and Physical Medicine (New York University) and Lenox Hill Hospital, both in New York City, and the Newark (N. J.) Hospital for Crippled Children.

New Alaskan Medical Expedition Announced

A second medical expedition to Alaska, co-sponsored by the Department of Interior and the American Medical Association, will spend most of August in the Territory. Its members are Drs. John E. Tuhy and W. Charles Martin, of Portland, Ore., and Frank Douglas and David Law (dentist), of Seattle, Wash. The team will give diagnostic and treatment services.

Pan-American Sanitary Bureau Receives Aid

The Pan-American Sanitary Bureau has received a check for $222,000 from Mexico to be applied toward its expanded program of disease control, teaching and medical research in the American republics. Of the sum, $22,000 is Mexico's regular quota payment and the remainder is an extra contribution. Brazil, Argentina and other Latin American countries have voted to make similar contributions, but Mexico's is the first to be received.

GOVERNMENT SERVICES

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Albert, M.	Brooklyn
Alm, T.E.	Huntington Park, Calif.
Alper, J.	Bronx, N.Y.
Amador, L.V.	Las Cruces, N. Mex.
Andrus, R.S.	Spanish Fork, Utah
Atwood, A.S.	East Hartford, Conn.
Avvocato, R.A.	Brooklyn
Baker, J.J.	Gettysburg, Pa.
Ballard, W.R.	Beckley, W. Va.
Bartley, M.D.	Indianapolis
Batson, B.E.	Poplarville, Miss.
Battey, A.M. Jr.	Augusta, Ga.
Bauersfeld, S.B.	Bethesda, Md.
Bentley, M.D.	Huntington Woods, Mich.
Berman, J.R.	New York
Bilder, M.	Pittsburgh
Bills, J.W.	Philadelphia
Bishoff, R.J.	Wilkinsburg, Pa.
Bishop, H.C.	Great Neck, N.Y.
Bishop, T.E.	Minoa, N.Y.
Black, C.J.	Chicago
Blank, W.A.	Franklin, Neb.
Blumberg, J.D.	Brooklyn
Blumenthal, I.	Royston, Ga.
Boeshart, C.B.	Danville, Ohio
Boland, C.R.	Johnson City, N.Y.
Boldt, T.H.	St. Louis
Bondi, R.G.	Rochester, N.Y.
Boswell, R.W.	Evansville, Ind.
Bowers, C.H.	Newton Highlands, Mass.
Boyd, E.F. Jr.	Hollywood, Calif.
Boyd, J.A. Jr.	Atkinson, N.C.
Boyle, J.P.	Washington, D.C.
Brady, H.S.	Wichita, Kan.
Brannen, J.H.	Moultrie, Ga.
Brofman, B.L.	Cleveland Heights, Ohio
Brown, P.F. Jr.	Gainsville, Ga.
Brown, R.L.	Snyder, N.Y.
Bryan, J.T.	Meridian, Miss.
Burke, G.E.	New York
Burnett, G.R.	Sherrill, N.Y.
Calder, K.T.	Flint, Mich.
Campbell, B.H.	Charles City, Iowa
Canavarro, K.S.	New York
Carlisle, D.	Birmingham, Ala.
Carlson, H.C. Jr.	Pittsburgh
Carney, R.P. Jr.	St. Louis
Carroll, H.B.	North Seattle
Casady, R.R.	Oklahoma City
Casale, J.B. Jr.	Essex Fells, N.J.
Casden, D.D.	Brooklyn
Catania, A.F.	Brooklyn
Cernock, W.F.	Chicago
Chanatry, A.G.	Utica, N.Y.
Chang, D.J.	Honolulu, Hawaii
Chase, R.E.	Chicago
Chester, R.V.	Syracuse, N.Y.
Clarke, O.W. Jr.	Petersburg, Va.
Clayton, E.C.	Winston-Salem, N.C.
Collier, H.S.	Louisville, Ky.
Connor, J.	Quincy, Mass.
Copeland, H.B. Jr.	Wheeling, W. Va.
Cornelison, J.L.	San Angelo, Texas
Cosgrove, G.E. Jr.	South Bend, Ind.
Cotter, P.B.	Buffalo
Coursin, D.B.	McKeesport, Pa.
Cowart, G.T.	Sanford, Fla.
Cox, W.H.	Richmond, Va.
Cramp, L.L.	Scarlet's Mill, Pa.
Crandall, R.G.	Salt Lake City
Crothers, C.H.	Framingham, Mass.
Crow, E.W.	Wichita, Kan.
Crumbley, J.J.	Sylvester, Ga.
Culp, D.A.	Sunbury, Pa.
Cummings, M.H.Jr.	Williamstown, W. Va.
Dale, W.A.	Columbia, Tenn.
Dammers, W.R.	Oak Park, Ill.
Davis, C.	San Francisco
Davis, H.G.Jr.	Sylvester, Ga.
D'Errico, F.J.	Brooklyn
Dersch, W.H. Jr.	Oklahoma City
Dolin, G.	Brooklyn
Doncaster, R.M.	Jeanette, Pa.
Dourmashkin, L.R.	New York
Dufford, C.A. Jr.	Newberry, S. C.
Dworin, M.S.	New Britain, Conn.
Eagles, W.McC.	Fountain, N. C.
Eberlein, W.R.	Shawano, Wis.
Eckert, R.T.	Englewood, N. J.
Eder, W.P.	Minneapolis
Ehrlich, L.	Chicago
Ellis, E.LeR.	Cheyenne, Wyo.
Ellis, J.B.	Belvidere, Ill.
Ellison, E.H.	Columbus, Ohio
Farrell, H.W.	Chicago
Feldman, S.I.	Minneapolis
Fergusson, R.C.	Kulm, N. D.
Figley, M.M.	Toledo, Ohio
Fine, L.J.	Detroit
Fine, S.	Philadelphia
Fink, A.I.	Brooklyn
Fink, W.J.	Washington, D. C.
Finken, W.S. Jr.	Brooklyn
Fisher, J.A.	Asbury Park, N. J.
Fleming, W.C.	Yorktown, Va.
Fontes, R.J.	Cranston, R. I.
Foster, J.E.	Mobile, Ala.
Fox, W.P.	Oak Park, Ill.
Fritz, H.C.	Bunker Hill, Ill.
Gadbaw, J.J.	Utica, N. Y.
Gallagher, J.C.	Rossford Wood, Ohio
Gambescia, J.M.	Philadelphia
Gans, S.L.	Cleveland Heights, Ohio
Garcia, A. Jr.	Port Washington, N.Y.
Garnjobst, W.M.	Corvallis, Ore.
Gettings, T.H.	Warren, Pa.
Gainsiracusa, J.E.	San Francisco
Gleason, E.A.	Camden, N.Y.
Glod, A.P.	Castle Hayne, N.C.
Glovatzky, W.J.	Seattle
Goerner, P.G.	West Burlington, Iowa
Golia, U.V.	New Haven, Conn.
Gonwa, W.J. Jr.	Chrisman, Ill.
Gottnick, L.T.	Chicago
Grabiak, C.F.	Rillton, Pa.
Greifenstein, F.E.	Union, N.J.
Gundel, R.E.	Columbia, Pa.
Guze, S.B.	New York
Haft, D.E.	Framingham, Mass.
Halsey, H. II.	Montclair, N.J.
Hankins, G.S.	Hampton, Va.
Hardwig, R.P.	Waverly, Iowa
Harrington, R.R. Jr.	Maquoketa, Iowa
Harris, J.F.	New York
Hartjen, J.K.	Detroit, Mich.
Hass, F.M.	Minneapolis
Hatchfield, H.J.	Great Neck, N.Y.
Hattersley, P.G.	Pasadena, Calif.

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Hawkins, J.F. Jr	Baltimore
Hay, H.S	Somerset, Pa.
Henry, W.G	Toledo, Ohio
Hershkowitz, M	New York
Herweg, J.C	Springfield, Mo.
Hess, F.M. II	Bangor, Pa.
Hiltz, L.T	Covington, Ky.
Hoffman, J.B	Brooklyn
Hoffman, S.H	Terre Haute, Ind.
Hollan, O.R	Sinton, Texas
Holmes, C. DuV. Jr	Indianapolis
Hoover, R.D	Oklahoma City
Horkins, E.J	Detroit
Huber, P.J	Detroit
Hughes, J.P	Wilkinsburg, Pa.
Hughes, L.R	Philadelphia
Humphries, J.M	Altoona, Ala.
Hunter, R.C	Chippewa Falls, Wis.
Imperiale, A.F	New York, N.Y.
Jackson, J.L. III	Wichita Falls, Texas
Jacobs, L.G	Indianapolis, Ind.
Jacques, S.A	Baldwin Park, Calif.
Janda, R.W	Chicago
Janelli, D.E	Great Neck, N. Y.
Jarvis, D.F	Clintonville, Wis.
Joffe, I	New Orleans, La.
Johnson, N.J	Brooklyn, N. Y.
Johnson, P.D. Jr	Terre Haute, Ind.
Johnston, M.LeS	Glendora, Calif.
Jolly, W.H	St. Charles, Mo.
Jones, S.N	Rockville, Md.
Juhnke, L.W	Detroit, Mich.
Kable, W.T. Jr	Pittsburgh
Kahn, A.J	Chicago, Ill.
Kavka, J	Chicago
Kehoe, J.M	Eden Valley, Minn.
Kell, J.F. Jr	Lawrence, Kan.
Khedroo, L.G	Chicago
Kiddie, T	Pasadena, Calif.
Kirk, D.A	Salt Lake City
Kirkpatrick, O.F	Dallas, Texas
Klavon, R.J	Pittsburgh
Kleh, J	Washington, D.C.
Kleinschmidt, R.F	Pittsburgh
Klinger, L	New Orleans
Kinseley, R.M	Swissvale, Pa.
Kochevar, G.J	Leavenworth, Kan.
Kopp, E.A	Summit, N.J.
Koury, G.E	Burlington, N.C.
Krusen, E.M	Drexel Hill, Pa.
Kuhn, R.A	Oakland, Calif.
Lamp, J.C	Ventnor City, N. J.
Lenahan, P.J	Wilkes-Barre, Pa.
Lentini, V	Shively, Ky.
Lerblance, W.P. Jr	Checotah, Okla.
Leuallen, E.C	Cape May, N. J.
Lewis, S.M	Newark, N. J.
Linkins, C.H. Jr	Louisville, Ky.
Lindgren, V.V	Winnebago, Minn.
Linss, W.P	Dayton, Ky.
Lippitt, W.H	Baltimore, Md.
Lockwood, C.C	Chicago, Ill.
Lowery, J. McC	Columbus, Ohio
Lowry, D.M	Oklahoma City, Okla.
Luce, R.R	Moscow, Idaho
Lunn, W.W	Olney, Tex.
McCall, J.W. Jr	Memphis, Tenn.
McCanna, P.R	Burlington, Wis
McCarty, C.P	Helena, Ark.
McClellan, W.A	Lakewood, Ohio
McDougal, B.B	Hale Center, Tex.
McGarity, W.C	Jersey, Ga.
McNatt, W M	Naples, Tex.
MacBride, R.G. Jr	Orleans, Mass.
Magruder, W.W	Starkville, Miss.
Maher, R.W	Washington, D.C.
Malley, C.G	Oakland, Calif.
Maltinsky, M. M	Rochester, N.Y.
Mancini, A.J	Batavia, N. Y.
Manning, H. J	Milwaukee
Marks, A. R	Clarksburg, W. Va.
Martin, J. C. Jr	Iredell, Texas.
Martin, J.G	Dallas, Tex.
Martin, R.A	Glasgow, Ky.
Mascia, A.J	Bronx, N. Y.
Mascia, A.V	New York, N. Y.
Massey, C. McD	Augusta, Ga.
Masters, V. E	Fort Lauderdale, Fla.
Mayer, E. C. Jr	Butte, Mont.
Mednick, H	Woodside, L. I., N.Y.
Meineker, R. L	Albany, N.Y.
Mellins, H. Z	Brooklyn
Meredith, D. T	Phoenix, Ariz.
Merrill, H. R	San Diego, Calif.
Merrill, L. G	Pocatello, Idaho
Merritt, E. G	Chicago
Meyer, J. G	Springfield, Ill.
Mickelson, M. S	Los Angeles
Milani, G. E. Jr	New York
Miller, D. E	Kingman, Kan.
Miller, E. V	Salina, Kan.
Miller, O. W	Rushville, Neb.
Minczewski, R. C	South Bend, Ind.
Mishkin, S	Brooklyn
Mitchell, A. D	Topeka, Kan.
Mitchell, W. E	Bryson City, N. C.
Molano, C. E	New York
Monsour, K. J	Philadelphia
Moore, G. D. Jr	Shreveport, La.
Morgan, C. H	New York
Morrison, L. E. II	Indianapolis
Morrissey, W. J	Lovillia, Iowa
Moser, J. M. Jr	Washington, D. C.
Namay, E. M	Charleston, W. Va.
Narrett, S. S	Prasaic, N. J.
Nelson, J. J	Portland, Ore.
Nickerson, R. W	Pittsburgh
Noller, H. W	Topeka, Kan.
Noshpitz, J. D	Bronx, N.Y.
Noziska, C. R	Porterville, Calif.
Nunn, J. W	Highland Park, Mich.
Nyman, R. D	Chicago
Ochs, L. H	Lebanon, Ill.
O'Dell, H. W	Farmersburg, Ind.
Ogilvie, O. E	Salt Lake City
Oliver, K. M	Lynnhaven, Va.
Olshaker, B	Washington, D. C.
Packer, R. M. Jr	Greenville, S. C.
Palmer, R. I	Cedar City, Utah
Pascoe, J. J	Nevada, Mo.
Pearce, C. G	Herber Springs, Ark.
Peck, R.D	Montgomery, W. Va.
Penna, O.J	Evanston, Ill.
Perkins, R.C	Buffalo
Perrin, E.D	Cameron, Texas
Pettit, V.E	Des Moines, Iowa
Phillippi, G.M	Camden, Ala.
Phillips, J.M. Jr	Mount Vernon, N.Y.
Pike, W.H. Jr	Hobart, Ind.
Pitt, L.P	Trinity, Ala.
Plotz, C.M	Brooklyn
Portner, J.H	Philadelphia
Posin, H.I	Brooklyn
Potts, W.A	Buffalo
Presant, H.M	Buffalo
Price, R.A	Phoenix, Ariz.
Quick, C.M	Mansfield, Ohio
Quinn, W.E	Culver City, Calif.
Radefeld, D. A	Cleveland
Rado, E. A	Indianapolis
Ramsdell, S. T	Flandreau, S. D.

ARMY MEDICAL OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

	Cincinnati
Ransohoff, W.	Los Angeles
Rapaport, S.I.	Rochester, N.Y.
Rebasz, R.J.	Salt Lake City
Rees, R.L.	St. Paul
Reizman, B.	Washington, D. C.
Reuter, F. T.	Mokena, Ill.
Reiman, R. W.	Atlanta, Ga.
Riser, A. F.	Baltimore
Robinson, W. H.	North Seattle, Wash.
Roedel, R. F.	Cleveland Heights, Ohio
Rosenthal, M.	Phillips, Maine
Ross, C. J.	New Orleans
Ross, R. Jr.	Dallas, Texas
Rowe, E. B.	Brookline, Mass.
Rudnick, J. H.	Newman Grove, Neb.
Rundquist, R. B.	Ridgewood. N. Y.
Runge, W. F.	Hartford, Conn.
Russo, J. N.	Gilmer, Texas
Rutledge, L. E.	New York
Sagal, L.J.	Philadelphia
Schimmel, I.	Pittsburgh
Schlesinger, M.R.	Cincinnati
Schmidt, R.T.	Granger, Wash.
Schnepper, J.W.	Chicago
Seibel, G.W.	Mansfield, Ohio
Seibert, J.E.	Danvers, Ill.
Seitz, P.F.D.	Slater, Iowa
Severson, W.L.	Columbia, Ohio
Sheilds, L.V. Jr	New York
Sheiman. L.	Chicago, Ill.
Shephard, J.E	New York. N.Y.
Shepp, M.D	Providence, R.I.
Sheridan, J.J	Redondo Beach. Calif.
Shillam, D.S.	Wilson, N. C.
Shingleton, W. W.	Savage, Md.
Shipley, F.M	Middletown, N.Y.
Shorter, S.S.	Atlantic City, N. J.
Shuman, B. J.	El Reno, Okla.
Shuttee, R.D	Avalon, N.J.
Shuttleworth, J.E	Philadelphia
Siegel, A.	Brooklyn
Siegman, F. A.	Roxbury, Mass.
Silkman, R.J	Chicago
Silver, M. L.	New Orleans, La.
Simms, B.F.	San Francisco
Simonton, J. H.	South Bend, Ind.
Skillern, P.G.	Jacksonville, Fla.
Skinner, R. G. Jr	Medford, Ore.
Sleeter, R. L.	Washington, D. C.
Smith, B. G.	Columbus, Ohio
Smith, I. G.	Neodesha, Kan.
Smith, D.C.	Bonne Terre, Mo.
Smith, D.E. Jr	Birmingham, Ala.
Smith, D.D.	Birmingham, Ala.
Smith, G.H. Jr	Dubach, La.
Smith, J.L. Jr.	Reading, Pa.
Snyder, H. B.	Ely, Minn.
Snyder, O.E.	Memphis; Tenn.
Snyder, R.A	Sharon, Pa.
Sommerville, W.J	Flint, Mich.
Sorkin, M.L.	New York
Spaet, T.H.	Mount Vernon, N. Y.
Spellman, F. A.	Woodward, Iowa
Spellman, G. G.	Clarksburg, W. Va.
Spelsberg, W.K.	Baton Rouge, La.
Spiller, E.B.	Wilkinsburgh, Pa.
Spray, P.E.	Indianapolis
Starks, W. O.	Oklahoma City
Steelman, G.M.	Pittsburgh, Pa.
Steiger, W.A. 3d	Brooklyn
Steinberg, H.	Far Rockaway, N. Y.
Steiner, M.	Madison, Wis.
Steinhaus, J. E.	La Crescenta, Calif.
Stern, W. E.	Asbury Park, N.J.
Stevenson, N.D.	

	Indianapolis
Stewart, R. L.	Evanston. Ill.
Stewart, W. B.	Edgeworth, Pa.
Stewart, W.D.	Detroit
Stillwell, D. L. Jr.	Xenia, Ohio
Stout, J.J.	Healdton, Okla.
Strong, J.P.	Buffalo
Sullivan, J.R.	Baltimore
Supplee, J. F. III	Kew Gardens, N.Y.
Suskind, R.R.	Columbus, Ohio
Swank, R.E.	New York
Taves, E. H.	San Francisco
Taylor, F. M.	Halingen, Texas
Taylor, E.D.	Los Angeles.
Taylor, K.S.	Lawrence, Mass.
Tepper, W. R.	Flushing, N.Y.
Thomas, J.S.	Portland, Ore.
Thompsen, R.	Robinson, Ill.
Thorpe, R.F.	Richmond Heights, Mo.
Timrud, D. H.	Wildwood, N.J.
Todd, J.C.	Hickory Flat, Miss.
Todd, N.W.	Canton, Ohio
Tondra, J.M.	Philadelphia
Traitz, J.J.	New York
Treiser. H.T.	Knoxville, Tenn.
Trent, L.W.	Brooklyn
Troisi, J. G.	Morgantown, W. Va.
Tucker, E. B. Jr	New York
Tucker, J. L.	Chicago, Ill.
Tucker, S.M.	East Cleveland, Ohio
Tuckerman, W.W.	Los Angeles
Turnbull, F.M. Jr	Memphis, Tenn.
Turnbull, S.H. Jr	Maine, N. Y.
Tymeson, G.W.	Coquille, Ore.
Ulett, G.A. Jr	Brooklyn
Uzmann. J. W.	Kansas City, Mo.
Van Biber, J. T.	Hynes, Calif.
Van Dam, H.	Chicago
Vander Laan, C.A.	Holland, Mich.
Vander Ploeg, W.H.	Grand Rapids, Mich.
Van Portfliet, P.	Tacoma, Wash.
Vimont, R. T.	Chicago
Vinciguerra, P.L.	San Francisco
Vitt, R. J.	Narberth, Pa.
Vogel, A. W.	Jersey City, N.J.
von der Lieth, W.C.	South Orange, N.J.
Waldron, J.F.	Cedar Vale, Kan.
Walker, W. K.	Kalamazoo, Mich.
Wallace, P.F.	Alpharetta, Ga.
Waters, R.A.	Salado, Texas
Watson, A.R.	Cincinnati
Weigel, R.E.	Denver
Weiker, J.	Eloise, Mich.
Weisberg, R.J.	Philadelphia
Wellenbach, B.L.	Louisville, Ky.
Wells, W.D.	Brooklyn
Welt, S.M.	Miami Beach, Fla.
Werblow, S.C.	Berkeley, Calif.
Weyland, R. D.	Monroe Falls, Ohio
Weygandt, P. L.	Portland, Ore.
White, H. L.	Ennis, Texas
White, R. B.	Antigo, Wis.
Whiting, W. H.	Houston, Texas
Whitson, R. O.	Casper, Wyo.
Wiiking, L. F. Jr.	Kinston, Ala.
Williams, R. E. Jr	Waukesha, Wis.
Willison, C. H.	New York
Wilson, E. B. Jr.	New York
Wilson, P. D. Jr.	Winterville, Miss.
Winn, E. H. Jr.	Brooklyn
Winters, H. S.	Nashville, Tenn.
Witherspoon, F. G.	Brookville, Pa.
Wolford, J. A.	Red Bank, N. J
Wood, F. H.	Jersey City, N. J
Zheutlin, A.	Syracuse, N. Y
Zimdahl, W. T.	

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARIZONA

Workshop in Health and Safety Education.—Arizona's first Workshop in Health and Safety Education will be held at the State Teachers College, Flagstaff, August 2-14. The program is designed to assist teachers, administrators, school nurses and others interested in health and safety education, and to give them an opportunity to discuss such problems with consultants from several sections of the United States. The health education consultants are: Frank S. Stafford, of the United States Office of Education, Washington, D. C.; Dr. William W. Bauer, director, Bureau of Health Education, American Medical Association, Chicago; Miss Vivian Drenckhahn, New York, National Tuberculosis Association; Dr. Henry C. Schumacher, Cleveland, U. S. Public Health Service; Dr. Edith P. Sappington, San Francisco, of the U. S. Children's Bureau, and C. Mayhew Derryberry, Ph.D., San Francisco State College. Many organizations, both state and national, have cooperated in planning and preparing materials for the Workshop, which has become regional in character. Additional information may be obtained from the Registrar, Arizona State College, Flagstaff.

CONNECTICUT

Personal.—Dr. Carl E. Johnson, New Haven, has been appointed a member of the Connecticut Medical Examining Board to succeed Dr. George M. Smith, Pine Orchard, who has resigned after more than twenty-two years of service on the board. Dr. Johnson, a graduate of Harvard Medical School, Boston, 1926, is chief of obstetrics and gynecology at the Hospital of St. Raphael, New Haven, and chairman of the program committee of the state medical society.

First Class in Hospital Administration.—The immediate placement of eight students at the completion of the first year of Yale University's course in hospital administration demonstrates the need for this sort of training, officials of the university have reported. The course at Yale was established in the Department of Public Health with the aid of a grant from the W. K. Kellogg Foundation. Dr. Clement C. Clay, assistant professor of hospital administration, states that only one or two vacancies remain to be filled for the next course starting in September.

ILLINOIS

Dr. Sutton Made Chief of Division.—Dr. Charles F. Sutton has been appointed chief of the Division of Local Health Administration, Illinois Department of Public Health, to succeed Dr. Richard F. Boyd, who accepted a position with the Health and Welfare Fund of the United Mine Workers of America at Washington, D. C. Dr. Sutton, a graduate of Rush Medical College, served in the Army Medical Corps in World War II and has been with the state health department since January 1946.

Chicago

Personal.—Dr. William B. Wartman, Morrison professor of pathology and chairman of the department at Northwestern University Medical School, was recently appointed to the committee on pathology of the division of medical sciences, National Research Council.

Loyola University Receives Millon Dollar Gift.—At the opening of Loyola University's medical-dental school drive June 15 at the Stevens Hotel, the university received a $1,000,000 gift from Frank J. Lewis, Chicago industrialist. Mr. Lewis' gift will be used to establish a trust which is expected to yield $50,000 a year for the medical school's operating expenses. He has also donated the site for the university's proposed Stritch School of Medicine in the West Side Medical Center.

Dr. Saunders Appointed Associate Director.—Dr. H. Prather Saunders, Chicago, was appointed an associate director of the American College of Surgeons, effective June 1. Dr. Saunders joined the staff of the college in March 1946, on his return from duty with the Medical Corps of the Navy. He is a councilor of the Chicago Medical Society, of which he was president in 1942, and a member of the council of the Illinois State Medical Society. He has been a member of the attending surgical staff of Ravenswood Hospital since 1930.

Public Lectures on Radiation.—Six free, public lectures on radiations and radioactive substances in biology and medicine are being given at the University of Chicago at 4:30 p. m. Wednesdays, July 7-August 11 in the Social Science Building (1126 East 59th Street), room 122.

July 7, Raymond E. Zirkle, Ph.D., Significance of Radiosubstances and *High Energy Radiations in Biology and Medicine.*

July 14, William Bloom, Effects of Radiation on the Cells of the Body.

July 21, Robert D. Boche, Ph.D., Effects of Radiation Exposure on Populations.

July 28, J. Garrott Allen, Care of Persons Exposed to Radiation.

August 4, Konrad E. Bloch, Ph.D., Techniques of Using Isotopes as Tracers.

August 11, James W. J. Carpender, Uses of Radioactive Substance in the Treatment of Disease.

INDIANA

Awards for Scholastic Leadership.—The three scholastic leaders in the 1948 Indiana University School of Medicine, , have been awarded medals by the Indiana State Medical Association. The awards this year were a gold medal to Dr. Richard A. Theye, Fort Wayne, now interning at the Indiana University Medical Center; silver medal to Dr. Martin H. Wortzel, Newark, N. J., now interning at Beth Israel Hospital, Newark, and bronze medal to Dr. Max E. Chervin, Philadelphia, intern at Michael Reese Hospital, Chicago.

New Department Heads.—The administrative reorganization program proposed for the Indiana University School of Medicine, Bloomington-Indianapolis, is nearing completion with the appointment of full time heads of the department of surgery and the new department of obstetrics and gynecology. Dr. Harris B. Shumacker Jr. has been appointed chairman of the department of surgery. Dr. Shumacker, formerly associate professor of surgery at Yale University School of Medicine, New Haven, assumed his new post on July 1. Dr. Carl P. Huber, a member of the staff for ten years, has been named chairman of the department of obstetrics and gynecology. The department was created earlier by the merging of the former division of gynecology with the department of obstetrics.

KENTUCKY

Narcotic Violation.—The Bureau of Narcotics, U. S. Treasury Department, reports that Dr. Azzie Z. Tucker, Fulton, pleaded guilty to violation of the federal narcotic code on April 19. His sentence of one year and one day was suspended, and he was placed on probation for three years on condition that he does not apply for registration under the federal narcotic law during the probationary period.

Dr. Underwood Appointed State Health Commissioner.—The State Board of Health of Kentucky has elected Dr. E. Bruce Underwood, Morganfield, state health commissioner and secretary of the state board of health, to succeed the late Dr. Phillip E. Blackerby. Dr. Underwood received his M.D. degree from the University of Louisville School of Medicine in 1937 and was in private practice until 1940. He served as health officer in Union, Webster and Henderson Counties from 1940 to 1946, and in the following year was health officer of Tallahassee, Fla. Since January 1948 he has been in private practice in the clinic which he built at Morganfield.

MISSOURI

State Medical Election.—At the meeting of the state medical association in St. Louis last Spring, Dr. *William A. Bloom*, Fayette, was elected secretary, and Dr. *Charles E. Hyndman*, St. Louis, treasurer, instead of Dr. *Perry W. Jennings*, Canton, who was named as secretary in THE JOURNAL, June 5, 1948, p. 552.

NEW YORK

State Society Selects Education Fund as War Memorial.—The Medical Society of the State of New York voted at its annual meeting in May to establish an education fund for the fifty-eight children of its thirty-two members who died in World War II. On the completion of his secondary school education each child will be given $600 per year if he pursues a collegiate and/or professional postgraduate course up to the age of 25 years if he remains unmarried. The estimated cost of the plan is $244,000. To meet the cost of the War Memorial a special assessment of $12 per member was approved by the house of delegates to be collected by the county societies within the year following the annual meeting. Since the termination of the war the society has been considering various plans for a suitable memorial to its deceased members and voted the educational fund as most appropriate.

New York City

The Romaine Fellowship.—Columbia University College of Physicians and Surgeons has received a bequest of $140,000 for medical research from the estate of the late C. Evaretta Romaine. The fund will be set up as the Dr. DeWitt C. Romaine Fellowship. Dr. Romaine, who died June 1, 1939, graduated from the College of Physicians and Surgeons in 1881.

Personals.—Dr. Frederick L. Liebolt, associate professor of orthopedic surgery, New York Hospital-Cornell University Medical Center, received the honorary doctor of laws degree at the University of Arkansas, Fayetteville, June 5.—Dr. I. Oscar Weissman has been appointed director of Sydenham Hospital, succeeding Dr. Sigmund L. Friedman, who resigned to take a position with the Mount Sinai Hospital, Cleveland. Dr. Weissman, a graduate of Long Island College of Medicine, 1932, has been associated with the U. S. Public Health Service.

Beach Waters Classified.—New York City beaches are being classified by the board of health as follows: Class A, or "approved beach waters" but subject to reclassification in light of continuing observation; class B beaches, "polluted beach waters," and class C, "unsafe beach waters." The records indicate that pollution at some of bathing beaches in the city is increasing and at some beaches may become dangerous for bathing or swimming. The action of the board does not affect that section of the Sanitary Code which forbids the operation of bathing establishments in certain areas, notably the shores of the Hudson, Harlem and East rivers, in Upper New York Bay, Jamaica, Sheepshead and Raritan bays, and parts of Arthur Kill and Kill Van Kull. The Sanitary Code restrictions in those areas continue unchanged.

PENNSYLVANIA

Expand State Society Headquarters.—The Medical Society of the State of Pennsylvania has purchased property adjacent to its present headquarters building in Harrisburg. The three-story building will relieve the present crowded situation and provide for an increase in the activities at the heaquarters of the society, which has grown from 7,230 members enrolled when the present building was purchased in 1922 to 10,200 members.

Philadelphia

Personals.—Dr. Wilbur H. Strickland has been appointed medical director of the Mercy-Douglass Hospital, which was formally merged, by court decree, on March 11. Dr. Seymour S. Kety has been appointed professor of clinical physiology in the Graduate School of Medicine, University of Pennsylvania, effective July 1. Dr. Kety is at present assistant professor of pharmacology, University of Pennsylvania School of Medicine.

Dr. Hubbard to Direct Rheumatic Fever Program.—Dr. John P. Hubbard, Washington, D. C., has been appointed assistant professor of pediatrics at the University of Pennsylvania School of Medicine and will direct a rheumatic fever teaching program throughout Pennsylvania under the auspices of the state health department. Dr. Hubbard's work in rheumatic fever prior to the war, at Harvard Medical School and Children's Hospital, Boston, will continue at the University of Pennsylvania and at Children's Hospital, Philadelphia. He will simultaneously direct a nationwide program of the American Academy of Pediatrics for the improvement of child health from offices in the hospital. Dr. Hubbard has been directing a study of child health services for the academy. He is a graduate of Harvard Medical School, 1931, held a Rockefeller traveling fellowship to study pediatrics and public health in the United States, England and Germany in 1934, was staff physician at St. Lukes Hospital, Tokyo, in 1935, and studied rheumatic fever and heart disease on a Commonwealth Fund research fellowship in 1936-1937 at the House of the Good Samaritan, Boston.

TEXAS

Study of Poliomyelitis.—Columbia University College of Physicians and Surgeons and the Neurological Institute of New York City are cooperating with the University of Texas Medical Branch, Galveston, in a special study of poliomyelitis. Also cooperating is Baylor University College of Medicine, Houston, with Dr. Paul R. Harrington, associate professor of orthopedic surgery, participating. The investigation plans to devise satisfactory criteria for evaluating the neuromuscular status of poliomyelitis in patients. Clinical chemotherapeutic studies will be made with special reference to antibiotics and synthetic compounds which have been shown experimentally to have value against the virus of poliomyelitis. The cooperative research is under the direction of Dr. Murray Sanders, associate professor of bacteriology of the College of Physicians and Surgeons, Dr. Clifford G. Grulee Jr., assistant professor of pediatrics and director of the poliomyelitis unit of the University of Texas Medical Branch, and Dr. Saul R. Korey of the Neurological Institute, New York.

GENERAL

The Original "Cotton Hammer."—At the meeting of the American Association for the Surgery of Trauma in Chicago, June 18, Dr. Kellogg Speed, Chicago, presented to the association the original hammer used by Dr. Frederick J. Cotton, Boston, in the employment of his famous "artificial impaction of the hip" in the treatment of fractures of the neck of the femur. This gavel had placed on it a plate inscribed showing its origin.

Dr. Garrison Wins Cadillac at Meeting.—Dr. Harvey F. Garrison, Jackson, Miss., was the winner of a 1948 Cadillac club coupé presented by White Laboratories, Inc., pharmaceutical manufacturers, at the American Medical Association annual session in Chicago. Dr. Garrison, who operates a children's clinic in Jackson, is past president of the Southern Medical Association and Mississippi State Medical Association. Dr. and Mrs. Garrison cancelled their train reservations in order to drive the new Cadillac home.

Dr. Harrison to Head American Heart Association.—Dr. Tinsley R. Harrison, professor of medicine at Southwestern Medical College, Dallas, Texas, became president of the American Heart Association at its annual meeting in Chicago, June 18-19, succeeding Dr. Arlie R. Barnes, Rochester, Minn. Dr. Harold M. Marvin, New Haven, Conn., former executive secretary of the association, was chosen president-elect. Dr. Harrison is a graduate of Johns Hopkins University School of Medicine, Baltimore, 1922, and has been at Southwestern Medical College since 1944.

Dr. Brick Wins Essay Contest.—Dr. Irving B. Brick, Georgetown University School of Medicine, Washington, D. C., won the eighth annual essay contest of the Mississippi Valley Medical Society "for the best unpublished essay on a subject of practical and applicable value to the general practitioner." His paper is entitled "Clinical Significance of Hiatus Hernia." Second prize goes to Dr. Franklin I. Shroyer, Dayton, Ohio, for his essay, "Cytological Diagnosis of Abnormal Growth in the Female Pelvis." Dr. Brick will receive a cash award and a gold medal. He will present his essay at the thirteenth annual meeting of the Mississippi Valley Medical Society in Springfield, Ill., September 29-October 1.

Traffic Deaths Rise in May.—The National Safety Council reports that traffic deaths went up in May, the first time in seven months, with an increase of 3 per cent over May of last year. The May death toll of 2,650 brought the year's total to 11,270, 5 per cent less than the 11,830 killed in the first five months of 1947. The Mountain states were chiefly responsible for the May increase with a 25 per cent jump in fatalities; Atlantic states had sharp increases also, while the Central states held even. Pacific states were the only ones to continue improvement. Although travel figures for May are not yet available, the council believes that a heavy increase in mileage may have been responsible for the rise.

Communicable Diseases.—The U. S. Public Health Service reports that the week ending July 3 was the sixth consecutive week in which no case of smallpox had been reported in the United States. For the week ending July 3, 29 cases of Rocky Mountain spotted fever were reported of which only 6 were in the Mountain States. Of 38 states reporting on rabies in animals, 21 reported no cases and of 17 states reporting cases the largest numbers were in Indiana (20), Texas (14), Michigan (10), Kentucky (8), and New York, Ohio, Florida and California (7 each). One case of anthrax was reported in each of the following states: New York, New Jersey and Pennsylvania, bringing the total to date to 38 cases, as compared with 28 of the corresponding period of last year.

Poliomyelitis Incidence.—The National Foundation for Infantile Paralysis reports high incidence of poliomyelitis for the four weeks ending June 12, during which 644 cases were reported throughout the country. Total for the first twenty-four weeks of 1948 was 1,446 cases reported, compared with 1,047 for the comparable period last year. Outbreaks continued in Texas, with 427 cases to June 12; North Carolina, 148 cases; Iowa, 58, and South Dakota, 21. Other states showing an increase in cases over the same period in 1947 include Indiana, with 28 as compared with 18 last year; Iowa, 52 against 14; New Jersey, 31 against 13; Oregon, 20 against 8; South Carolina, 13 against 4; Washington, 28 against 15; North Dakota, 110 against 18, and South Dakota, 21 against 2.

Cardiological Congress.—At the recent meeting of the Third Interamerican Cardiological Congress, Dr. Louis N. Katz, Chicago, was made permanent honorary president of the Interamerican Society of Cardiology. It was agreed that the Fourth Interamerican Cardiological Congress would be held in Buenos Aires in 1952. The First International Cardiological Congress will be held at some as yet undetermined place in Europe in 1950. Registration for the congress was 520 representing 170 active members and delegates and thirty-six countries. The proceedings and abstracts are to be published in the *American Heart Journal, Belgium Acta Cardiologica, Revista Argentina de Cardiologia* and *Archivas del Instituto de Cardiologia de México.*

The American Congress of Physical Medicine.—This organization will hold its twenty-sixth annual session September 7-11 at the Hotel Statler, Washington, D. C. All sessions will be open to members of the medical profession in good standing. In addition to the scientific sessions, the annual instruction courses will be held September 7-10. These courses will be offered in two groups: One set of ten lectures will be based primarily on physics and physiology and attendance will be limited to physicians; one set of ten lectures will be more general in character and will be open to physicians as well as to physical therapists. The physical therapists must be registered with the American Registry of Physical Therapy Technicians. Information may be obtained by writing to the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2.

Research Program on Human Reproduction.—The directors of the National Committee on Maternal Health have approved five applications for research in human reproduction made by the National Research Council. Grants total $21,918 for the first year. Scientists in charge of these studies and the titles of their research are: David W. Bishop, Ph.D., assistant professor of zoology, University of Illinois, Chicago—(1) radioactive phosphorus turnover in sperm; (2) effect of aging of sperm in male tract on oxygen consumption and glycolysis; G. E. Seegar Jones, instructor in gynecology, Johns Hopkins University School of Medicine, Baltimore—role of thyroid function in human reproduction; effect of thiouracil on the reproductive rate in rats; role of thyroid function in the human fetus; Doris H. Phelps, Ph.D., research associate, Vanderbilt University, Nashville, Tenn., who will conduct her project at the University of Witwatersrand, Johannesburg, South Africa—studies on endometrial vascular phenomena; Gregory Pincus, Sc.D., director of laboratories, Foundation for Experimental Biology, Worcester, Mass.—control of fertilization and of the early development of mammalian eggs; Boris B. Rubenstein, Michael Reese Hospital, Chicago—penetration and survival of sperm in the female genital tract.

The Arthritis and Rheumatism Foundation.—Dr. W. Paul Holbrook, Tucson, Ariz., has announced the formation of a foundation to promote the study of arthritis and other rheumatic conditions. The new foundation is sponsored by the American Rheumatism Association in cooperation with the National Arthritis Research Foundation, the Detroit Fund for Crippling Diseases, and others. Seven and one-half million persons in the United States are estimated to be afflicted with arthritis or related disorders. The medical policies and activities of the new foundation will be under the direction of a medical and scientific committee now being organized. The chairman of the board of directors is Floyd B. Odlum, Indio, Calif., president of the Atlas Corporation. The main objectives of the new foundation include a nationwide survey of what can be done to combat arthritis. It expects to: (1) develop, with the aid of the National Research Council, a research program designed to mobilize facilities of the nation's medical schools and of the basic sciences, in the search to discover the cause and methods for the prevention and cure of rheumatic diseases; (2) establish fellowships designed to increase the number of men qualified to conduct research and to specialize in the treatment of these diseases; (3) develop key centers throughout the country devoted to research, teaching and treatment, coordinated with medical schools; (4) promote a program of medical education to increase the appreciation of the profession as a whole of what can and should be done to bring effective treatment to patients with rheumatism; (5) foster the development throughout the nation of more adequate provision for patients with rheumatism, particularly in connection with the work of general hospital. Thirty-eight local chapters of the foundation will cover the entire nation. Chapters also will help integrate programs of investigation within their areas as well as raise funds for the purpose of financing such local programs and providing an equitable share of the funds needed to promote the national program of research as well as general educational and planning activities designed to support and increase the effectiveness of local efforts. In addition to Mr. Odlum and Dr. Holbrook, the president, the board of directors of the new foundation are:

Mr. Cyril H. Jones, Shelburne, Vt., former head of the Milton (Mass.) Academy, vice chairman and vice-president.

Mr. Hayden N. Smith, New York, member of the firm of Winthrop, Stimson, Putnam and Roberts, secretary.

Mr. James G. Blaine, New York, president, Marine Midland Trust Company of New York, treasurer.

Mr. David G. Baird, New York, of the insurance firm of Marsh and McLennan.

Dr. Walter Bauer, Boston, director of the Robert M. Lovett Foundation for Crippling Diseases and associate professor of medicine, Harvard University.

Dr. Ralph Boots, New York, director of the Edward Daniels Falkner Arthritis Clinic at Presbyterian Hospital and professor of clinical medicine, Columbia University College of Physicians and Surgeons.

Mr. A. B. Frey, St. Louis, attorney, and president of the National Arthritis Research Foundation.

Dr. Richard H. Freyberg, New York, associate professor of clinical medicine, Cornell University Medical College, and president of the American Rheumatism Association.

Mr. George L. Harrison, New York, chairman of the Board of New York Life Insurance Company.

Mr. H. J. McLaurin, Detroit, president of G. M. Underwriters, Inc. and general agent of Aetna Life Insurance Company, and trustee of the Detroit Fund for Crippling Diseases.

Mr. Frank Mandel, Chicago, Mandel Bros. Department Store.

Mr. Richard S. Reynolds, Richmond, Va., president of Reynolds Metal Company.

Dr. Charley J. Smythe, Plymouth, Mich., medical director, William J. Seymour Hospital, Eloise, Mich.

Dr. Robert M. Stecher, Cleveland, past president of American Rheumatism Association.

Mr. Howell Van Auken, Detroit, member of the law firm of Lucking, Van Auken, Schumann and Greiner, and trustee of The Detroit Fund for Crippling Diseases.

Mr. Charles B. Wrightsman, Houston, Texas, president, The Standard Oil Company of Kansas.

FOREIGN

France

International Congress on Sulfur.—This Congress will be held in Cauterets (High Pyrenees), France, September 13-15, under the patronage of the Minister of Public Health. Subjects to be reported include sulfur and the life of the cell, the detoxicating effect of sulfur, and sulfur deficiencies. In the medical section sulfur will be discussed in relation to endocrine glands, respiratory apparatus, voice, skin, liver, rheumatism, study of metabolism of sulfur in the organism, pyretotherapy with sulfur, arteries and nutrition.

Hungary

Hungarian Congress of Pediatrics.—The pediatric section of the Hungarian Medical Trade Union is organizing an International Congress of Pediatrics to be held in Budapest September 4-12. Two days of the congress will be devoted to plenary sessions of all the sections. Rheumatic fever, toxicosis and social significance and results of pediatrics will be discussed. All pediatricians are invited to participate, and those who wish to attend should communicate with the Centenary Congress Committee, Bokay Janos u. 53, Budapest 8, Hungary. Those desiring to take part in the discussion or to present a paper are requested to give the title and a short summary of the lecture.

CORRECTIONS

Graduate Course in Endocrinology.—In the list of graduate courses in Endocrinology in the June 19, 1948, Journal, page 726, the date for the course sponsored by the American College of Physicians should have been November 1-6 instead of November 8-13. This course will be given at the LaSalle Hotel, Chicago.

Carcinoma of the Uterus, Ovary and Tube.—In the article by this title by Dr. Norman F. Miller in The Journal, Jan. 17, 1948, page 165, the last figure in column 3 of table 2 should be 23 instead of 36 and the last figure in column 5 of table 2 should be 9 instead of 12.

Dexedrine.—In The Journal, June 19, 1948, page 756, in reply to a query concerning "dexedrine," it was erroneously stated that "dexedrine" is the same substance as d-desoxyephedrine. "Dexedrine" is not d-desoxyephedrine. It is the dextrorotary isomer of amphetamine: 1-phenyl-2-amino-propane. There appears to be considerable confusion between these two drugs, doubtless due in part to the fact that they are related in chemical structure and are both dextrorotary.

Deaths

George Van Ingen Brown ⊕ Milwaukee, died at St. Mary's Hospital April 2, aged 86, of carcinoma of the prostate. Dr. Brown was born in St. Paul on Jan. 15, 1862. He graduated from the Pennsylvania College of Dental Surgery, Philadelphia, in 1881, and from the Milwaukee Medical College in 1895. He practiced dentistry in St. Paul and Duluth from 1881 to 1898, then became professor of operative dentistry and oral surgery and dean of the dental department at Milwaukee Medical College. He was a special lecturer on oral surgery in the dental department at the University of Illinois, 1902-1903, State University of Iowa, 1903-1904, University of Tennessee in 1904, Vanderbilt University in 1905 and the Southern Dental College in Atlanta from 1909 to 1915. From 1904 to 1910 he was professor of oral surgery and pathology at the State University of Iowa. Dr. Brown was professor of oral and plastic surgery at the University of Wisconsin Medical School, Madison, from 1920 until he retired as emeritus professor in 1937. From 1915 to 1919 he served as first lieutenant, captain, major and lieutenant colonel in the medical reserve corps. During World War I he served in the Surgeon General's Office in Washington, in charge of the section of plastic and oral surgery; later he was in charge of plastic and oral surgery at General Hospital number 11, Cape May, N. J., and chief of the maxillofacial service at Walter Reed Hospital, Washington, D. C. In 1919 he was appointed surgeon in the U. S. Public Health Service and consultant in plastic surgery for the Bureau of War Risk Insurance. He was past president of the Milwaukee Academy of Medicine, Milwaukee Surgical Society and the Inter-State Post-Graduate Medical Association of North America. He was a member of the Pan American Medical Association, the Society of Plastic and Reconstructive Surgery, Société Scientifique Française de Chirurgie Reparatrice, Plastique et Esthetique, Paris, France, and honorary member of the La Societé Belge de Stomatologie and the Italian Physico-Chemical Academy of Palermo, Italy, a fellow of the American College of Surgeons and a specialist certified by the American Board of Plastic Surgery. In 1903 he was appointed as a delegate to the International Medical Congress in Madrid, Spain, and in 1911 was appointed to report on harelip and cleft palate before the International Medical Congress in Budapest. He served as secretary of the Section on Stomatology of the American Medical Association in 1897 and 1898 and from 1921 to 1924, and as chairman in 1898 and 1899 and member of the House of Delegates in 1902, 1907 and from 1909 through 1916. Dr. Brown was on the staffs of the Milwaukee County Hospital in Wauwatosa, State of Wisconsin General Hospital, Wisconsin Methodist Hospital, Wisconsin Orthopedic Hospital for Children and Madison General Hospital all in Madison, Veterans Administration Hospital in Wood, Columbia, Milwaukee Children's and St. Mary's hospitals in Milwaukee. In 1935 he was honored by the Boy Scouts with a silver beaver award, highest scouting award, for his services, and in 1938 was elected a member of the National Boy Scout Council, serving in that post until his death. Dr. Brown was the author of four editions of "Surgery of Oral and Facial Diseases and Malformations, Their Diagnosis and Treatment Including Plastic Surgical Reconstruction" and contributor to "The Cyclopedia of Medicine" and other publications.

Henricus Johannes Stander ⊕ New York; born in Georgetown, Cape Colony, South Africa, June 21, 1894; Yale University School of Medicine, New Haven, 1921; professor of obstetrics and gynecology at the Cornell University Medical College; formerly associate professor of obstetrics at the Johns Hopkins University School of Medicine, Baltimore; specialist certified by the American Board of Obstetrics and Gynecology; member of the school board of Scarsdale; member of the American Gynecological Society, of which he had been vice president, and New York Obstetrical Society; fellow of the American College of Surgeons; in 1937 received the Order of Merit of Carlos Finlay in recognition of his services to Cuba; in 1947 received honorary M.D. degree from Trinity College, Dublin University; obstetrician and gynecologist in chief to the New York Hospital; author of "Toxemias of Pregnancy" 1929, "Williams Obstetrics" in 1936 and 1941, and "A Textbook of Obstetrics," 1945; died in Scarsdale, N. Y., May 2, aged 53, of coronary disease.

Alois Bachman Graham ⊕ Ligonier, Pa.; born in Madison, Ind., Sept. 27, 1870; Medical College of Indiana, Indianapolis, 1894; professor emeritus of surgery (proctology) at the Indiana University School of Medicine, Indianapolis; president of the Seventh District (Ind.) Medical Society in 1913, the Indianapolis Medical Society in 1916, the American Proctologic Society in 1919 and the Indiana State Medical Association in 1931, of which he was a member; member of the House of Delegates of the American Medical Association in 1920 and 1921, and chairman of the Section on Gastro-Enterology and Proctology in 1928 and 1929; fellow of the American College of Surgeons; chief of the surgical staff of Base Hospital number 32 in France during World War I, serving for eighteen months in the medical corps; formerly on the staff of City Hospital; died in St. Margaret Memorial Hospital, Pittsburgh, April 5, aged 77.

John Tolson O'Ferrall ⊕ New Orleans; born in Meridian, Miss., Aug. 18, 1885; Medical Department of Tulane University of Louisiana, New Orleans, 1908; specialist certified by the American Board of Orthopaedic Surgery, Inc.; member of the Clinical Orthopaedic Society, Southeastern Surgical Congress and the American Academy of Orthopaedic Surgeons; formerly vice president of the Louisiana State Medical Society; fellow of the American College of Surgeons; served overseas during World War I; affiliated with the New Orleans Hospital and Dispensary for Women and Children, Lakeshore Hospital and the Southern Baptist Hospital, where he died recently, aged 62, of pneumonia.

Addison Carey Page ⊕ Des Moines; born in New Sharon, Iowa, in 1874; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; served as treasurer of the Iowa State Medical Society; past president of the Polk County Medical Society; from 1939 to 1945 member of the advisory state board of health; formerly on the faculty of the Drake University Medical Department; on the staffs of the Iowa Methodist and Iowa Lutheran hospitals; died in Mason City, Iowa, April 14, aged 73, of coronary disease.

Clifford Wilmot Mack ⊕ Livermore, Calif.; born in Rawden, Ont., Canada, Dec. 16, 1884; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1908; specialist certified by the American Board of Psychiatry and Neurology, Inc.; fellow of the American College of Physicians; member of the American Psychiatric Association; past president of the Alameda County Medical Association; served during World War I; consulting psychiatrist to the Samuel Merritt Hospital in Oakland and the Veterans Administration Hospital; medical superintendent of the Livermore Sanitarium; died March 31, aged 63, of coronary occlusion.

Thomas Ritchie Ponton, Yucaipa, Calif.; Manitoba Medical College, Winnipeg, Man., Canada, 1898; served as superintendent of the Hollywood Hospital in Hollywood, Calif., Illinois Masonic Hospital in Chicago and the University Hospital in Augusta, Ga.; at one time medical superintendent of the Vancouver General Hospital in Vancouver, B. C.; served with the Canadian Army during World War I; for many years editor and at the time of his death consulting editor of *Hospital Management;* died in Redlands April 2, aged 73, of cerebral hemorrhage.

Carles Harth Able, Norway, S. C.; University of Georgia Medical Department, Augusta, 1884; died March 28, aged 89.

Emil Amberg ⊕ Detroit; Universität Heidelberg Medizinische Fakultät, Baden, Germany, 1894; member of the American Academy of Ophthalmology and Otolaryngology, and the American Otological Society, Inc.; fellow of the American College of Surgeons; specialist certified by the American Board of Otolaryngology; consulting otologist at Grace Hospital and on the adjunct staff of Harper Hospital, where he died April 12, aged 79, of cerebral hemorrhage.

Edmund James Barnes ⊕ Ossining, N. Y.; University and Bellevue Hospital Medical College, New York, 1909; served during World War I; died in Ossining Hospital March 23, aged 71, of perforated gastric ulcer and peritonitis.

Delbert Barney, Wilkes-Barre, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1887; member of the American Medical Association; past president and secretary of the Luzerne County Medical Society; served on the staff of Wilkes-Barre General Hospital; died March 20, aged 88, of acute congestive heart failure.

Joseph Baum, Woodmere, N. Y.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1893; member of the American Medical Association; formerly consulting physician for the New York Board of Health; affiliated with St. Joseph's Hospital in Far Rockaway, where he was vice president of the Rockaway Savings Bank; died April 8, aged 78, of bronchopneumonia.

Louis Charles Benkert, Columbus, Ohio; Ohio Medical University, Columbus, 1897; formerly county coroner, police surgeon and physician for the Ohio Penitentiary; served on the board of education, of which he was president from 1915 to 1922; died April 4, aged 74, of cardiovascular disease.

Edward Percy Beverley ⊕ Lieutenant Colonel, U. S. Army, retired, Broad Run, Va.; University of the South Medical Department, Sewanee, Tenn., 1899; also a graduate in pharmacy; served during World War I; entered the medical corps of the U. S. Army as a major on Dec. 2, 1920; retired Aug. 31, 1937 for disability in line of duty; died in the Walter Reed General Hospital, Washington, D. C., April 3, aged 72, of coronary thrombosis.

Mary Euphrasia Smith Briggs, Pawtucket, R. I.; Tufts College Medical School, Boston, 1894; died March 9, aged 84.

Theodore Prewitt Brookes ⊕ St. Louis; Washington University School of Medicine, St. Louis, 1909; assistant professor of clinical orthopedic surgery at his alma mater; member of the American Academy of Orthopedic Surgeons; fellow of the American College of Surgeons; affiliated with the Evangelical Deaconess Home and Hospital, Barnes, St. Louis Children's and St. Louis Maternity hospitals; on the consulting orthopedic staff of the Lutheran Hospital, where he died April 1, aged 61, of cerebral thrombosis.

George Davies Chunn ⊕ Colonel, U. S. Army, retired, Sarasota, Fla.; Johns Hopkins University School of Medicine, Baltimore, 1913; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; entered the medical corps of the U. S. Army in 1915 and retired Oct. 31, 1945; died in Tampa March 12, aged 59, of carcinoma of the prostate.

Frank Benjamin Converse ⊕ West Willington, Conn. (licensed in Connecticut in 1894); past president of the Tolland County Medical Society; for three terms state representative; served as health officer; president of the medical staff of Johnson Memorial Hospital in Stafford Springs; died April 4, aged 82, of arteriosclerotic heart disease.

Joseph Stanley Cutler ⊕ Wauwatosa, Wis.; Chicago Medical College, 1890; for many years health officer; served during World War I; affiliated with the Milwaukee County Hospital; died recently, aged 82, of chronic nephritis and pernicious anemia.

James Ernest Davis, St. Petersburg, Fla. (licensed in Florida in 1920); died March 19, aged 72.

Carl Vinton Davisson ⊕ Williamsport, Ind.; Indiana University School of Medicine, Indianapolis, 1908; medical examiner for the county draft board and later an officer in the medical corps of the U. S. Army during World War I; served on the staffs of Lafayette Home Hospital and St. Elizabeth Hospital, Lafayette, where he died April 7, aged 67, of carcinoma of the pancreas.

S. James Deehan II, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1940; member of the American Medical Association; served during World War II; interned at the Memorial Hospital, where he served a residency; died April 6, aged 36.

Ernest Adolphus Dennard, Fort Smith, Ark.; Meharry Medical College, Nashville, Tenn., 1914; died April 1, aged 62, of coronary embolus.

Albert Eugene Dietrich, Bay Shore, N. Y.; Long Island College Hospital, Brooklyn, 1893; died March 23, aged 79, of neuritis.

Cova Roy Graham, Bourbon, Ind.; University of Louisville (Ky.) Medical Department, 1910; member of the American Medical Association; past president of the Marshall County Medical Society; died April 3, aged 62, of coronary occlusion.

Stilwell G. Meany ⊕ East Troy, Wis.; Marquette University School of Medicine, Milwaukee, 1913; for many years president of the school board; on the staff of Walworth County Hospital in Elkhorn; died April 4, aged 57, of coronary sclerosis.

Harry Lewington Merryday ⊕ Daytona Beach, Fla.; University of Louisville School of Medicine, 1914; past president of the Volusia County Medical Society; member of the Selective Service Advisory Board during World War II; member and past chief of staff of the Halifax District Hospital; past director of the chamber of commerce; died in the Riverside Hospital, Jacksonville, March 28, aged 63, of heart disease.

Lillian Morgans, Middletown, N. Y.; New York Medical College and Hospital for Women, Homeopathic, New York, 1906; died April 7, aged 76, of coronary thrombosis.

Charles W. Morrow, Fairhope, Ala.; University of Maryland School of Medicine, Baltimore, 1888; died March 25, aged 81.

Frederic T. Murlless Jr., Hartford, Conn. (licensed in Connecticut in 1892); also a dentist; died March 11, aged 81.

Edward Henry Nelson ⊕ Chisholm, Minn.; Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1903; served as mayor of Chisholm and as member of the board of education; died in Hibbing General Hospital, Hibbing, March 29, aged 72, of cerebral embolism.

Arthur North, Corpus Christi, Texas; University of Arkansas School of Medicine, Little Rock, 1907; member of the American Medical Association; served as a physician for the U. S. Department of Justice and the county jail; member of the local draft board during World Wars I and II; died March 13, aged 75, of cardiac decompensation.

John Gabriel O'Connell, Bridgeport, Conn.; Tufts College Medical School, Boston, 1917; member of the American Medical Association; formerly associate surgeon at Bridgeport Hospital; died in Newington, April 6, aged 57, of coronary thrombosis.

Herbert James Orchard ⊕ Superior, Wis.; Trinity Medical College, Toronto, Canada, 1892; formerly city health officer; for many years affiliated with St. Mary's Hospital, died March 25, aged 79, of arteriosclerotic heart disease and bronchiectasis.

Harry Walker Paul ⊕ Shreveport, La.; University of Texas School of Medicine, Galveston, 1920; deputy coroner of Caddo Parish for many years; on the staffs of the T. E. Schumpert Memorial Sanitarium and the North Louisiana Sanitarium; died in Tri-State Hospital March 22, aged 53, of pulmonary infarct and cirrhosis of the liver.

Birdsey Preston Peck, Eaton, Colo.; Denver Homeopathic College, 1904; died in March, aged 73.

Wilson Pendleton, Asheville, N. C.; University of Virginia Department of Medicine, Charlottesville, 1908; member of the American Medical Association; past president of the Buncombe County Medical Society; member of the American College of Chest Physicians; served during World War I; affiliated with the Asheville Mission Hospital; died March 28, aged 62, of cerebral hemorrhage.

Valentine Simmons; Pacific Palisades, Calif.; Medical Department of Tulane University of Louisiana, New Orleans, 1897; member of the American Medical Association and of the Louisiana State Medical Society; died March 24, aged 76, of carcinoma.

Leigh Arthur Simpson, Fulton, N. Y.; Syracuse University College of Medicine, 1920; member of the American Medical Association; died March 26, aged 52, of coronary thrombosis.

Hiram Jason Smith ⊕ Chicago; born in Oakfield, Wis., in 1882; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; clinical associate professor of ophthalmology at his alma mater; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; chief oculist for the Illinois Central Railroad; affiliated with Illinois Central Hospital, where he died February 16, aged 65, of uremia.

Winfield Scott Smith, Philippi, W. Va.; University of the South Medical Department, Sewanee, Tenn.; 1898; served as health officer for Barbour County and as examiner for the local Selective Service board during World War I; died March 24, aged 74, of coronary occlusion.

Thomas Millette Snyder, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1916; professor of histology and embryology and clinical professor of ophthalmology at his alma mater; on the staff of the Hahnemann Hospital, where he died March 25, aged 54.

Arthur Jay Somers ⊕ Chippewa Falls, Wis.; Milwaukee Medical College, 1905; affiliated with St. Joseph's Hospital, where he died March 25, aged 69, of uremia.

Joseph Anderson Speed, Durham, N. C.; Jefferson Medical College of Philadelphia, 1914; member of the American Medical Association; died March 15, aged 59.

George William Stark ⊕ Syracuse, N. Y.; Syracuse University College of Medicine, 1907; member of the American Urological Association; died in Syracuse General Hospital March 2, aged 65, of coronary thrombosis.

Francis Lansing Stebbins, Geneva, N. Y.; University of the City of New York Medical Department, New York, 1891; member of the original staff of the Geneva (N. Y.) General Hospital; died in the Clifton Springs (N. Y.) Sanitarium, March 27, aged 81, of arteriosclerosis and pulmonary edema.

Henry Danford Steele, Princeton, Ill.; Northwestern University Medical School, Chicago, 1892; member of the American Medical Association; died in Phoenix, Ariz., March 3, aged 78, of coronary thrombosis.

John Frank Stein ⊕ Oshkosh, Wis.; Milwaukee Medical College, 1905; served overseas during World War I; for many years on the staff of Mercy Hospital, where he died March aged 66, of septicemia due to an infected gallbladder.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 5, 1948.

Payment of Specialists in National Health Service

It is estimated that the new National Health Service will cost annually $562,400,000 and its ancillary services $480,000,000. Admitting this staggering cost, a member of the Government claimed its worth in the saving of human life and suffering which it would bring about. Meanwhile the Government goes ahead with details of its gigantic scheme for the socialization of medicine. The total maximum fees for a specialist physician or surgeon holding a part time appointment will be $8,000 a year, which will be made up as follows: For hospital work specialists will be paid $800 a year for a half-day session a week at a hospital or clinic, not more than eight sessions a week being allowed. Consultations in the patient's home to which a specialist is called by a general practitioner will be paid for at the rate of $400 a quarter for twenty-five consultations. No fee will be paid for consultations in excess of twenty-five. Major operations will be performed by surgeons in the sessional time. For minor operations at the patient's home the specialist will be paid $21. For full time specialists rates of pay ranging from $6,000 to $20,000 have been recommended by a committee appointed by the Government. All varieties of specialists will be remunerated on the same scale, the place of an individual within the scale being dependent on his responsibilities, experience and skill. Consideration was also given to the view that in the hospital system of the future there should be a more uniform level of efficiency throughout the country, a better distribution of specialists and permeation throughout the hospital service of every region of the influence of the university center. These objects could be achieved only by increasing the mobility of specialists throughout the service and facilitating the exchange of staffs between teaching and nonteaching hospitals. The starting salaries recommended for specialists appointed to the staffs of hospitals are: at 32 years of age $6,000; at 30 or below, $5,000; at 31, $5,500; above 32, $6,000, with, at the discretion of the authorities, up to four special increments of $500 in respect of age, special experience and qualifications. The initial salary should be augmented by an additional $500 after each year of service until $10,000 is reached. A national committee, predominantly professional in composition, should be established to select individual specialists whose outstanding distinction merited higher reward, and should confer awards in three grades as recognition of special contributions to medicine, exceptional ability or outstanding professional work. It is also recommended that practitioners in training for special branches should receive salaries.

Code to Control the Advertising of Nostrums

The exaggerated, if not entirely fictitious, claims made for proprietary medicines are such a scandal that a code for the guidance of advertisers, manufacturers, distributors and publishers has been drafted by organizations representing these interests. It is recommended that advertisements should not contain a claim to cure any ailment or symptoms of ill health, or any offer or advice relating to the treatment or serious diseases that should rightly claim medical attention, or make misleading or exaggerated claims. There should be no offer to return money. Terms such as college, clinic, institute or laboratory should not be used unless an establishment corresponding with the description exists. For products offered to women there should be no use of terms such as "never known to fail." References to doctors or hospitals, whether British or foreign, are not permissible unless they can be substantiated. Special claims that certain drugs have special qualities that are unknown are prohibited, as is the use of terms implying treatments for sexual weakness, premature aging or impaired vitality. A long list is given of diseases for which treatment should not be advertised. It includes alopecia, amenorrhea, arteriosclerosis, baldness, high or low blood pressure, convulsions, dermatitis, disseminated sclerosis, structural or organic defects of the ears or eyes, fungous infections, gallstones, goiter, heart troubles, impetigo, indigestion, insomnia, leg troubles, lupus, menopausal ailments, pyorrhea, renal disease, rheumatism, ringworm and gastric and duodenal ulcer.

Attempt by the Government to Establish Free Medicines in Australia

Unlike New Zealand, the government scheme for a state medical service has been defeated in Australia by the medical profession. But having failed to provide free treatment, the government is trying to provide free medicines, which again is opposed by the medical profession. The federal council of the Australian British Medical Association has instructed its members to return all formularies and prescription forms for free medicine sent to them by the government, and to continue to prescribe on private forms which will not enable patients to receive free medicines. Doctors are advised to send to their patients a circular explaining that they must be at liberty to prescribe what they think best and not the mixture that the government thinks best. This boycott follows four years of fruitless negotiation. The government's case for restricting the medicines to be supplied free is that unlimited prescribing would require unlimited expenditure.

PARIS

(From Our Regular Correspondent)

May 20, 1948.

Conference on Nomenclature

At the end of the nineteenth century, France, acting under Bertillon's influence, convened an international conference on nomenclature of diseases and the causes of death. It was agreed that this nomenclature would be revised every tenth year. In November 1946, the temporary Commission of the World Health Organization created an International Committee of Experts of 9 members, each representing a nation, entrusted with the preparation of the sixth decennial revision of the nomenclature. This conference met in Paris, April 26-30, 1948, under the presidency of Professor Baudouin. Delegates from thirty nations were present.

At this meeting the delegates signed an agreement by which international statistical classification of diseases, traumas and causes of death will be submitted to the World Health Organization for investigation and action. Countries that took no part in the conference will be able to join on application. The new classification comprises nine hundred and fifty-two items covering disease, morbid conditions and exogenous causes of morbidity and mortality. It constitutes the last to be compulsorily used for the coding of medical cards and death certificates; moreover, several abbreviated lists are proposed to meet certain requirements, such as a form for death certificates, and a ruling for the selection of the initial cause of death. The new statistical classification will come into force Jan. 1, 1950. The new classification shows remarkable progress in comparison with the classification of 1938. The number of items has been increased from two hundred to nine hundred and fifty-two and, for the first time, includes not only causes of death but all causes of disease.

The conference submitted to the World Health Organization the following proposals: (1) constitution of a permanent Committee of Experts in Sanitary Statistics, (2) constitution by various governments of National Committees, the duties of which it would be to coordinate statistical works within the country and to serve as a liaison unit between the medico-statistical organizations and the Committee of Experts of the

World Health Organization, (3) decentralization of the study of certain problems, which would be entrusted to National Committees, and (4) convocation, when needed, of international conferences on statistical problems and cooperation with the interested sections of the United Nations.

Superannuation Pension for Physicians

The law of Jan. 17, 1948, provides for a compulsory basic pension at least equal to half of the superannuated workers' pension. This modest grant is a result of the creation of the "Liberal Professions Fund." The law provides for a supplementary pension, created on the application of the interested profession. The autonomous physicians' fund will be the concern of physicians only and will be managed by physicians without being submitted to any other professional fund. The National Council of the Order of Doctors has had a pension established, which would be payable after the age of 65, provided that the beneficiary stops practicing; it can be deferred as long as the interested physician desires. The plan provides for the payment of 200,000 francs to lawful legatees in case the physician dies before 65, the reversibility of half the pension to the widow when she attains the age of 65 and in case of total disability the payment of 200,000 francs and of the whole pension. It is estimated that one physician out of two will retire at 65. A reduction of the yearly contribution by young and aged physicians is provided. The grant of the pension to physicians who have attained the age of 65 and who have not made the necessary annual payments will be made against payment by them of a lump sum, covering partially the lacking payments. The plan has just been submitted to all physicians of France for referendum.

PALESTINE

(From Our Regular Correspondent)

JERUSALEM, May 17, 1948.

Palestine Disturbances after November 29, 1947

When the United Nations General Assembly made known its decision to partition Palestine, an uninterrupted wave of war began in this country. In the first five months there was a total casualty toll of 10,646 persons, 5,014 of whom were reported killed and 5,632 wounded. Of the 5,014 dead, 1,256 were Jews, 3,569 Arabs; the rest included military personnel and police. Of the 5,632 wounded, 2,102 were Jews and 3,163 Arabs. As illustrated by these figures, the endeavors of the Palestine government to maintain law and order have, unfortunately, proved ineffective. In January 1948 the Palestine government approached the International Red Cross with the request to send a mission to Palestine which should examine the situation in the light of the many casualties and the difficulties of hospitalization. At the end of January, three delegates of the International Red Cross were elected: Dr. R. Marti, Dr. M. J. de Reynier, both of the International Red Cross Headquarters in Geneva, and Dr. N. I. Munier of Egypt, head of the Middle East International Red Cross Mission. The commission made a tour through Palestine, had discussions with the responsible authorities of the Jews (Vaad Le'umi, Dr. Katznelson, and the Red Shield Organization, Dr. Nissel, Dr. Dankwert and Dr. Levontin), as well as with the Arab Medical Association, and inspected the available medical institutes and hospitals. The commission also visited the Department of Contagious Diseases of the Government Hospital at Beit Safafa, where on Dec. 28, 1947, the Jewish chief, Dr. H. Lehrs, was murdered in cold blood while on his daily round of duty. Inspecting Jaffa, Tel-Aviv and Haifa, the International Red Cross Commission saw the available hospitals and emergency hospitals (such as the El Amin hospital in Haifa and the Borochov hospital in Ahuza). The destruction in Palestine seen by the members of the commission is described by them as "shocking and terrible."

By the beginning of January 1948, it had become clear that attacks on physicians, nurses and Red Shield ambulances were considered normal by the Arab fighters. On January 6 an appeal was made by the Jewish Medical Association and the Arab Medical Association, for respect of the immunity of physicians, nurses and hospital staff, irrespective of race, origin and creed. This appeal was not heeded. Attacks on Jewish medical personnel, ambulances and hospitals continued unabated, in spite of the endeavors made by the Arab and Jewish medical organizations. The Arabs did not hesitate to attack funerals, and they were abiding by no convention concerning Jewish wounded persons and prisoners. On March 31 the Jewish Agency and the Arab Higher Executive assured the International Red Cross Society that they would welcome a Red Cross delegation to Palestine which would care for the victims of the present disturbances. Dr. de Reynier said that activities of the International Red Cross would commence immediately on the written agreement of both parties to the Geneva Convention. A Red Cross commission, consisting of eight commissioners, four physicians and ten nurses, has been planned. The Red Cross intends not to open hospitals of its own but to attempt to keep existing hospitals, as well as first aid stations, ambulances and the members of the medical profession immune from attacks. The Red Cross will, furthermore, care for the wounded, the evacuation of women and children from the battle zones and the setting up of neutral areas for limited periods, where persons could find refuge from the fighting. Some of these intentions have already materialized in the Jerusalem area, inasmuch as the entire complex of the Government Hospital in Jerusalem has been placed under the supervision of the Red Cross and under the administration of the Arab Medical Association. Negotiations have also taken place regarding the establishment of so-called "Geneva Islands" (neutral places as previously described). The budget for the administrative work of the International Red Cross in Palestine has been fixed at 1,000,000 Swiss francs, contributed jointly by the Palestine government, the Jewish Agency and the Arab Higher Executive.

All these endeavors did not prevent the catastrophe of April 13, when Arab bands attacked the staff of the Hadassah Hospital and members of the Hebrew University, who were on their way through the Sheikh Jarrah Quarter of Jerusalem to the Hadassah and University premises on Mount Scopus. Seventy-six Jews were murdered in this attack and 21 wounded. There were ten vehicles in all in this Hadassah convoy, three containing solely physicians, nurses and patients. Some of the vehicles were clearly marked with the insignia of the Red Shield. Among the dead were the Director of the Hadassah Hospital, Dr. Chaim Yassky; Dr. Doljanski, the head of the Department of Experimental Pathology and of the Cancer Research Laboratory; Dr. Ben David, Secretary to the Committee of the Medical Faculty, and Dr. B. Miszurski, assistant to Dr. Doljanski. The tragedy of this massacre is best described in the words of the few survivors, Dr. I. M. Bromberg and Dr. Ullman:

> About 9:45 a. m. the ambulance in which we were traveling hit a mine and fell into a road trap, and the engine was damaged. The ambulance was a few meters behind the escort car and a few meters in front of two buses which were also damaged. The vehicles were peppered with bullets, and at 10:15 a. m. the first bullets penetrated the ambulance. Dr. Yassky was the first person to be wounded, some pieces of shrapnel hitting his leg. Many hundreds of shots were fired at the vehicles, some from heavy weapons, and explosions occurred nearby.
>
> Those in the ambulance were the drivers, Dr. and Mrs. Yassky, one wounded patient on a stretcher, the assistant matron of the hospital and six other physicians.
>
> Dr. Yassky sat next to the driver throughout and opened the peephole of the ambulance from time to time to see what was going on and to report on events. His movements were quickly observed by the Arabs, and it became clear that he had become a special target, because the largest concentration of bullets was directed at his part of the vehicle. It was suggested that he move farther back into the ambulance, but he refused, wishing to stay at his observation post and to encourage the driver.
>
> At 11:15 a. m. the second casualty occurred in the ambulance, when Dr. Matoth, children's physician, was also hit by shrapnel. At 12 noon Dr. Yassky reported that Arabs were coming much nearer and that large numbers were massing for what appeared to be the kill. At 1 p. m. Dr. Yassky said "This looks like the end. We must say goodbye."
>
> A little later, a convoy of British Army cars was seen by Dr. Yassky to turn into the Ramallah Road. He shouted to them for help and waved

a white handkerchief, which he reported must have been clearly seen by the soldiers.

At 2 p. m. a second army convoy took the same road, and again they were signalled. There was no help forthcoming.

At 2:45 p. m. more bullets penetrated the car near Dr. Yassky, and he was slightly wounded in the face. A little later he reported that one of the buses was burning and that its occupants must be dead. Soon afterward he reported that the second bus was burning. He then said farewell to the occupants of the ambulance and to his wife, and the other passengers also began to say farewell.

Just after 3 p. m. a bullet penetrated the lower part of the ambulance, apparently passing through the engine, and hit Dr. Yassky in the region of the liver. He began to bleed profusely. He asked for an injection of morphine, which he was given. He said a final word to his wife and his staff and to the patient on his stretcher.

The passage of time in the ambulance became blurred. One or two persons actually dozed off at intervals, and all were resigned to their death. Many made neat packages of their watches and personal belongings, which they stowed away in the ambulance, and sat awaiting their bullet. Indeed, several were impatient for this bullet to come, because on several occasions waves of Arabs had approached to within a few meters of the cars, out to slaughter.

Around noon, the driver of the vehicle, Zecharia, thought that it was better to run for it than to sit and await butchery in the ambulance. He was killed a few moments later. Later, one of the physicians also thought that the slim chance of a run for safety was better than the certainty of being killed in a trap. Though wounded, he got out of the car, and his run for safety was a crawl on all fours to Antonius House, which he reached, to be saved by the small British unit in occupation of this building, about 20 yards from the ambulance.

At 3 p. m. two army ambulances passed by the stranded cars; help was asked for and again was not given.

Some time during the afternoon, a number of "Molotov bottles" hit the ambulance, but failed to set it on fire. One of the wounded bus drivers crawled to our ambulance and was able to get into the driver's seat. He became impatient, decided the occupants of the ambulance had no chance, crawled out again and was killed.

All these macabre happenings took place against a background of bullets, bombs, mortars, "Molotov bottles" and hordes of Arabs crazed with an orgy of shooting.

The ordeal lasted seven hours, and then, at 4:30 p. m., British help arrived. Since this help was extended, all occupants of the ambulance have been unanimous in declaring how helpful and considerate the manner was.

New Blood Pressure Principle of Anterior Lobe of Hypophysis

Proceeding from the observation that after hypophysectomy of rats the blood pressure sinks as it does after adrenalectomy, H. Hase (Tel-Aviv) attempted experimentally to find the principle responsible in the hypophysis for the maintenance of the blood pressure. The hypophysis extract used for this purpose was dialyzed after acid hydrolysis, and the last dialysate was used for the experiments. The tests were made with rats; the nonbloody method of Byron and Wilson was used to determine the blood pressure of the rat tail. As hypophysectomized rats could not be obtained for the experiments, the animals were made hypotonic through the elimination of the adrenals. The normal blood pressure value of the test animals was between 130 and 140 mm. After the elimination of the adrenals, values between 85 and 90 mm. could be measured. After injection of the hypophysis extract, the blood pressure increased, reaching a peak after one and a half to two hours and returning to its starting point within the next twenty-four hours. In two publications (*Nature*, Dec. 6, 1947, and *Acta Medica Orientalia*, Jan.-Feb. 1948) Hase pointed out the significance of this new blood pressure factor. He expressed the belief that this principle was particularly important in the treatment of blood pressure disorders caused by hormonal disturbances. Clinical examinations of persons suffering from hypotonia and presenting, at the same time, endocrine disturbances, showed reactions to the injected extract of the anterior lobe of the hypophysis with a temporary increase in the blood pressure and partial improvement of the disturbed endocrine functions (testes or ovaries). The extract used was clearly free of gonadotrope substances.

The death of Hase, in February 1948, interrupted these studies which were carried out in the laboratories of the Teva Middle East Pharmaceutical and Chemical Works Ltd., Jerusalem.

A New Outbreak of Typhoid in Palestine

In the beginning of May, a new outbreak of typhoid fever was reported from the Arab town of Acre. There is no doubt of the epidemic character of this outbreak, and the disease has already spread to neighboring villages, particularly to Satr Amr. The source of infection seems to be the municipal drinking water. The spreading of the disease has been favored by the large influx of Arabs from Haifa, since the necessary control measures can hardly be carried out during the present disorders. British military and police personnel have also been infected, and the latest known figures of persons implicated are as follows: 54 British soldiers, 10 British police and 70 civilians. The difficulties encountered in fighting the epidemic in the present circumstances are shown by a report stating that in Acre Arabs killed an army sergeant and wounded 2 soldiers who had brought dichlorodiphenyltrichloroethane (DDT) for use in the town.

Importance of Complement Fixation Test for Amebiasis

In a paper read before the Palestine Jewish Medical Association, Tel-Aviv Branch, H. Steinitz reported on 70 cases of various abdominal troubles. All the patients were examined thoroughly, many during long periods in hospitals. An exact diagnosis was not made, but the patients showed positive reactions to the complement fixation test for amebiasis (performed by A. Klopstock with his modification of Craig's method). Included in this series were some cases of acute amebic hepatitis, besides a number of cases of subacute and chronic hepatitis and chronic intestinal amebiasis (without amebas in the feces). The antiamebic treatment, performed on the basis of the positive reaction to the serologic test, proved highly successful in about 75 per cent of the cases (including all the acute cases), a therapeutic result considered as satisfactory, since results have not been better in cases in which there were positive observations of Amoeba histolytica in the feces.

In the opinion of H. Steinitz the complement fixation test is indicated in all cases of abdominal disturbances, acute as well as chronic, with unclear diagnosis, and particularly in those cases in which, in spite of many examinations, a definite diagnosis has been impossible. The complement fixation test should also be made when no improvement has resulted from antiamebic therapy. A further indication is the impossibility of examination of the feces on the spot, owing to the lack of experienced examiners or the necessity of sending specimens for examination over long distances, e. g., in rural districts. A positive result in a complement fixation test in undiagnosed abdominal diseases is helpful in the diagnosis "amebiasis" and allows the physician to undertake antiamebic therapy.

In the discussion which followed, Sandler reported on his own experiences with the complement fixation test with patients of the Workers' Sick Fund. He came to conclusions similar to those of Steinitz. Klopstock gave a short report of the examination of about four thousand specimens (to be published shortly *in extenso*), pointing out the important significance of a positive reaction to a complement fixation test. The reaction is specific for amebiasis, but further technical improvement will be necessary to improve the results. Most of the other participants in the discussion acknowledged the importance of these investigations and pointed out the necessity of further extensive examinations to clarify the possibility of a more exact diagnosis of the amebic infection—a problem of particular importance for Palestine, with its high rate of infection with amebiasis.

AUSTRALIA

(From Our Regular Correspondent)

June 14, 1948.

Pharmaceutic Benefits Crisis

A situation without parallel in medical history exists in Australia today. An enactment by the commonwealth government has been nullified by the combined action of the medical profession.

From June 1 every Australian was entitled to have a limited range of medical prescriptions dispensed without payment to the pharmaceutic chemist. While the actual number of prescriptions so dispensed will not be known until the government checking staff has received the chemists' claims at the end of the month, available evidence suggests that the total is negligible. Far from being annoyed at the refusal of the doctors to take part in the scheme, the Australian public is apathetic and adopts the attitude of a detached spectator of a battle of tactics. There is a growing public aversion to socialization in Australia. Two days before the plan was brought into force, the people, through a referendum, gave an emphatic negative to the government's referendum on price fixing.

The government's scheme is that prescriptions will be limited to a formulary and must be written on a prescribed form. The British Medical Association voices the attitude of all doctors in Australia when they make three objections to the "free" medicine plan:

1. The limitation of prescribing to a restricted formulary interferes with a doctor's duty to prescribe according to his professional judgment. Estimates indicate that the formulary would cover only about half the prescriptions normally written. The formulary is not as wide as the British Pharmacopoeia and (to the horror of manufacturing chemists) does not include proprietary preparations.

2. Although the minister for health (Senator McKenna) promised that there would be no penalty clauses against doctors, the medical practitioner finds himself beset with instructions, failure to comply with which leave him liable to a penalty of 50 pounds ($150). One of these instructions is that the doctor will not use a government prescription form for any other purpose than the writing of a prescription "in accordance with, and for the purpose of the Act and these Regulations. Penalty: Fifty pounds."

3. None of the recommendations by the British Medical Association (at the request of the government) for extension of the formulary were included.

Less definite but equally cogent objections to the scheme are:

1. It is the beginning of a national medical service by back-door methods.

2. It is both difficult and dangerous to make a patient's disease fit a formulary.

3. The scheme placed in the hands of the director-general of health the complete control of medical prescribing. It was an example of government by regulation.

In a bitter attack on doctors in the national parliament June 15, the minister for health drew attention to the "social and professional ostracism exercised by doctors against doctors. It is one of the cruelest, most vicious, unchristian things within the law in this country." He criticized doctors who earned great wealth from the sick and suffering of the community, yet denied financial relief to their patients. The doctors' objections to the penalty clauses, said the minister, were not only without merit, but were utterly fantastic.

The spokesman for the British Medical Association, Dr. J. G. Hunter, general-secretary of the federal council, replied to this outburst by pointing out that their boycott policy was determined by the rank and file of the profession and that the British Medical Association merely acted as a mouthpiece. The minister's statement on the scheme was described as "characterized by distortions and omissions." The minister's claim that 95 per cent of chemists' prescriptions came within the formulary was completely and absolutely untrue. Abuse of the British Medical Association was no argument in favor of "free" medicine.

The British Medical Association has offered to participate in the plan if: (1) penalty clauses are deleted, and control of doctors maintained by a professional committee from their own association; (2) doctors use their own prescription forms; (3) any doctor's prescription will be dispensed by the chemist without charge to the patient.

The present attitude of the British Medical Association is that no further negotiations will be entered into with the minister for health unless he expresses his willingness to make, as a basis of negotiation, elimination of (*a*) government prescription forms, (*b*) all penal clauses applicable to doctors and (*c*) limitation of prescribing to a formulary.

June 21, the federal president of the British Medical Association (Sir Henry Newland) announced that he had received a letter from the minister, inviting the British Medical Association to a conference on these points.

The government, meanwhile, has placed itself in a difficult position by anticipating the implementation of the plan and collecting a social services contribution from taxpayers for the financial year 1946-1947. Public pressure is thus brought on the government to settle its dispute with the doctors.

Artificial Insemination

Referring to the report on this subject in The Journal, May 8, page 170, obstetric hospitals in Australia are beginning to adopt the principle of artificial insemination, but the procedure is not often successful.

The first of 7 babies resulting from artificial insemination was recently born in Sydney. In Brisbane 6 women have been inseminated without result. In most of these cases, the husband has been the donor. It is believed, however, that some babies have been born in Australia as a result of insemination by donors other than the husband.

Owing to the absence of legal protection for all concerned, information of such procedure is difficult to obtain. Theologians are outspoken in their condemnation, the Roman Catholic church particularly. Recently, the Church of England in Australia, through Bishop Dixon stated:

"The faithful should declare exactly where it stood if they were to accept attacks on the sanctity of marriage, or if there was failure to check suggestions of the use of artificial means for bringing about human birth. The latter would result in cruelty to individuals brought into existence knowing nothing of their parentage, or the grave dangers by which they must be handicapped from birth."

BELGIUM

(From Our Regular Correspondent)

Liége, June 22, 1948.

Doctors Fighting Against the Government

A most acute controversy has arisen between the Belgian Medical Federation and the Secretary of the Treasury (Minister of Finances). The creation of a fiscal notebook for all the fees collected by the physician, in which the nature of the fee should be indicated for those who are subjects of insurance against diseases, has caused a general revolt of the medical profession. In fact, the fiscal inquiry makes medical secrecy, which is the basis of professional ethics, meaningless to a larger extent than it is realized. The great Belgian medical association, *Fédération Médicale Belge*, has realized an impressive referendum: 6,000 of 8,000 practitioners have declared themselves ready to support the claims and to refuse the use of the fiscal notebook. By an important majority the representatives of the general assembly have decided that in case penalties should be imposed on the physicians, the Belgian Medical Federation immediately will go on administrative strike.

This administrative strike will consist of not filling out any administrative papers except: (*a*) medical prescriptions on personal stationery; (*b*) testimony ordered by articles 55 to 57 of the Civil Law and article 361 of the Criminal Law compelling the physician to report a birth in the absence of the father, and (*c*) reports of contagious diseases (royal ordinance of June 10, 1922).

If physicians should be imprisoned, the Belgian Medical Federation will not hesitate to declare a strike, withholding medical attendance except for emergency cases.

This unanimity of the members of the medical profession and this firmness provide a good outlook in the fight against the progress of state management of medicine. In fact, if the medical profession continues this united resistance, it will have the experience—and this will be a convincing one—of the immense advantage which the abolition of payments by a third party would involve for the profession. In the present circumstances the doctor gets his fee from the patient and ignores the entire organization of insurance against disease or mutual insurance which should pay in his stead. It is a return to the total emancipation of medicine, a situation which should never have been abandoned if medicine was to remain a free and justly honored profession.

Correspondence

STATISTICAL ANALYSIS OF "TREATMENT OF MENINGITIS WITH SULFADIAZINE AND SULFAMERAZINE"

To the Editor:—In the January 3 issue of THE JOURNAL, page 8, appeared an article by Zeller, Hirsh, Sweet and Dowling entitled "Treatment of Meningitis with Sulfadiazine and Sulfamerazine," in which the results of therapy with a combination of sulfadiazine and sulfamerazine in 75 cases of meningococcic meningitis are compared statistically with the results achieved against this disease in previous studies using either sulfadiazine or sulfamerazine alone. Unfortunately, the authors arrive at conclusions which are not supported by their own results but are based on the fallacious interpretation of statistical data.

Dr. Dowling began therapy with the sulfadiazine-sulfamerazine combination following my suggestion at the occasion of his personal visit to my laboratory in the fall of 1944. However, he and his co-workers arbitrarily increased the dosage of the combination "25 to 33 per cent" above the generally accepted routine dosage of sulfonamide drugs. Thus, adult patients received 8 to 9 Gm. of the combination daily as contrasted to the 6 Gm. maintenance dose used by these authors previously with either sulfadiazine or sulfamerazine. Consequently, each patient on combination therapy received an additional amount of at least 21 Gm. of a sulfonamide drug in the average ten day treatment period! While the authors neither claim nor prove the necessity for such a substantial increase in dosage when using the sulfadiazine-sulfamerazine combination, they formulate their conclusions on the advantages and disadvantages of mixture therapy as if they had used the ordinarily required dosage and thus present an entirely misleading picture. The chief advantage of sulfonamide combinations—the avoidance of renal complications—is obscured, and the possible increase in sensitization reactions is given undue prominence. Moreover, "in most patients in the present series, the initial dose (8 Gm.!) and one or two subsequent dosages were given intravenously" (p. 8), so that each patient received 14 Gm. of sulfonamide combination intravenously in the first twenty-four hours. When using the smaller dosage of single sulfonamide drugs, Dowling and associates employed the oral route as a rule, reserving intravenous therapy for the severely ill and stuporous patient (Sweet, L. K.; Dumoff, S. E., and Dowling, H. F.: Meningococcic Meningitis Treated with Sulfadiazine and Sulfamerazine: A Three Year Study, *Ann. Int. Med.* **23**:338, 1945). It is common knowledge that administration by vein increases the danger of renal complications sometimes as much as 50 per cent (Plummer, N., and Wheeler, C.: The Toxicity of Sulfadiazine: Observations on 1,357 Cases, *Am. J. M. Sc.* **207**:175 [Feb.] 1944). Statistical comparison is further complicated by the use of serum therapy with single sulfonamide agents and the elimination of this measure in the present series and also by the great variations in mortality figures (20 to 90 per cent) in different epidemics of meningococcic meningitis (Lepper, M. H.; Sweet, L. K., and Dowling, H. F.: The Treatment of Meningococcic Infections with Sulfadiazine and Sulfamerazine, *J. A. M. A.* **123**:134 [Sept. 18] 1943). Hence, it seems hardly possible to obtain valid data on comparative case fatality rates in evaluating small series of patients unless alternate patients are treated with single and combined sulfonamide agents in the same epidemic, a measure employed by the authors when comparing sulfadiazine and sulfamerazine (*Ann. Int. Med.* **23**:338, 1945). The two reasons put forward by Zeller and co-workers in their explanation of the use of this excessive dosage schedule (p. 11) are unsound and highly objectionable. To my knowledge no better clinical results were predicted by proponents of the sulfonamide mixture therapy. Rather it was contended that the relative increase in solubility would permit the use of higher dosages wherever necessary without a prohibitive increase in the incidence of renal complications. This contention was fully confirmed in the study under discussion. In our own experience, now based on the treatment of more than 1,000 patients with various acute infections including meningitis, sulfonamide combinations produced highly satisfactory clinical results at the routine dosage level without any renal complications (Lehr, D.: Prevention of Renal Damage by Use of Mixtures of Sulphonamides: Animal-Experimental and Clinical Studies, *Brit. M. J.* **2**:943 [Dec. 13] 1947). Moreover, it is impossible to follow the reasoning of Zeller and co-workers, that the claim of better clinical results with sulfonamide mixtures could be investigated by the employment of higher dosages. Logically, the prerequisite of such proof would hinge on the use of equal amounts of sulfonamide drugs in the series slated for comparison. Otherwise, what evidence can the authors provide that the combination would not have rendered identical therapeutic results at the 6 Gm. daily dose, obviously with a further significant decrease in the incidence of renal complications? This assumption is supported by the conclusion which Dowling and co-workers derive from a three year study on the "Treatment of Meningococcic Meningitis with Sulfadiazine and Sulfamerazine," namely, that high sulfonamide concentrations in the blood bore no direct relation to recovery in patients with meningococcic meningitis. The authors must have been aware also that raising the dosage in a mixture of only two sulfonamide drugs meant the removal of much of the basic advantage on which the principle of combination therapy rests. H. F. Dowling and M. H. Lepper (Toxic Reactions Following Therapy with Sulfapyridine, Sulfathiazole and Sulfadiazine, *J. A. M. A.* **121**:1190 [Apr. 10] 1943), among others, reported that the frequency of renal calculi varied in direct proportion to the maximum level of the sulfonamide compounds in the patient's blood. They found that calculi occurred only when dosages larger than 3 Gm. of sulfadiazine or sulfathiazole were given in twenty-four hours. Dowling and co-workers (Relative Toxicity of Sulfadiazine and Sulfamerazine, *J. A. M. A.* **125**:103 [May 3] 1944) also reported that sulfamerazine causes significantly more kidney damage than sulfadiazine. It follows that the upper limits for the safe use of a sulfadiazine-sulfamerazine combination without alkalization lies in the 6 Gm. routine dosage or below this amount. Consequently, the authors' statement that the second reason for the use of a higher dosage was "to explore the upper limits of dosage at which the mixture could be safely administered" is strange indeed.

Despite the fact that the sulfadiazine-sulfamerazine combination was put at such obvious disadvantages in the comparison with the separate compounds, the results reported, except for an apparent increase in allergic reactions, are all in favor of the combination. There was a lower case fatality rate in all age groups receiving the sulfadiazine-sulfamerazine combination, as well as in patients grouped in accordance with the poorest prognosis. There were much fewer "complications related to disease," 14 per cent for the mixture as compared to 26 per cent for the single drugs. (This difference, incidentally, approaches statistical significance when tested by the chi square method.) There was finally a substantially lower incidence of renal complications as well as a lowered incidence of nausea, vomiting, leukopenia and anemia, despite the fact that patients on combination therapy had the highest blood levels and received a 25 to 33 per cent higher dosage than patients treated with either sulfadiazine or sulfamerazine alone.

With regard to allergic reactions, one is struck by the unusual combined tabulation heading, "Fever and/or Rash and/or Conjunctivitis," which seems to attach undue significance to conjunctivitis alone as a sensitization reaction. The combined reporting of these three reactions makes it impossible to elucidate the exact position of conjunctivitis in the over-all picture of reactions counted as allergic in nature. However, it seems fair to assume that the exceptionally high figures for sensitization reactions reported by Dowling and co-workers for the separate compounds as well as the combination, which are in conspicuous contrast to most reports in the literature, are due to the inclusion of conjunctivitis alone as an allergic reaction. Although conjunctivitis is seen occasionally accompanying other sensitization reactions from sulfathiazole, it seems extremely rare from sulfadiazine and its homologues. Plummer and Wheeler reported 1 case of conjunctivitis among 1,357 patients receiving full sulfadiazine therapy without qualifying the nature of this reaction. Most authors reporting toxic reactions from sulfadiazine or sulfamerazine do not mention the occurrence of conjunctivitis. Dowling himself (Dowling, H. F.; Hartman, C. R.; Sugar, S. J., and Feldman, H. A.: The Treatment of Pneumococcic Pneumonia with Sulfadiazine, *J. A. M. A.* **117:** 824 [Sept. 6] 1941) saw no conjunctivitis in 137 patients with pneumococcic pneumonia treated with sulfadiazine. Hence, the frequency of this reaction in meningitis would speak for connection with the infection. Associates and I have not observed any instance of conjunctivitis alone as an allergic reaction in our large series treated with the combinations sulfathiazole-sulfadiazine and sulfadiazine-sulfamerazine. Moreover, in our experience the incidence of drug fever and rash remained at the same low level as indicated in previous reports (Lehr, D.; Slobody, L. B., and Greenberg, W. B.: The Use of a Sulfadiazine-Sulfathiazole Mixture in the Treatment of Children, *J. Pediat.* **29:**275 [Sept.] 1946). A full explanation of this observation is beyond the scope of this discussion; it will be published elsewhere. Briefly, however, it should be stressed that the widely accepted belief that the production of sulfonamide allergy is independent of the size of the dosage has no basis in fact. On the contrary, there exists overwhelming evidence that within limits the incidence of sensitization is directly proportional to the tissue concentration of each sulfonamide compound. Hence, if one refrains from the use of excessive amounts, combinations of two or more sulfonamide drugs in partial dosage may result in an actual decrease of the incidence of allergic reactions despite the simultaneous presence of several independent allergens. This contention could serve to explain the low incidence of drug fever and rash observed in our series, even after prolonged therapy. Our own findings and the objection raised against the inclusion of conjunctivitis alone as an allergic reaction make it appear doubtful whether any significance can be attached to the increase in sensitization reactions reported by Zeller and co-workers in their small series.

Finally, in the statistical evaluation of the results, the authors have made liberal use of the chi square method. Readers unfamiliar with statistics are likely to draw wrong conclusions from the fact that none of the authors' measurements revealed statistically significant differences between sulfadiazine and sulfamerazine used as combination (group A), and separately (group B). For example, the fatality rate observed in group A was 6.7 per cent and in group B was 10.1 per cent. In the present instance this difference is "statistically not significant," meaning that a definite conclusion cannot be reached that method A is better than method B, because this percentage difference is based on such a small sample. The difference might be due to chance alone. However, it does not mean that method B is as good as method A. If these same percentages had been found in sample groups of 600 each, the difference would be statistically significant. Since every one of the authors' measurements was "statistically not significant," which is another way to saying that the evaluation with such small samples was inconclusive, the statistical data do not permit any conclusions as to the advantages of one method over the other. Hence, the authors have wrongly interpreted the chi square tests to mean that there is no difference between method A and method B, as regards fatality rate and the incidence of renal complication, while the results of these tests merely suggest the necessity for collection of more data.

In summary, then, the authors have failed to provide any valid evidence that with the doses required for the treatment of meningococcic meningitis the disadvantages of using a mixture of sulfadiazine and sulfamerazine outweigh the advantages.

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TRANSIENT CEREBRAL PARALYSIS

To the Editor:—In a recent report in The Journal entitled "Transient Cerebral Paralysis in Hypertension and in Cerebral Embolism" (J. A. M. A. **137:**423 [May 29] 1948), Pickering challenged the hypothesis that cerebral angiospasm is responsible for hypertensive encephalopathy, pointing out that cerebral vessels have relatively thin walls and that they react poorly to vasoconstrictor agents. This author furthermore expressed the view that sudden organic arterial obstruction, for example by a thrombus, and not vasospasm is the cause of the transient paralyses observed in hypertensive disease. This concept is based on his observation that embolic occlusion of cerebral arteries produces attacks that are "precisely similar in kind and range to those occurring in hypertension." Thus in either condition, according to this author, paralyses may be transient or permanent depending entirely on the establishment of a collateral circulation.

What Pickering failed to consider, however, is that the similarity between the attacks associated with cerebral embolism and those with hypertensive encephalopathy might well be the result of a common denominator other than organic arterial obstruction; namely, cerebral angiospasm itself. That arterial embolism is commonly associated with intense vasospasm of the adjacent vascular channels has been established. It has also been recognized that vasoconstriction arising in this manner is often a more potent cause of the ischemia than the organic occlusion itself. The development of such vasospasm, therefore, and its subsequent disappearance in cases of cerebral embolism might well explain the transient character of the episodes observed in some instances.

It would indeed be impossible to explain the recurrence of identical seizures in a hypertensive patient ten, twenty or more times in a day or in the course of a year or more on the basis of organic arterial occlusions.

Although cerebral arteries allegedly possess feeble contractility, Pickering is unable to explain Penfield's observation of intense vasoconstriction of the arteries of the exposed cortex following an epileptic attack induced by electrical stimulation (Penfield, W.: The Circulation of Epileptic Brain, *A. Research Nerv. & Mental Dis., Proc.* **18:**605, 1938).

Our own studies in which papaverine in large oral dosage successfully prevented the attacks of hypertensive encephalopathy (J. A. M. A. **136:**930 [April 3] 1948) and idiopathic epilepsy (to be published) add further evidence in support of cerebral angiospasm as the underlying basis for these conditions.

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Medical Economics

COMPARATIVE INCREASES IN THE COSTS OF MEDICAL CARE AND IN THE COST OF LIVING

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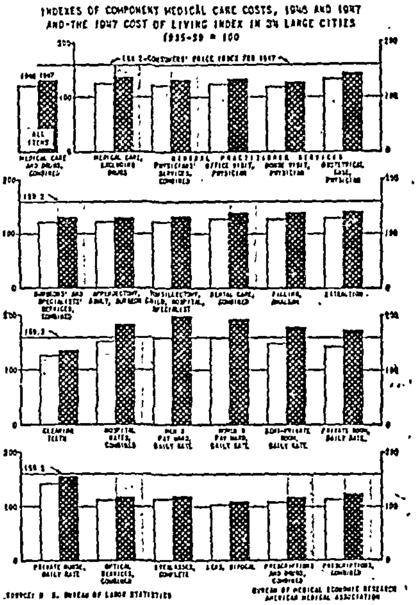
Frequently physicians ask if the general cost of living has risen faster or slower than a fee or service rate charged by physicians. A rather satisfactory answer is provided for the thirty-four large cities in which field representatives of the U.S. Bureau of Labor Statistics gather sample data monthly or quarterly. Their compilations for 1947 have been made available.

Except for hospital items, the index of the cost of living (now called "consumers' price index for moderate-income families") for 1947 was higher *than the index of any reported medical care item.*[1]



SOURCE: U. S. BUREAU OF LABOR STATISTICS

BUREAU OF MEDICAL ECONOMIC RESEARCH AMERICAN MEDICAL ASSOCIATION

The chart shows the indexes for 1946 and 1947. The sharp rise in hospital rates is noteworthy. In each section of the chart the consumers' price index for 1947, 159.2, is shown as a horizontal line. It should be noted that the index for "medical care and drugs combined" for 1947 is 131.6 and for medical care excluding drugs, 135.3. For physicians' services (general practitioner) combined the index for 1947 stands at 130.3.

House visits at 125.3 are not as high as office visits, 132.4. Obstetric cases show the highest index, 143.7, in this group for 1947.

Hospitals have been exposed to the full impact of inflation during the forties. Consequently, the index for hospital rates combined in 1947 is 179.6, a sharp increase from 1946, when the index was only 150.6. Observing the several hospital indexes separately, the highest in 1947, 194.4, is for men's pay ward daily rate. The lowest of these indexes for 1947 is 108.2 for the bifocal lens.

A number of indexes of drug items such as acetylsalicylic acid and quinine are not included. Data regarding these items can be found in "*Indexes of Retail Prices of Services and Miscellaneous Goods*",[2] pages 10-1 to 10-3.

These consumer price indexes date back to 1935; the 1935-1939 average has been set equal to 100. In the table appears the yearly index number starting with 1940 for each of the medical care items exclusive of the particular drug items already noted. The table has been so arranged that the summary item appears first and the component items in the line or lines immediately below.

Although the behavior of medical care prices in thirty-four large cities does not reflect the price changes in all towns and cities where physicians practice, it does provide a rather clear picture of the general trend of prices American people are paying for their medical care. The inescapable conclusion is that the cost of these important items of medical care has risen since 1940 but, *with the exception of hospital items, not as* rapidly as the general cost of living. This conclusion reinforces and substantiates the conclusions in my study of the costs of medical care.[3]

In this earlier study the conclusions were that medical care items as a whole cost the American people $5,600,000,000 in 1946 but that only 3.9 per cent of total personal consumer expenditures of the American people were spent for these medical care items; this compared with 4.3 per cent in 1940. More particularly, in 1946 the amounts spent for physicians' services and hospitals were 1 and 0.6 per cent of total personal consumer expenditures in that year. Hence, the general conclusion was that the American people were spending a smaller percentage of the total consumer budget for medical care as a whole and for physicians and hospitals as components thereof.

In 1946 physicians received only 26 per cent of all the dollars spent for medical care as compared with 31 per cent in the base period, 1935-1939, and 32 per cent in 1929, the first year for which the data were gathered and published by the U.S. Department of Commerce.

The amount spent for drugs in 1946 had risen to 24 per cent of all dollars spent for medical care as compared with only 21 per cent in the base period, 1935-1939, and 20 per cent in 1929. Thus the story of the wonder drugs is written into the recent history of medical economics. The percentages for hospitals were 16, 17 and 13, respectively; for dentists the percentages were 13, 13 and 16. It was also stated in my earlier study that the people are getting more for their money. They get well quicker, they live and earn longer. The type of medical care given in 1946 differs as much from the type given in 1929 as a 1946 passenger automobile differs from a 1929 model.

Whether one examines the record of total expenditures of the American people for medical care or the prices of significant items during recent years, the general conclusion is warranted that the American people have been fortunate in that the costs of keeping well have not risen as rapidly as the cost of living.

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[1] *The consumers' price index covers seven groups of items.* (Monthly Labor Review 66:235 [Feb.] 1948). The seventh group, Miscellaneous, covers many items including the medical care items.

This article is a condensation of a report recently published by the Bureau of Medical Economic Research. A copy will be sent on request to association headquarters.

[2] Indexes of Retail Prices of Services and Miscellaneous Goods, United States Department of Labor, Bureau of Labor Statistics, 1947.

[3] Dickinson, F. G.: Is Medical Care Expensive? Chicago, American Medical Association, 1947. (Breakdowns for 1946 appear in over printed copies only.)

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Constitutionality of Law Repealing Naturopathic Practice Act.—This was a suit by a number of naturopaths against the attorney general to determine the validity of chapter 2 of the Public Acts of 1947, which chapter repealed the existing naturopathic practice act and prohibited the practice of naturopathy in the state. The trial court upheld the validity of section 1 of the act (repealing the existing naturopathic practice act) but struck down section 2 (prohibiting the practice of naturopathy in the state) on the ground that it constituted an unwarranted abuse of the police power of the legislature. The effect of this decree was to remove from the Tennessee code the provisions as to licensing of applicants to practice naturopathy but to leave in effect the licenses granted from 1943 to 1947. There are some two hundred licensed naturopaths in the state. From this decision the attorney general appealed to the Supreme Court of Tennessee.

In construing a statute, said the Supreme Court, it is permissible to take notice of the conditions existing at the time of its enactment. At the session of the general assembly previous to the one enacting this statute, a committee was appointed to investigate the unlawful practice of the healing arts. The committee's report revealed that licenses to practice naturopathy had been issued to wholly unqualified persons; that they had been purchased; that they had been issued as a result of fraudulent cooperation; that a number of corporations had been chartered by naturopaths to issue certificates of compliance with the educational requirements of existing statutes, and that some of these chartered schools issued diplomas to persons who had attended the schools for a period of time not in excess of one week, but which diplomas certified that the holders thereof were qualified in a number of subjects dealing with the arts. The enactment of chapter 2, Public Acts of 1947 followed.

As we conceive the legislature intent, the Supreme Court continued, as gathered from the face of the Statute and from existing conditions, it is that the prohibitions of the statute were directed at persons engaged in the practice of naturopathy and were evidenced, first by a bar to all future licensing of such and, second, by a restriction against the use of the licenses theretofore issued. In enacting the statute the legislature intended to prevent the practice of naturopathy by persons who have only limited qualifications and do not possess what might be termed a general practitioner's or osteopath's certificate; it did not intend to prohibit the performance of the acts which the naturopathic licensing act included within the definition of the practice of naturopathy. Physicians are licensed under chapter 181 of the Public Acts of 1945, and osteopaths under section 7003 et seq of Williams' Code. These generally licensed practitioners are not prohibited from performing the acts in question. The effect of the statutes governing the practice of medicine, the practice of osteopathy and the present statute is that no person shall practice naturopathy unless he be licensed either as a general practitioner or as an osteopath. It cannot be disputed, said the Court, that the legislature has the right to require a general practitioner's license for those who desire to practice a limited branch of the healing arts, and the present statute therefore may be treated as one imposing additional qualifications on persons already in the practice of the profession. It discloses an effort on the part of the legislature to regulate one phase of the healing arts and should be construed in pari materia with other statutes on this subject.

Dr. Herzog in his work on Medical Jurisprudence very clearly calls attention to the dangers flowing from the limited knowledge of the limited practitioner as follows:

> While electro-therapy, mechano-therapy, hydrotherapy, suggestive therapeutics, and certain other forms of treatment for which licenses are issued to limited practitioners are valuable in many pathological conditions, the limited practitioner is likely to do a great deal of harm, not only because he is not thoroughly educated as a physician but, as he is only licensed to use a certain system of treatment, he is apt to use it in cases to which it is not adapted.

Obviously a much more accurate diagnosis may be expected from a general practitioner who has studied medicine and disease in all its phases than from a limited practitioner with only limited preparation therefor, and an accurate diagnosis of an ailment lies at the very foundation of successful methods of treatment. After all, concluded the court, why should not persons who hold themselves out to be doctors, who not only rub and massage patients but prescribe medicine for them, even though narcotics and sulfonamide drugs are prohibited, be required to have the training of a medical doctor? Evidently the legislature thought there was too much borderlining in the practice of naturopathy and determined to stamp out the evil that was not in the science but in the practicing of it, to the definite injury of credulous sufferers.

Accordingly the Supreme Court held that the enactment of the statute in question prohibiting naturopathy in the state was a valid exercise of the police power of the legislature and that no unwarranted discrimination appears in the act. Petition for rehearing was denied and judgment of the trial court in favor of the plaintiffs was reversed.—*Davis v. Beeler, Attorney General, 207 S. W. (2d) 343 (Tenn., 1948).*

Compensation of Physicians: Patient's Obligation to Pay Reasonable Charge for Services.—The claimant, a dully licensed physician, presented to the estate of Ada J. McKeehan, deceased, a bill for professional services rendered the deceased prior to her death. The claim was contested by the residuary legatee and allowed, but in a smaller amount. The physician, therefore, appealed to the Supreme Court of Pennsylvania.

The claimant, a specialist in internal medicine, had been the deceased's physician for some sixteen years preceding her death and was the nephew of her deceased husband. During this period, he attended Mrs. McKeehan on many occasions at her home in Carlisle, at his office in Harrisburg and at the Harrisburg Hospital, where she had been a patient under his care four different times between 1939 and 1942. He made numerous physical examinations, blood counts and urinalyses for her and, on two occasions, took her to the University of Pennsylvania Hospital at Philadelphia and returned her to Carlisle. During these sixteen years Dr. Reckord never rendered any bill to Mrs. McKeehan and she at no time paid him for his services. His office records contained numerous entries showing visits by her to his office and by him to her home, as well as reference to services and treatments rendered by him, but no charges were entered. Following the death of Mrs. McKeehan, the claimant, at the instance of the executor of her estate, prepared and presented a bill for his services for the six years immediately preceding her death, in the amount of $9,410. An auditor, appointed by the court to pass upon the claim and make distribution, awarded the physician $5,000. This award was appealed to the Orphans' Court by both the physician and the residuary legatee, and a final decree entered in favor of the physician in the amount of $2,738. On appeal to the Supreme Court the residuary legatee contended that the evidence established that the claimant intended, when he rendered the medical services in question, that they were to be gratuitous and therefore the trial court erred in making any award to him whatsoever. The physician, on the other hand, contended that the services were not rendered gratuitously, that there always was an intention to charge for them, that the charges were reasonable and that the court erred in not awarding him the full amount of his claim.

It is well settled, said the Supreme Court, that "While there is an implied agreement to pay for the services of a physician if the services were intended to be and were accepted as a gift or act of benevolence, they cannot, at the election of the physician, create a legal obligation to pay." We agree with the trial court, however, that, under all the evidence presented in the instant case, it was a question of fact for the auditor to determine whether or not the claimant intended that his services, when rendered, were to be free of charge. There is sufficient evidence on which to predicate the finding of the auditor that the claimant did not so intend, but that he intended to charge although postponing the time of making an actual charge. This finding by the auditor, approved by the orphans' court, is entitled to the same weight as the verdict of a jury and cannot be disturbed, the Supreme Court concluded.

As to the matter of compensation for the services rendered, the Supreme Court continued, it is well established that "In the absence of an express agreement as to amount, the law implies a promise to pay for a physician's services as much as they are reasonably worth." Furthermore, "physicians should not have their services valued, as you would commodities in trade, by a fixed standard; what would be a proper charge for the same service to a man fully able to pay would be excessive to a man of limited means, and what would be willingly done for the indigent, without thought of financial reward, should be compensated for by one who can afford to pay on the scale which doctors of repute measure as the proper one." In order to substantiate the reasonableness of the amount of his claim, the claimant called two Harrisburg doctors, each of whom stated that in his opinion the services rendered by the claimant were worth $10,000. It must be borne in mind, said the court, that while the opinion of other physicians is competent on the question of the value of a doctor's services, it is not so conclusive as to take the place of the judgment of the court whose duty it is to pass on the question of the value of such services. In disregarding the testimony of the claimant's experts the trial court said that their opinions were based on all the evidence given at the first hearing before the auditor, some of which was incompetent. The opinions stated a lump sum for six years' services and no opinion was elicited as to reasonable charges for various types of service, such as office calls, laboratory work, examinations, home and hospital visits. The trial court also said: "We agree that the claimant visited and examined the decedent on many occasions. We cannot agree that each examination involved much time and skill in interpreting findings. The decedent apparently had a chronic condition and we gather from the evidence that the claimant's services were largely routine, checking pulse, blood pressure, heart, lungs, throat, making urinalyses and blood counts and from time to time prescribing medicines and drugs. We have made an exhaustive study and tabulation of all the records from which we are able to set out in detail the various services rendered by claimant. We have also determined from all the evidence what we deem to be the reasonable value of the services rendered, considering, inter alia, the type of service and the time consumed in rendering it and also considering, as admissions, the charges made to others." The Supreme Court therefore concluded that, under all the evidence, the trial court did not abuse its discretion in fixing the value of the claimant's services at $2,738. Accordingly the judgment of the trial court was affirmed. *In re McKeehan's Estate, 57 A. (2d) 907 (Pa., 1948).*

Hospitals, in General: Reasonableness of Fee as Question for Jury.—The plaintiff hospital sued to recover its fee for services rendered to the defendant following injuries sustained in a collision between a bus and a streetcar. From a judgment for the plaintiff, the defendant appealed to the Supreme Court of Oklahoma.

After the collision the defendant, while still unconscious, was taken to the plaintiff hospital at the direction of the street car motorman. She remained there and received treatment for two days. After she returned home she engaged a private physician and subsequently made two additional visits to the same hospital to receive treatment. In answer to the defendant's first contention, that she had never made any agreement whatever to pay for the services rendered, the court stated the general rule that the acceptance of valuable services and materials "raises a presumption of intent to pay, or that the services were to be compensated, or a presumption of legal liability, and while such presumption is not conclusive, it is sufficient to throw upon the person contesting liability the burden of showing an agreement or other circumstances indicating that the services were to be gratuitous." In the absence of any facts or circumstances indicating that the services were to be gratuitous, the court concluded, we hold that the defendant had no reason to assume or believe that the services rendered by plaintiff were gratuitous and that the evidence conclusively establishes an agreement implied by law that the defendant would pay the reasonable value of such services.

The defendant also contended however, that the value of the services rendered was a question which should have been submitted to the jury, regardless of the fact that the plaintiff's evidence of the value thereof was undisputed. The defendant denied the amount of the debt, and the only testimony on the subject was given by the physician who owned the hospital. He testified that "they are the usual, regular and reasonable charges for the services rendered." The court stated the general rule to be that the testimony of experts as to the value of professional services is not binding on the jury. Thus, in an action by a physician to recover compensation for professional services, the question of the value of the services is for the jury, even where the evidence of the plaintiff and his expert witnesses as to the value of the services is undisputed. The reason for this rule, said the court, is that while the testimony of an expert witness may not be arbitrarily rejected, it may be weighed by the jury in the light of their knowledge and experience, and if, when so weighed, it is found at variance with their knowledge or experience, they may accord it such weight as they deem proper in determining the value of services rendered. Such evidence, although standing alone, is not conclusive, and does not justify the refusal of the trial court to submit that question to the jury. Because the trial court in this case refused to submit the question of the reasonableness of the plaintiff's fees to the jury, the judgment in favor of the plaintiff was reversed and the case remanded for a new trial.—*Piggee v. Mercy Hospital, 186 P. (2d) 817 (Okla., 1947).*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

18: 185-272 (March) 1948. Partial Index

*Development of a Single Standard Slide Test for Syphilis. B. S. Kline. -p. 185.
Cardiolipin Antigens in Serologic Tests for Syphilis. A. S. Giordano, C. S. Culbertson and Margaret W. Higginbotham. -p. 193.
Cardiolipin Blood Tests in Syphilis. J. J. Andujar, M. M. Anderson and E. E. Mazurek. -p. 199.
*Clinical and Serologic Evaluation of 27,103 Consecutive Slide Tests with Cardiolipin-Lecithin Antigen and Kline Antigen. B. Levine, B. S. Kline and H. Suessenguth. -p. 212.
*The V.D.R.L. Slide Test. A Comparison with the Mazzini, Kahn and Kolmer Tests for Syphilis. D. Widelock. -p. 218.

Standard Test for Syphilis.—According to Kline, a standard test for syphilitic reagin should possess the advantages of maximum specificity, maximum sensitivity, maximum uniformity of results, maximum simplicity and maximum rapidity. An optimal mixture of chemically pure cardiolipin obtained from beef heart and purified lecithin from the same source has been observed in tests for syphilis to give results of maximum sensitivity and of much greater specificity than obtainable with present day antigen extracts; accordingly, it may be used as a base for the *development of a single standard* test for syphilis. Studies showed that cholesterol, isotonic solution of sodium chloride and a certain minimal amount of water to disperse completely the antigen particles should be used in the preparation of the cardiolipin-lecithin antigen emulsion. The reading of results is facilitated by adding glycerin to the antigen. The flocculation reaction, which requires two ingredients and little time, is much better suited for use in a standard test for syphilis than is the complement fixation reaction, which requires five ingredients and much time. The slide flocculation test technic employs concentrated emulsion, optimal ratio of emulsion to serum and mixture of the ingredients on an open glass slide in wax-ringed chambers by rapid rotation. This technic offers more advantages for a standard test for syphilis than does the tube flocculation technic.

Cardiolipin and Kline Antigens.—Levine and his co-workers report a clinical and serologic evaluation of 27,103 comparative slide tests for syphilis with optimal cardiolipin-lecithin antigen and Kline antigen in general hospital and ambulatory patients and in persons presenting themselves for antepartum and premarital examinations. Optimal cardiolipin-lecithin antigen emulsion gave results in the slide test for syphilis of decidedly greater specificity and much greater sensitivity than did diagnostic Kline antigen emulsion and therefore is of greater value than the latter in the diagnosis of the disease. Optimal cardiolipin-lecithin antigen emulsion gave results in the slide test of decidedly greater sensitivity in syphilitic serums and much greater specificity in nonsyphilitic serums than did Kline exclusion antigen emulsion and therefore, when negative, serves better than the latter in the exclusion of syphilis. Optimal cardiolipin-lecithin antigen gave results of maximum specificity and maximum sensitivity in slide tests of the blood of newborn infants of five treated syphilitic mothers. Optimal cardiolipin-lecithin antigen is now being used as the standard antigen for the Kline test. The Kline antigen is employed as an adjunct of confirmatory value.

Venereal Disease Research Laboratory Slide Test.—Widelock compared the Venereal Disease Research Laboratory slide test, which employs a cardiolipin-lecithin-cholesterol antigen, with the Mazzini and Kahn flocculation tests and the Kolmer complement fixation test in 52,372 routine specimens submitted to the Bureau of Laboratories of the New York City Department of Health. The reliability of the Mazzini slide test as a screen test in a large public health laboratory is evidenced by the fact that of 8,425 "negative" Mazzini serums only 74 (0.8 per cent) were reactors to the research laboratory's test. The Kolmer complement fixation test produced approximately the same number of reactors in this group. The relative reactivity of the laboratory's slide, the Kahn standard and the *Kolmer complement fixation tests was 83.6 per cent,* 57.4 per cent and 64.2 per cent, respectively, of the Mazzini reactors tested. Thus the sensitivity of the four tests, in order of reactivity was: the Mazzini slide test, the research laboratory's slide test, the Kolmer complement fixation test and the standard Kahn test.

American Journal of Medicine, New York

4:159-312 (Feb.) 1948

Observations on Normal Young Woman Given Synthetic 11-Dehydrocorticosterone Acetate. F. Homburger, J. C. Abels and N. F. Young. -p. 163.
Effects of Synthetic 11-Dehydrocorticosterone (Compound A) in Subject with Addison's Disease. R. G. Sprague, C. F. Gastineau, H. L. Mason and M. H. Power. -p. 175.
Sodium Loss in Man Induced by Desoxycorticosterone Acetate. Study in Subject with Myotonic Dystrophy. K. L. Zierler and J. L. Lilienthal Jr. -p. 186.
Effect of Increasing Blood Volume and Right Atrial Pressure on Circulation of Normal Subjects by Intravenous Infusions. J. V. Warren, E. S. Brannon, H. S. Weens and E. A. Stead Jr. -p. 193.
*Value and Limitations of Thymol Turbidity Test as Index of Liver Disease. H. G. Kunkel. -p. 201.
*Liver Function Tests in Differential Diagnosis of Jaundice, T. L. Althausen. -p. 208.
*Minimal Yet Adequate Program of Liver Function Studies in Differential Diagnosis of Jaundice. H. Shay and H. Siplet. -p. 215.
"Blast Hypertension" Elevated Arterial Pressures in Victims of Texas City Disaster. A. Ruskin, O. W. Beard and R. L. Schaffer. -p. 228.
Coexisting Auricular Fibrillation and Complete Heart Block. E. A. Haunz and H. L. Smith. -p. 237.
Electrocardiographic Patterns of Ventricular Aneurysm. E. Goldberger and S. P. Schwartz. -p. 243.

Thymol Turbidity Test in Disease of the Liver.—Kunkel found that in a group of 76 patients with infectious hepatitis who were followed throughout their illness the thymol turbidity test showed a maximal value that was higher than the highest value obtained in a control group of 46 patients. The results would appear to demonstrate the value of this reaction for the diagnosis of acute hepatic damage. No correlation between severity of symptoms and degree of aberration in the thymol turbidity test could be found. The test proved to be of particular use in evaluating persistent symptoms following infectious hepatitis. Patients with cirrhosis of the liver associated with chronic alcoholism showed considerably lower values for the thymol turbidity test than did patients in a non-alcoholic group. Decidedly positive reactions were associated with hyperglobulinemia in various parasitic diseases and other conditions in which an inflammatory process in the liver was present.

Liver Function Tests in Jaundice.—Althausen discusses the pathologic physiology of different types of jaundice and its relation to excretory and metabolic liver function tests. He analyzes the results of the intravenous galactose test and the *response* of prothrombin to vitamin K in the differential diagnosis of the disease of 190 patients with jaundice. He points out the importance of distinguishing between obstructive jaundice, for which surgical operation is the only effective treatment, and parenchymatous jaundice, which constitutes a strictly medical problem. The usefulness of the intravenous galactose test is demonstrated by the fact that, when taken alone, it made possible the *differentiation between obstructive and parenchymatous* jaundice in 3 out of 4 cases. When taken in conjunction with certain simple additional clinical data, this test allowed the identification of the type of jaundice in almost all cases. The diagnostic accuracy of the prothrombin response to vitamin K is shown by the fact that it was present in 9 of 10 patients with obstructive jaundice and was absent in the same proportion of patients with *parenchymatous* jaundice. The author *concludes* that appropriate liver function tests are an important aid in the differential diagnosis of jaundice when taken in conjunction with data from the history, physical observations and other laboratory studies.

Liver Function Studies.—Shay and Siplet believe that adequate liver function studies may be made in jaundice with the following tests: quantitative van *den Bergh, serum* cholesterol partition, *serum* alkaline phosphatase and thymol turbidity. If the physician has only limited laboratory facilities available, he can still follow a case of jaundice by combining the methylene blue test, the galactose tolerance test and the thymol turbidity test. If applied early in the course of jaundice and repeated at short intervals (three to four days for a period of a week; three sets of readings) these tests will usually *permit identification* of the type of jaundice.

American J. Obstetrics and Gynecology, St. Louis

55:189-366 (Feb.) 1948

Blood Volume in Pregnancy: Critical Review and Preliminary Report of Results with New Technic. C. E. *McLennan and* L. G. Thouin. -p. 189.
Malignant Tumors of Ovary. J. B. Montgomery. -p. 201.
Advanced Ectopic Pregnancy: Report of 3 cases. K. M. Wilson, W. L. Ekas and J. H. Schultz. -p. 218.
Intrauterine Pack in Management of Postpartum Hemorrhage Lois A. Day, R. D. Mussey and R. W. DeVoe. -p. 231.
Maternal Congenital Heart Disease as Obstetric Problem. C. J. Lund. -p. 244.
•Treatment of Cervix Carcinoma with Radium and 800 Kilovolt X-Ray. H. E. Schmitz. -p. 262.
Pelvic Delivery Following Cesarean Section. D. H. Hindman. -p. 273.
Arrest of Abnormal Uterine Bleeding with Pitressin Tannate in Oil. R. C. Benson. -p. 286.
Evaluation of Results of Carcinoma of Cervix Uteri Treated by Radical Vaginal Operation. S. Mitra. -p. 293.
Carcinoma of Cervix Complicating *Procidentia* Uteri. Dorothy L. Ashton. -p. 299.
Comparison of Accuracy in Diagnosis of Vaginal Smear and Biopsy in Carcinoma of Cervix. Ruth M. Graham, S. H. Sturgis and J. McGraw. -p. 303.
Pregnancy Following Tubal Sterilization. W. J. Dieckmann and Elizabeth R. Hauser. -p. 308.
•Penicillin Vaginal Suppositories and Prevention of Postpartum Morbidity. R. R. Pierce. -p. 313.
Nine-Year Follow-Up in Cases of Toxemia of Pregnancy. F. P. Light. -p. 321.
Heparin in Treatment of Toxemia of Pregnancy: Preliminary Report. J. V. S. Maeck and H. Zilliacus. -p. 326.
•Pregnancy and Multiple Sclerosis. L. H. Douglass and C. L. Jorgensen. -p. 332.

Radium and Roentgen in Carcinoma of the Cervix.—Schmitz reviews observations on patients with cervical cancer treated at Mercy Hospital Institute of Radiation Therapy during the ten year period between 1933 and 1942. It was at the beginning of this period that higher voltage roentgen therapy was first introduced at the institute. The plan of radium therapy has remained the same since 1924. A direct comparison of cases for the ten *years of* this study with the cases previously reported would show any advantage gained by the addition of higher voltage roentgen rays. The aim is to attain dose of 4,000 r into the tumor and surrounding gland-bearing areas of the pelvis. Whenever possible only one anterior and one posterior field are used. The size of the field is 20 by 20 cm. or less, depending on the size of the pelvis. The kilovoltage *used is* 800. The focus-skin distance is 70 cm., and filtration is done with lead, tin, copper and aluminum. Although the patients experience intense discomfort at the height of the irradiation effect, the acute cystitis, proctitis and enteritis subside with little permanent injury to these structures. *Inspection of the pelvis in patients with* endometrial carcinoma that has been irradiated similarly and who have been then subjected to hysterectomy has revealed no significant injury to the pelvic viscera. Radium therapy is carried on in conjunction with the roentgen therapy unless the condition of the cervix due to the cancer is such that insertion of radium would *be difficult.* Then the application of radium is postponed until the tumor has regressed sufficiently to make *less* difficult the insertion of radium. Fifty milligrams of radium filtered with 2 mm. brass and 3 mm. of para rubber is placed in the cervical canal for thirty hours. This dose is repeated at seven day intervals for a total dose of 4,500 *milligram* hours. Of the 166 cases reviewed here more than half were inoperable according to present standards. The results obtained with the described irradiation in the groups that were clearly operable were superior to those obtained with surgical treatment in comparable groups. Thus the evidence is in favor of continued radiologic treatment of cancer of the cervix.

Penicillin Vaginal Suppositories to Prevent Postpartum Morbidity.—Pierce says that 778 of 1,573 puerperal women were given 200,000 units of penicillin per vaginam immediately after delivery with a morbidity rate due to infection of the genital tract of only 2.3 per cent. In the control group of 795 cases, the morbidity rate was 5.3 per cent. Blood levels were obtained with intravaginal penicillin in 77.5 per cent of cases on which levels were tested. The authors believe that this administration of penicillin should be of particular value in cases which become morbid after early rupture of membranes and long labor, and in *which* infection of the genital tract is suspected. The routine use of penicillin vaginal suppositories after delivery is justified because of the reduction of the nursing care required in infected cases, reduction in number of extra hospital days per patient and particularly a reduction in genital tract infection following delivery.

Pregnancy and Multiple Sclerosis.—Douglass and Jorgensen say that 5 cases of multiple sclerosis associated with pregnancy have been seen since 1939 at the University Hospital in Baltimore. In 1 of the women the pregnancy was interrupted at the clinic with which the authors are connected, and in another interruption had been carried out elsewhere, although the authors believed that it should not have been done. The other 3 cases would seem to to warrant the conclusion that pregnancy has little if any effect on multiple sclerosis. The disease is one in which remissions and exacerbations normally occur. The progress is not accelerated by pregnancy nor is pregnancy likely to cause exacerbations. In these 3 cases pregnancy proceeded more or less normally; there were no major obstetric complications, and labor was without special incident. All infants were born alive and in good condition and did well. The puerperium was normal and uneventful.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

59:157-310 (Feb.) 1948

Superficial Spreading Carcinoma of Stomach. R. Golden and A. P. Stout. -p. 157.
Penetrating Wounds of Abdomen. M. Slater. -p. 168.
Significance of Widened Septum Pellucidum. R. M. Lowman, R. Shapiro and Lois C. Collins. -p. 177.
Visualization of Rokitansky-Aschoff Sinuses of Gallbladder During Cholecystography. H. C. March. -p. 197.
Myositis Ossificans Progressiva in Homozygotic Twins. J. H. Vastine, Mary F. Vastine and O. Arango. -p. 204.
Genetic Influence on Osseous Development with Particular Reference to Deposition of Calcium in Costal Cartilages. J. H. Vastine, Mary F. Vastine and O. Arango. -p. 213.
*Anatomic Classification of Cancer of Larynx for Use in Radiation Therapy. E. L. Jenkinson and E. L. Pirkey. -p. 222.
Accumulation of Blood Simulating Primary Bronchial Cancer: Report of Case. J. D. Call and P. P. Vinson. -p. 227.
Radiotherapeutic Eradication of Cancer with Surgical Repair of Subsequent Ulceration and Deformity: H. B. Hunt and D. H. Breit. -p. 229.
Radiation and Surgical Trends in Treatment of Cancer of Cervix Uteri. A. N. Arneson. -p. 251.
*Dosage Determination with Radioactive Isotopes. II. Practical Considerations in Therapy and Protection. L. D. Marinelli, Edith H. Quimby and G. J. Hine. -p. 260.
Optical Systems for Photofluorography. G. S. Monk. -p. 282.

Classification of Cancer of Larynx in Radiation.—Jenkinson and Pirkey present data on a group of consecutive cases of cancer of the larynx in patients treated in the Department of Radiology, St. Luke's Hospital, Chicago, from 1936 to 1945. Of the 58 patients, 45 were available for follow-up study. The authors call attention to the fallacy of radiologists' using a surgical classification. They point out that the classification into intrinsic and extrinsic is important to the surgeon, because any lesion that extends beyond the confines of the larynx cannot be cured by laryngectomy. However, from the radiologic point of view, one can expect as good a result from irradiation in an early lesion of the superior aspect of the aryepiglottic fold as in a similar sized lesion on the true cord. It is the extent of the lesion that is the more important prognostic observation, not the location. The authors present a classification which meets most of the needs of the radiologist. This classification requires a complete examination of the larynx, with direct visualization by means of the laryngoscope, and an adequate biopsy. This should be supplemented by roentgenograms of the soft tissue of the neck. The laryngologist must describe the lesion in terms of the extent of structural involvement, particularly to distinguish between neoplasm and inflammatory reaction. Following this thorough examination and biopsy, the anatomic classification should be determined. A stage 4 lesion may, during proper treatment, shrink to the extent of stage 2, or almost completely disappear, but the records should continue to show it in its original classification. The authors were impressed with the excellent results obtained in early lesions. They found that the earlier in the disease radiation treatment is instituted, the better the result.

Dosage Determination with Radioactive Isotopes.—Marinelli and associates show that when radioactive isotopes are employed either as tracers or in therapy, it is important to be able to determine the radiation dosage. Usually this cannot be measured, but when the half-life, radiation energy and biologic uptake and excretion are known it can be calculated. The paper consists of two parts. In the physical part are given mathematic formulas for dosage rates and total doses for beta ray-emitting and gamma ray-emitting isotopes, together with subsidiary formulas for safe concentration and the like. In the clinical part these formulas are accepted, and doses are considered for specific cases, for a number of isotopes of common interest. Particular consideration is given to the determination of safe tracer doses. Two extensive tables, for beta and gamma rays, respectively, give half-life, radiation average energy, fraction disintegrating per day and specific dosage data, including the safe tracer concentration, for thirty-eight isotope elements.

Annals of Allergy, Minneapolis

6:1-98 (Jan.-Feb.) 1948

Clinical Evaluation of New Histamine Antagonist "Decapryn". E. A. Brown, L. R. Weiss and J. P. Maher. -p. 1.
Allergenic (Skin-Test) Activity of Low Ragweed Pollen After Irradiation of Extract with Ultraviolet Light. Halla Brown and Mary H. Loveless. -p. 7.
Allergic Problems of Gastrointestinal Tract: Report of Cases Seen in Military Service. J. A. Rudolph and C. V. Sage. -p. 11.
Balsam as Cause of Contact Dermatitis in Florist. Louise O. Kappes. -p. 21.
Evaluation of Antistine, New Antihistaminic Substance. A. S. Friedlaender and S. Friedlaender. -p. 23.
Observations on Variations in Reactivity in Case of Allergy to Penicillin. J. Farrington, F. A. Dickersman and W. L. McGowan. -p. 30.
Allergy in Children as Related to Altitude. Julia Baker. -p. 33.
Symptomatic Purpura Occurring with Malaria. H. G. Nelson and J. B. Black. -p. 39.
Use of Micronized Therapeutic Agents by Inhalation with Special Reference to Allergic Pulmonary Conditions. G. V. Taplin and F. A. Bryan. -p. 42.
Specifications Recommended as Guides in Collection and Preservation of Pollens. M. V. Veldee. -p. 56.

Annals of Internal Medicine, Lancaster, Pa.

28:229-520 (Feb.) 1948

Renal Diseases: Some Facts and Problems. L. Leiter. -p. 229.
*Seven Hundred and Twenty-Seven Meningococcic Cases: Analysis. A. L. Hoyne and Rowine H. Brown. -p. 248.
Speculations as to Therapeutic Significance of Penicillin Blood Level. H. Eagle. -p. 260.
*Psychiatric Aspects of Vagotomy: Preliminary Report. T. S. Szasz. -p. 279.
Role of Anxiety in Somatic Disease. M. Gitelson. -p. 289.
U. S. Navy's War Record with Tetanus Toxoid. W. W. Hall. -p. 298.
Rheumatism and Arthritis: Review of American and English Literature of Recent Years. P. S. Hench, W. Bauer, E. W. Boland and others. -p. 309.

Meningococcic Meningitis.—Hoyne and Brown review observations on 727 patients who were admitted to the Municipal Contagious Disease Hospital in Chicago with a diagnosis of meningococcic meningitis during the four years 1943 to 1946, inclusive. The ages of the patients ranged from 7 weeks to 71 years. The total fatality rate was 14.8 per cent, but if the 67 patients who were moribund on admission are ruled out, the fatality rate is 6.2 per cent. Sulfonamide drugs were used in practically all cases. Sulfadiazine and sulfathiazole were used in over 500 of the total number; sulfamerazine and sulfapyridine were used in 127 and 68 cases, respectively. There were 103 patients who were treated with penicillin as well as one of the sulfonamide compounds, and 2 patients received penicillin exclusively. The fatality rate was much higher in the group treated with penicillin than in the group treated with the sulfonamide drugs alone. The authors also found that intrathecal therapy is not necessary against meningitis. Moreover, frequent lumbar punctures for drainage are not required. Penicillin is not a valuable adjunct in the treatment of meningococcic infections but is an efficient aid in the management of ocular complications. Although blood sulfathiazole levels are low, there is no doubt in regard to this drug's usefulness for the treatment of meningococcic meningitis. The authors question the emphasis which is customarily placed on the value of blood levels of the drug when considering prognosis.

Psychiatric Aspects of Vagotomy.—Szasz made psychiatric studies on 16 patients who had been operated on for peptic ulcer by vagotomy and in all but 1 of whom the ulcer had healed. The chief object of this study was to find out what happens to the patient as a whole after vagotomy. Over half of the patients were helped by vagotomy. Six patients were found to be unchanged from the psychiatric and clinical points of view; the healing of the ulcer, however, confers protection on these patients against future hemorrhage and perforation. One patient became definitely worse following vagotomy and remained psychologically incapacitated. Discussing the role of psychologic factors in the pathogenesis of peptic ulcer, the author says that patients with peptic ulcer have strong receptive-acquisitive tendencies, which obtain some gratification from the usual medical measures used in the treatment of peptic ulcer; vagotomy brings about healing of the ulcer without providing for these important emotional needs. This explains why some patients insist on continuing with some part of their medical regimen after vagotomy, when the physiologic needs for such treatment are no longer present. Psychoanalysis, although the only etiologic treatment in most cases of peptic ulcer, is not available for the large majority of patients. For those patients who do not respond adequately to the usual medical ulcer regimens and who will not be treated psychoanalytically, vagotomy is probably the treatment of choice. The absence of symbolic oral gratification due to cessation of dietary and other medical measures following vagotomy may be potentially harmful. It is suggested that the clinical results may be improved somewhat if the patients are permitted to continue with certain psychologically meaningful aspects of their preoperative medical regimens after vagotomy.

Bull. of U. S. Army Med. Dept. Washington, D. C.

8:165-246 (March) 1948. Partial Index

Treatment of Bacterial Food Poisoning. S. C. Werch. -p. 199.
Early Treatment of Chest Wounds by Intrapleural Suction. W. H. Berry. -p. 211.
Nephritis and Nephrosis. B. I. Kaplan. -p. 219.
Surgical Aspect of Bronchiectasis. W. Crandell. -p. 223.
Subacute Bacterial Endocarditis. T. H. Hunter. -p. 229.
Normal Renal Function and Pathologic Physiology in Renal Failure. J. Redish. -p. 232.
Anasarca and Leukemoid Reaction Complicating Gas Gangrene. F. Perlman. -p. 240.
Otitis Externa. A. T. Gordon. -p. 245.

Experimental Medicine and Surgery, Brooklyn

6:1-122 (Feb.) 1948. Partial Index

Experimental Observations on Augmented Unipolar Extremity Leads. B. Kisch. -p. 1.
Experimental Production of Epithelial Growth in Rabbit's Cornea. E. Meirowsky. -p. 9.
Effect of Various Agents on Excretion of Uric Acid and Allantoin. G. J. Martin. -p. 24.
Intrathoracic Electrocardiography in Patients with Pneumothorax. F. M. Groedel and P. R. Borchardt. -p. 55.

Georgia Medical Association Journal, Atlanta

37:39-66 (Feb.) 1948

Georgia's Plan for Increased Hospital Facilities and Health Centers. G. G. Lunsford. -p. 39.
Paranasal Sinus Infection in Infants and Children. T. S. Burgess. -p. 44.
Trends in Pediatric Immunology. W.C. Boswell. -p. 47.
Georgia's Hospital Construction Program. J. E. Ransom. -p. 51.

Indiana State Medical Assn. Journal, Indianapolis

41:185-276 (Feb.) 1948

Current Status of Influenzal Vaccines. L. T. Coggeshall. -p. 203.
*Streptomycin in Treatment of Tularemia. L. Foshay. -p. 207.
Cerebral Palsy. C. D. Martz. -p. 211.
Exchange Transfusion for Erythroblastosis Fetalis. A. W. Cavins. -p. 214.
Second Report on Intrathecal Penicillin in Central Nervous System Syphilis. J. H. Thrasher, J. Gosman and G. W. Bowman. -p. 216.

Streptomycin in Tularemia.—Patients whose case histories are reviewed by Foshay were treated at Cincinnati Hospitals, or their records had been published before or were supplied by physicians. Many patients were treated during years when streptomycin was scarce, and for this reason the composition of the treated group shows a high degree of selection with respect to extensive and severe infections. Streptomycin was usually administered by intramuscular injection every three or four hours, occasionally by continuous intravenous or subcutaneous drips. There was little advantage in the latter procedures. Dosage ranged from 0.015 Gm. every four hours to 0.5 Gm. every three hours, the total dosage varying from 0.64 to 42 Gm. per patient. Fever is commonly in or near the normal range within forty-eight or seventy-two hours. A striking release from headache, mental depression and bodily aches and pains often occurs within the first day. By the third day there is usually a definite reduction in the size of buboes, lessened pain in those regions and in the primary lesions, and occasionally early healing of primary ulcers. Stuporous patients with extensive pneumonic or serosal cavity exudates usually show reversion to mental clarity in from two to five days. Clearing of exudates is usually completed in five to six weeks. Comparison of results obtained with streptomycin and with hyperimmune serum revealed that streptomycin induced better results in most of the major aspects of morbidity even though it was administered later in the course of disease by an average of three days. The disease was shortened about one half by streptomycin therapy. Since dramatic recoveries of some patients in the desperately ill category, have followed the use of 2 to 5 Gm. as total dosage it seems reasonable to conclude that dosage in excess of 10 Gm. is a waste of a valuable product as well as an invitation to toxic and other untoward reactions. There is evidence that a total administration of 2 or 3 Gm. per patient will usually be sufficient. Streptomycin is an extremely effective therapeutic agent against tularemia.

Industrial Medicine, Chicago
17: 1-34 (Jan.) 1948

Silicosis Study and Management in Calumet Industrial Area. C. W. Rauschenbach, D. R. Johns, J. F. Larrabee and others. -p. 1.
Cardiovascular Problems in Railroad Industry. R. W. Edmonds and H. Feil. -p. 7.
Thermal Burns. G. S. Bergh. -p. 9.
•Secondary Closure of Wounds of Hand. M. L. Mason. -p. 12.
Indications for Sympathetic Block and Sympathectomy in Traumatic and Associated Conditions. T. R. Adams. -p. 17.
Dental Relations in State Industrial Hygiene Program. E. R. Aston. -p. 21.
•Sodium Bicarbonate. Occupational Medical Problem. E. W. Probst and F. B. Lanahan. -p. 24.

Wounds of Hand.—Mason shows that the surgeon confronted with a serious open wound of the hand is often in a dilemma as to what to do. There may be extensive nerve and tendon division, but the strict indications for primary repair do not obtain. The wound may be seriously contaminated, and there may have been many hours of delay. Regardless of the previous treatment or of the wound's gross soiling, it should be covered at once with sterile dressings and manipulation or inspection should not carried out until it can be done under aseptic conditions. Invasive contaminants come from human sources, the nose and throat and hands of surgeon, assistants, nurses, orderlies, interested bystanders and the patient himself. The wound should be converted into a surgically clean wound at the earliest possible moment and should be covered with voluminous occlusion compression dressing; the hand should be put at rest on a splint. The wound managed in this way has been carried up to the point of closure, and in the early wound would be considered ready to close. In the injury under discussion, it is dressed and splinted and four to six days are allowed to elapse. It is customary to give penicillin during this interval, but a large percentage of patients would do well without it. Secondary closure of the wound may be undertaken if there is no evidence of infection by the fourth to sixth day. After closure the hand is again put at rest on a splint, where it is kept until healing has occurred. Here the universal hand splint is found useful. The hand remains in the position of function during the entire period of healing. Practically every fracture of the hand may be successfully reduced on this splint.

Sodium Bicarbonate in Occupational Medicine.—In the process considered by Probst and Lanahan sodium bicarbonate is used as a powder to keep plastic sheeting from adhering to itself. Although the powder is first applied to the plastic sheeting at room temperature, it is exposed in some parts of the process to a dry heat which may be as high as 190 F. (88 C.) Personnel exposed to the powder in all stages and temperatures of the operation were studied by occasional and annual examinations. The total number studied was 448, representing exposure periods extending from three months to nine years. In 46 employees an eruption of the thoracic and axillary areas and exposed surfaces of the extremities developed. This eruption was a papuloerythematous reaction. In a few cases it extended to exudation and crust formation. Perspiration and friction aggravated the irritation, and scratching superimposed secondary infections in a few cases. The etiologic basis of each case was suggested by appearance of the eruption during the first few weeks of exposure to this powder. All but 2 persons were carried through to skin hardening (as observed by Schwartz) by continuation in the exposure and adherence to hygienic measures. Associated with the dermatitis were changes in hair coloring and texture. Black hair turned brown to brownish red and blond hair was bleached to lighter yellow tints. Texture of hair coarsened and became brittle, but alopecia did not develop. Coincident with cutaneous adjustment, these changes of the hair lost their intensity. Upper respiratory reactions of sneezing, rhinorrhea and dryness of nasal and pharyngeal membrane were passing effects. The hazardous effects of this compound were minimized by an active medical control program.

Journal of Infectious Diseases, Chicago
82: 1-100 (Jan.-Feb.) 1948 Partial Index

Effect of Oxygen Tension on Plasmodium Gallinaceum Malaria in Chicks. L. A. Terzian and L. H. Saxe. -p. 1.
Reduction in Immunity in Chicken Malaria Following Treatment with Nitrogen Mustard. W. H. Taliaferro and Lucy G. Taliaferro. -p. 5.
Antigenic Components of Lactobacilli of Human Oral Origin. N. B. Williams. -p. 31.
Primary Pneumonic Plague in Mukden, 1946, and Report of 39 Cases with 3 Recoveries. T. H. Tieh, E. Landauer, F. Miyagawa and others. -p. 52.
Studies on Transmission and Control of Respiratory Disease Within Army Barracks. C. G. Loosli, H. M. Lemon, H. Wise and O. H. Robertson. -p. 59.
Evaluation of Ultraviolet Radiation and Dust Control Measures in Control of Respiratory Disease at a Naval Training Center. W. R. Miller, E. T. Jarrett, T. L. Willmon and others. -p. 86.

Journal of Nutrition, Philadelphia
32: 137-286 (Feb.) 1948. Partial Index

Supplemental Value of Certain Amino Acids for Beef Protein. R. Hoagland, R. Ellis, O. G. Hankins and G. G. Snider. -p. 167.
Isoleucine Requirement of the Infant. A. A. Albanese, L. E. Holt Jr., Virginia I. Davis and others. -p. 177.
Role of Vitamin D in Utilization of Phytin Phosphorus. R. R. Spitzer, G. Maruyama. L. Michaud and P. H. Phillips. -p. 185.
Availability of Riboflavin of Ice Cream, Peas and Almonds Judged by Urinary Excretion of Vitamin by Women Subjects. G. Everson, Elizabeth Wheeler, Helen Walker and W. J. Caulfield. -p. 209.
Comparison of Vitamin A Liver Storage Following Administration of Vitamin A in Oily and Aqueous Media. A. E. Sobel, M. Sherman, Jacqueline Lichtblau and others. -p. 225.
Niacin Excretion in Rat in Relation to Tryptophane, Pyridoxine and Protein Content of Diet. Grace H. Bell, B. T. Scheer and H. J. Deuel Jr. -p. 239.
Mineral Metabolism Studies in Dairy Cattle: II. Effect of Calcium and Manganese and Other Trace Elements on Metabolism of Lipids During Early Lactation. G. M. Ward and J. T. Reid. p. 249.
Biologic Value of Protein of Field Pea Products with Comparison of Several Methods Used for This Determination. Hazel C. Murry. -p. 257.
•Effects of B Vitamins, Liver and Yeast on Atabrine Toxicity in Rat. B. H. Ershoff. -p. 269.
Self Selection of Diet: VII. Effect of Age and Pregnancy on Selection. E. M. Scott, Sarah J. Smith and Ethel L. Verney. -p. 281.

Vitamin B and Quinacrine Toxicity.—Ershoff found that the administration of toxic doses of quinacrine to immature female rats maintained on a synthetic ration resulted in retardation of growth, alopecia, inhibition of ovarian development, enlarged submaxillary glands, granulocytosis and myocardial damage. These effects were largely counteracted by the addition of desiccated whole liver or yeast to the basal ration and, to a lesser extent, by the administration of additional vitamins of the complex B. Whole liver was more effective than yeast or the additional B vitamins in promoting growth and ovarian development in the immature quinacrine-fed rat. On quinacrine-free rations abnormalities were not observed on any of the diets employed.

Michigan State Medical Society Journal, Lansing

47: 1-120 (Jan.) 1948

Surgical Treatment of Carcinoma of Breast. S. W. Harrington. -p. 41.
Psychotherapy Aided by Meduna's Carbon Dioxide Treatment. P. H. Wilcox. -p. 50.
Reiter's Syndrome. R. F. Wiggers. -p. 56.
B. Coli Meningitis in Puerperal State: Report of 2 Cases. Kathryn J. McMorrow and F. H. Top. -p. 62.
Senile Cataract from Standpoint of General Practitioner. C. S. O'Brien. -p. 64.

New England Journal of Medicine, Boston

238:241-278 (Feb. 19) 1948

Which Type Cesarean Section? R J. Heffernan and C. L. Sullivan.—p 241
Work of Physical-Fitness Clinic W R P Emerson —p 249
Medial Ptosis of Kidney New Renal Syndrome G C Prather.—p 253
Device for Controlled Negative Pressure J R. Millet —p. 258.
"Nephrotic Syndrome". S E Bradley and C J Tyson —p 260.
Benign Prostatic Hypertrophy, with Obstruction —p 266.
Adenocarcinoma of Stomach, Pancreatic Cyst —p 268

238:279-310 (Feb. 26) 1948

Internal Public Relations. J.R. Miller.—p. 279.
*Postarsenical Encephalopathy in Treatment of Syphilis in Women. S.C. Kasdon and M.W. Shapiro.—p. 282.
Meningococcal Pneumonia Report of 2 Cases with Meningococcal Effusion in One. J.B. Brick.—p. 289.
*Unusual Complication of Intestinal Intubation. A.G. Brenizer Jr.—p. 291.
*Significance of "Tics" as Possible Manifestations of Epilepsy. S. Levin.—p. 293.
Infectious Mononucleosis with Intense Jaundice of Long Duration. H.L. Abrams.—p. 295.
Urology. F.H. Colby.—p. 297.
Epidermoid Carcinoma of Bronchus. Giant Follicular Type of Malignant Lymphoma of Lymph Nodes.—p. 300.
Primary Atrophy of Adrenal Cortex. Addison's Disease.—p. 302.

Postarsenical Encephalopathy.—Kasdon and Shapiro present histories and postmortem data on 2 women who were treated with neoarsphenamine for asymptomatic syphilis and who died from postarsenical encephalopathy. The first woman, aged 34, was pregnant. Convulsions developed three days after the second injection of neoarsphenamine, and eclampsia was first considered. The authors cite the following factors as decisive in differentiating postarsenical encephalopathy from eclampsia: a positive history of arsenical treatment, usually within three days; no hypertension; no albuminuria; no edema, and no toxic symptoms. The second case, which concerned a woman aged 31, was somewhat less typical than the first. In this patient the symptoms did not appear until fifteen days after the twenty-third injection. The course of the disease and the necroptic changes were typical. Therapy should include sedation and, most important of all, early administration of BAL. Adequate treatment succeeds in lowering the over-all mortality rate from 70 to 11 per cent. The most essential fact in control of this serious complication of treatment with arsenical preparations is the application of therapy before the onset of coma and convulsions. The prodromal symptoms that precede the onset of coma and convulsions are headache, epigastric distress, restlessness and nausea or vomiting, or both. The use of penicillin in the treatment of syphilis during pregnancy may eliminate encephalopathy.

Unusual Complication of Intestinal Intubation.—Brenizer reports a case in which a mercury-weighted Miller-Abbott tube spontaneously coiled and tied itself into a knot in the jejunum proximal to an obstructing omental adhesion. This complication was apparently produced by the use of a flexible tube, previously deformed by long storage in a tight coil. Intestinal tubes should be stored without coiling deformity, and their progress through the intestine should be followed by roentgenologic observations.

Tics as Manifestations of Epilepsy.—Levin reports 3 instances in which tics appeared to be manifestations of epilepsy. All 3 patients manifested epileptic dysrhythmias when they were examined by electroencephalography. The author's opinion that these 3 cases represent atypical forms of myoclonic epilepsy is favored by the electroencephalographic observations of 3 per second spike and wave dysrhythmia, which, according to Lennox, is characteristic of myoclonic epilepsy as well as petit mal and akinetic epilepsy. Tics have a resemblance to myoclonic jerks, and although in the usual forms of myoclonic epilepsy brief contractions of muscles in the upper extremities occur, at times similar contractions of other muscles are seen.

238:311-344 (March 4) 1948

Occurrence of Extensor Spasm in Patients with Complete Transection of Spinal Cord. M. B. Macht and R. A. Kuhn. -p. 311.
*Fatal Acute Pancytopenia Following Tridione Treatment. T. J. Carnicelli and C. G. Tedeschi. -p. 314.
Neurologic Complications of Trichinosis: Report of 2 Cases. J. C. Skinner. -p. 317.
Acanthosis Nigricans: Report of Case Associated with Thyroid Cancer. W. H. Kaufman and R. F. Tilley. -p. 320.
*Morphine Hypersensitivity in Kyphoscoliosis. K. H. Katz and B. L. Chandler. -p. 322.
Abdominal Surgery. A. W. Allen. -p. 324.
Congenital Heart Disease: Tetralogy of Fallot: Acute and Chronic Rheumatic Endocarditis, with Stenosis Involving all Valves. -p. 331.
Carcinoma of Gall Bladder, with Extension to Small Intestine. Acute Gangrenous Appendicitis, with Perforation and Abscess Formation. -p. 334.

Fatal Acute Pancytopenia Following "Tridione" Treatment.—Carnicelli and Tedeschi describe a fatal case of acute pancytopenia following the use of "tridione" (trimethadione). In this case, as in 2 similar cases reported in the literature, a condition of aplastic anemia accounted for the fatal course of events. No other factor could be incriminated. As in the case reported by Mackay and Gottstein, the hematic condition developed several months after the patient was receiving the medicament; the onset was abrupt and sudden, and no available treatment could prevent the fatal outcome. A note of caution is sounded regarding the administration of this drug and its potential danger, as well as the necessity of frequent examinations of the blood. A plea is made to limit the use of "tridione" to the control of true petit mal seizures.

Morphine Hypersensitivity in Kyphoscoliosis.—Katz and Chandler describe 2 cases exemplifying the adverse effects of morphine on kyphoscoliotic patients with pulmonary cardiac failure. The major physiologic and pathologic factors in the causation of this sensitivity are discussed. The authors do not believe that the exagerated effect from morphine is in any way specific for patients with kyphoscoliosis. Their experience suggests that any patient suffering from long-standing disease of the lung with pulmonary decompensation complicated by heart failure presents similar predisposing handicaps, which might make the added effects of morphine lethal. A sampling of recent case records at the Boston City Hospital of patients with chronic cor pulmonale without kyphoscoliosis lends further support to the impression that these patients are often adversely affected by morphine.

New Orleans Medical and Surgical Journal

100:297-344 (Jan.) 1948

Pathogenesis of Edema of Congestive Heart Failure. E. H. Bresler. -p. 297.
Hypertrophic Pyloric Stenosis. H. O. Barker, H. H. Hardy Jr. and H. A. White. -p. 307.
Treatment of Chronic Anemia. N. W. Voorhies. -p. 310.
Radiation Treatment in Cancer. S. Hatchette. -p. 316.
Functional Conditions of Nose. J. Stamm. -p. 322.

100:345-396 (Feb.) 1948

Chemotherapy and Antibiotics. M. Finland. -p. 345.
Surgical Use of Chemotherapeutic and Antibiotic Agents. C. Lyons. -p. 358.
Use of Antibiotics in Pediatrics. G. W. Salmon. -p. 361.
Sulfonamides and Antibiotics in Otolaryngology. G. F. Joseph. -p. 367.
Adult Hypothryoidism and Myxedema: Review of the Diagnostic Data in 151 Cases. N. Burnstein. -p. 374.
Human Isoimmunization. J. W. Davenport Jr. -p. 376.
New Method of Treating Peptic Ulcers with Penicillin Gastric Drip: Preliminary Report. R. W. Young. -p. 379.
Use of Curare in Tetanus. E. Z. Browne and H. A. Stone. -p. 382.

Ohio State Medical Journal, Columbus

44:113-224 (Feb.) 1948

Chemothefapy in Infants and Children. I. Sulfonamides. J. G. Kramer. -p. ,145.
Propylthiouracil and Methyl Thiouracil in Treatment of Hyperthyroidism. E. P. McCullagh and R. W. Schneider. -p. 149.
•Thrombocytopenic Purpura Hemorrhagica. C. R. Rittershofer. -p. 154.
•Contraindications and Indications for Pentothal Sodium. *R. Sommerfield. -p. 159.*
Intracapsular Cataract Extraction. E. J. Wenaas. -p. 161.
Experiment with Uterine Cervical Smears in Diagnosis of Genital Malignancies. G. M. Wilcoxon and F. H. Falls. -p. 165.
Dissecting Aneurysm of Middle Cerebral Artery. T. L. Ramsey and V. T. Mosquera. -p. 168.

Thrombopenic Purpura Hemorrhagica.—According to Rittershofer, thrombopenic purpura hemorrhagica comprises a group of closely related hemorrhagic diseases characterized by reduction in the number of circulating platelets, prolonged bleeding time, decrease in capillary resistance and spontaneous frank bleeding from mucous membranes and bleeding into the skin causing petechiae and ecchymoses. One group of workers believes that thrombopenic purpura is brought about by hyperactivity of the spleen in destroying platelets. In favor of this view is the benefit obtained by splenectomy. Others stress the view that the cause of chronic thrombopenic purpura is in the bone marrow. This view is based on the observation that all factors which depress the bone marrow lower the platelet count. Thus, agents such as benzene, roentgen rays, radium and bacterial toxins, and neoplastic metastases, all produce a reduction in platelets. Since a severe thrombopenia is almost invariably found in hemorrhagic purpura, one is apt to conclude that the bleeding is dependent on a deficiency of platelets. A study of purpuric cases shows, however, that some patients bleed at a platelet level of 60,000 or higher while others may show only mild purpura with 20,000 platelets or less. The diagnosis of thrombopenic purpura rests on reduction in the platelet count, prolongation of the bleeding time, positive tourniquet test, absent clot retraction and a normal or only slightly prolonged coagulation time. Acute leukemia and aplastic anemia may be confused with thrombopenic purpura, but the appearance of myeloblasts or lymphoblasts suggests leukemia. Examination of sternal bone marrow should leave no further doubt, for a striking increase in immature leukocytes indicates leukemia, and in applastic anemia little regeneration of the blood elements occurs. Infection plays an important role in secondary purpura hemorrhagica. Search for foci of infection is important. Metastases to the bone marrow cause a reduction in the number of platelets. Toxic agents such as benzene and arsphenamine and allergic sensitivity may do the same. For adults removal of the spleen has consistently given good results in thrombopenic purpura. In children, however, splenectomy must be considered as a last resort. There is no justification for subjecting a patient to splenectomy before the most frequent causes of secondary purpura, namely, infection, blood dyscrasias and allergy, are ruled out. Repeated transfusion of blood is effective in idiopathic purpura hemorrhagica. Transfusion just before splenectomy is now the almost universal surgical practice. Ascorbic acid therapy can only be effective in those instances of capillary bleeding in which there is a deficiency of the vitamin.

"Pentothal Sodium."—Sommerfield believes that because of the seeming simplicity of the procedure "pentothal sodium" is being administered by many with immature anesthetic judgment. The casual and infrequent administrator should limit use of this drug to the so-called average case, i.e., one of short duration and in which no special skill is required. Most contraindications to the use of "pentothal sodium" are relative, but the inability to maintain a clear airway, whether that inability arises from the physical condition of the patient, the site of operation or failure of the anesthetist to realize that he is not succeeding in keeping the air passage open, is an absolute contraindication to the use of this anesthetic. The unavailability of oxygen under pressure likewise is a definite contraindication to use of "pentothal." The indications for the use of this agent have increased. Originally it was intended to be a complete anesthetic, but because of its limitations as such, newer technics were developed. Its field of usefulness has been greatly widened by its use in combination with regional, spinal and inhalational agents, and curare. Conditions which only a short time ago were regarded as contraindications to "pentothal" are no longer considered as such. Patients with hepatic disease, in shock, undergoing operations about the oropharynx and nasopharynx or intra-abdominally can be anesthetized with this agent in combination with others.

Philippine Medical Association Journal, Manila

24:1-58 (Jan.) 1948

•Experimental Liver Cancer in Rats Produced by Butter Yellow. J. Z. Sta. Cruz. -p. 1.
What We May Learn From American Ophthalmologists. G. De Ocampo. -p. 15.
Endemicity of Schistosomiasis Japonica in Sorsogon, Southeastern Luzon. T. P. Pesigan. -p. 19.
Intestinal Obstruction Secondary to Ascariasis in Children. A. V. Tupas and S. Mañalac-Morales. -p. 29.
Experiences in Use of Non-Absorbable Sutures: I. Alloy Stainless Steel Wire Sutures. L. F. Torres Jr. and P. M. Recio. -p. 33.
Experiences in Use of Non-Absorbable Sutures: II. Abaca Fiber Sutures. P. M. Recio. -p. 37.

Cancer of Liver Produced by Butter-Yellow.—According to Sta. Cruz, primary carcinoma of the liver is a problem of the rice consuming people of the Orient. Statistical studies of primary cancer of the liver in Oriental countries show that it has an incidence of 4 to 5 per cent of all cancers, while in Europe and America it is only 0.2 of 1 per cent. The author fed rats with rice to which the carcinogenic agent butter yellow had been added. Butter yellow is p-dimethyl aminoazobenzene. The feeding of albino rats with butter yellow in a diet deficient in vitamin B produced a high incidence of primary carcinoma of the liver or hepatoma. Animals died or were killed in different periods of the experiment, thus it was possible to observe various types of lesions more or less in accordance with the time of survival of the rats. Animals surviving less than thirty days had acute serous hepatitis. Those surviving forty to fifty days showed adenoma of the bile ducts. Fibrosis or annular cirrhosis was observed in those surviving sixty to one-hundred days. Carcinoma or hepatoma was seen in those animals surviving for from one hundred and one to four hundred and sixty-six days. The author points out that the frequency of round cell infiltration in necropsies of supposedly normal livers among Filipinos was interpreted by American pathologists as a reaction of parasitism. The constant observation of this lesion in rats free from parasites can be considered a reaction of vitamin B deficiency in the diet, which is a problem in Oriental countries. The bile duct hyperplasia and adenomatosis (bile duct adenoma), which were prominent lesions of the liver in rats in the first three months of the experiment, may be considered the specific action of butter yellow on the bile ducts of rats, because similar lesions are not encountered in human livers. The 18 cases of carcinoma in this series were all hepatomas originating from the liver cells, none from the bile ducts. The diagnoses of cholangiomas of the liver refer probably to the adenomatous and cholangiomatous type of hepatoma originating from hepatic cells. This is in accord with the high incidence of hepatomas and the infrequent occurrence of cholangiomas in man. Almost all the hepatomas were accompanied or rather preceded by annular cirrhosis of the portal type. This is also observed in human hepatomas. The presence of cirrhosis is a reliable differentiating point in favor of hepatomas. Cirrhosis is seldom seen in metastatic carcinomas of the liver in man.

Proc. of Staff Meet. of Mayo Clinic, Rochester, Minn.

23:57-80 (Feb.-4) 1948

Some Modern Concepts in Treatment of Brain Abscess: Report of 3 Cases. C. S. MacCarty and J. G. Griffin. -p. 57.
*Malignant Lesions of Uterus Associated with Estrogen-Producing Ovarian Tumors: Report of 2 Cases. Elizabeth Mussey, M. B. Dockerty and J. C. Masson. -p. 63.
Method of Obtaining Bilateral Bronchograms. H. W. Schmidt. -p. 71.

Malignant Lesions of Uterus Associated with Ovarian Tumors.—Mussey and associates point out that the association of malignant lesions of the uterus with estrogen-producing neoplasms of the ovary has been noted by several writers and suggests the possible importance of the estrogens as carcinogenic agents in the human female. They present the histories of 2 patients recently observed at the Mayo Clinic in whom functioning ovarian tumors concurred with malignant growths in the uterus This report brings to 15 the number of malignant lesions of the uterus which have been found in conjunction with the 87 estrogen-producing ovarian neoplasms observed at the clinic. Data on 62 granulosa cell tumors and 23 theca cell tumors have previously been reported. The incidence of malignant lasions of the uterus in the combined series is 17.2 per cent. These figures are in close agreement with Hertig's estimate that 18 to 20 per cent of granulosa cell tumors are accompanied by carcinoma of the uterus. The experimental evidence to support the contention that carcinoma of the uterus may be produced by estrogens is suggestive but not conclusive. In the human being several clinical and pathologic observations sustain the belief that endometrial malignant lesions fail to develop without accompanying hyperestrinism. Etiologic factors other than the estrogens have been considered by those who have studied carcinoma of the body of the uterus; these include fibromyomas and radiation.

Surgery, St. Louis

23:161-320 (Feb.) 1948

Operative Treatment of Chronic Gastric and Duodenal Ulcer. C. Bruusgaard. -p. 161.
*Production of Allergic Gastric and Duodenal Edema Which Predisposes to Histamine-Provoked Ulcer in Dogs. S. R. Friesen, D. State, D. E. Jasper and others. -p. 167.
Aseptic Gastric Resection, Billroth I Technic. A. Monteiro and H. Barreto. -p. 178.
*Primary Nonspecific Ulcers of Small Intestine. J.A. Evert, B.M. Black and M.B. Dockerty. -p. 195.
Carcinoma of Gall Bladder: Report of 75 Cases. F. P. Sainburg and J. H. Garlock. -p. 201.
Hemmorhagic Infarction of Greater Omentum Simulating Acute Appendicitis: Report of 2 Cases. F. I. Harris, T. Diller and S. A. Marcus. -p. 206.
*Comparative Study of Action of Demerol and Opium Alkaloids in Relation to Biliary Spasm. E. A. Gaensler, J. M. McGowan and F. F. Henderson. -p. 211.
Surgical Management of Acquired Stricture of Esophagus with Esophagobronchial Fistula and Bronchiectasis of Entire Right Lung: Report of Case. O. T. Clagett and H. W. Schmidt. -p. 221.
Restoration of Thumb: By Transplantation, Plastic Repair and Prosthesis. A. J. Barsky. -p. 227.
Typhoid Osteomyelitis of Ribs Treated with Streptomycin and Surgical Excision: Case Report. H. P. Royster, C. K. Kirby and R. G. Wilbur. -p. 248.
Experimental Observations in Treatment of Craniosynostosis. F. D. Ingraham, D. D. Matson and E. Alexander Jr. -p. 252.
Cyst Formation at Operative Site Following Cerebellar Operations (Pseudomeningocele). W. T. Peyton and D. R. Simmons. -p. 269.
Foreign Body Localization in Soft Parts: Simple Method Requiring No Especial Training or Equipment. C. E. Gardner Jr. -p. 275.
Subcutaneous Emphysema Following Chest Trauma: Analysis of Twenty Cases. W. Sheinfeld. -p. 278.
Carcinosarcoma of Mammary Gland. B. Halpert and M. O. Young. -p. 289.
New Material and Tube Design in Gastrointestinal Intubation.. A. L. Kaslow. -p. 293.
Electric Lift: An Aid in Treatment of Decubitus Ulcers. J. G. Kostrubala and A. G. Wagner. -p. 298.

Allergic Gastric and Duodenal Edema.—Friesen and his co-workers sensitized dogs locally by immune horse serum of high antibody titer, either by direct mucosal and submucosal infiltration or intra-arterial injection. (The horse from which the serum was obtained had been sensitized previously to five different antigens.) After one to ten days one of the antigens to which the dog thus had been sensitized was injected systemically via a vein of the tongue and measurements of the viscus wall thickness and biopsies were obtained before and after injection of the antigen up to ten hours. All dogs thus sensitized manifested gross and microscopic edema following systematic intravenous injection of antigens. In dogs in which sensitization of the duodenum was accomplished by injecting immune horse serum within the duodenal lumen mucosal edema also developed after systemic injection of antigen. All five antigens were observed to be effective in initiating the response. One series of dogs was subjected to the same procedures with normal horse serum having a negative antibody titer to the antigens employed instead of the prepared horse serum with high antibody titer; these dogs had no edematous reaction after intravenous administration of antigens. To evaluate the role of allergic edema on the provocation of ulcer, a number of dogs were sensitized in the manner described. Forty-eight hours after sensitization, daily intravenous injection of the antigen into the systemic circulation of the dogs was begun; a different one of the five antigens to which the horse had been sensitized was injected daily until all five foreign proteins had been administered (a total of five days). In one series a mixture of histamine in beeswax was injected intramuscularly each evening. Another series of dogs was subjected to the same procedures with normal horse serum having a negative antibody titer to the antigens employed instead of the prepared horse serum with *high antibody titer. All the dogs subjected to the* production of local anaphylaxis with concomitant administration of the mixture of histamine in beeswax demonstrated edema with ulcer and/or erosion at the site of sensitization at the time they died or were killed (five days or less). Three of the six dogs subjected to the production of local anaphylaxis without administration of histamine in beeswax demonstrated definite ulcers at the site of edema after five days of antigen administration; all 6 showed edema at the site of senstitization. Of the dogs subjected to local injection of normal horse serum of negative antibody titer followed by daily systemic injection of antigen accompanied by the administration of histamine in beeswax, none showed edema, erosion or ulcer. Experimental gastrointestinal edema resulting from local antigen-antibody reaction favors the development of the histamine-provoked ulcer in dogs and abets the ulcer diathesis.

Nonspecific Ulcers of Small Intestine.—Evert, Black and Dockerty review 130 cases of primary jejunal and ileal ulcers in 97 men and 33 women. The average age of all patients was 43 years. Nonspecific localized ulcerations of the jejunum and ileum are so similar pathologically as to justify their classification as a group under the name *primary, or simple, ulcers. Although the lesions* are characteristically solitary, small groups of ulcers are sometimes observed. The causation of primary ulcers is unknown. There is little direct evidence to support theories that they are caused by infection, irritation from gastric secretions, trauma or vascular abnormalities. The symptoms of primary ulcer are for the most part secondary to the complications of perforation, bleeding or obstruction. The possibility of these lesions should be considered in the presence of unexplained intestinal bleeding or of peritonitis which suggests acute visceral perforation when such perforation cannot be found in the stomach or duodenum. *The mortality rate is high;* there were 56 fatalities among the 85 cases recorded before 1931, and 21 deaths among the 45 recently occurring cases. The lesion has been recognized during life only after some complication has led to surgical intervention.

"Demerol" and Opium Alkaloids in Biliary Spasm.—Gaensler and his co-workers made pressure studies which included determination of resting intrabiliary pressure, perfusion pain level and pressure changes resulting from the action of meperidine hydrocloride "demerol hydrochloride" N.N.R and opium alkaloids, in 10 postoperative patients with T tube *biliary drainage. Results in 10 unselected* patients with T tube drainage of the common duct showed that, contrary to common belief, meperidine is to be considered as a spasmogenic rather than a spasmolytic agent on the sphincter mechanism at the lower end of the common bile duct (Oddi). The spasm produced was intermediate in intensity between that produced by codeine and that by *morphine;* it was sufficiently severe in 2 instances to initiate a typical attack of biliary colic. The drug was observed to increase rather than relieve natural duodenal spasm as well as spasm produced by codeine. The effect produced by meperidine was regularly but briefly relieved by amyl nitrite or aminophylline. Meperidine should be used with as much caution as the opiates in postcholecystectomy pain. If biliary colic is due to spasm, glyceryl trinitrate 1/250 grain (0.25 mg.) in doses of one to two granules under the tongue will relieve the attack. If the pain is due to biliary obstruction other than spasm relief will not be afforded by the nitrites and morphine or meperidine.

Surgery, Gynecology and Obstetrics, Chicago

86:129-256 (Feb.) 1948

Use of Isotopes in Surgical Research. F.D. Moore.—p. 129.
Rectogenital Septum. E. Uhlenhuth, W.M. Wolfe, E.M. Smith and E.B. Middleton.—p. 148.
Effect of Surgical Interruption of Gastric Blood Flow upon Gastric Secretion and Prevention of Experimental Peptic Ulcers. H.H. Le Veen.—p. 164.
Repair of Hernia with Special Application of Principles Evolved by Bassini, McArthur and McVay. C.O. Rice and J.H. Strickler.—p. 169.
Redundant Blind Segments of Intestine Following Side to Side Anastomosis with *Division of Bowel: Report of 5* Cases. B.M. Black and C.G. McEachern.—p. 177.
Calcification of Supraspinatus Tendon: Infiltration Therapy with Local Anesthesia and Multiple Needling. I. Norwich.—p. 183.
Indication for Posterior Transpleural Bronchotomy in Management of Intrabronchial Tumors. H.T. Langston and R.T. Fox.—p. 192.
Laryngectomy. L.H. Clerf.—p. 197.
Effect of Absorbable Sponge Materials on Activity of Thrombin. J.H. Olwin and F.J. Wahl.— p. 203.
Opponens Transplant: Analysis of Methods Employed and Results Obtained in 75 Cases. J.W. Kirklin and C.G. Thomas Jr.—p. 213.
*Treatment of Persistent Colon Bacillus Infections of Urinary Tract by Sulfasuxidine and Streptomycin. E. Crowley and V.J. O'Conor.—p. 224.
Radical Treatment of Brain Abscess. J. Chorobski and A. Kunicki.—p. 230.

"Sulfasuxidine" and Streptomycin in Urinary Infections.—Crowley and O'Conor say that the apparently complete cure of a highly refractory urinary infection following treatment with sulfasuxidine (succinylsulfathiazole) plus streptomycin prompted them to use this combination in 23 patients, who had been under observation for from three months to twenty years without an effective or lasting eradication of the colon bacillus from the urine. The results have been so uniformly successful, and so much more noteworthy than when streptomycin alone was employed, that the authors believe this combination to offer the possibility of an effective method of cure in a greater percentage of these resistant cases than has been obtained by other methods of medication heretofore employed. Of 23 treated patients, 19 have maintained a completely favorable response for periods sufficiently prolonged to suggest a permanent cure. These patients received succinylsulfathiazole for varying periods before, during and after the administration of 5 to 17 Gm. of streptomycin. Either agent given alone had not had the favorable effect observed in the combined therapy. Success in the 19 patients with longstanding resistant infection seemed dependent on the patient's ability to continue the ingestion of succinylsulfathiazole. Fortunately the toxicity of the drug is low, and it can be given in large doses for long periods of time. Toxic symptoms, if they occur, subside rapidly when administration of the drug is discontinued.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

70:361-512 (Dec.) 1947. Partial Index

Effects of Bladder Distension on Autonomic Mechanisms After Spinal Cord Injuries. L. Guttmann and D. Whitteridge.—p. 361.
Dysprosody or Altered "Melody of Language." G. H. Monrad-Krohn.—p. 405.
*Early Traumatic Epilepsy. C. W. M. Whitty.—p. 416.
Hallucinations of Remembered Scenes as Epileptic Aura. P. K. Robinson and A. C. Watt.—p. 440.
Facial Apraxia and Apraxic Dysarthria. P. W. Nathan.—p. 449.
Mother-Child Incompatibility Problem in Relation to Nervous Sequelae of Hemolytic Disease of Newborn. D. F. Cappell.—p. 486.

Early Traumatic Epilepsy.—The material studied by Whitty falls into two groups: First, 29 cases of early epilepsy occurring among 434 consecutive gunshot wounds of the brain observed twelve to forty-eight hours after wounding; second, 23 cases found among the records of some 400 patients with brain wounds evacuated to a base hospital within a few days of wounding. Early epilepsy of a motor type only was recorded. The phrase "early attacks" is used here in a physiologic rather than a purely temporal sense. Attacks that occurred while the clinical condition of the patient and the state of the wound suggested that brain edema, local vascular change or actual brain debris were still present, were considered as early. Such a definition seems comparable to the usually accepted "first few days." The author made an attempt to evaluate the importance of traumatic factors such as site and severity of wound and constitutional factors such as family and personal history of epileptic phenomena in these early attacks. It is concluded that site plays little part in their incidence, though it may influence the type of attack which occurs. Extent of surface damage may be important, and constitutional factors are significant. The follow-up in these cases shows that they involve a greater likelihood of later epilepsy than similar wounds without early attacks. Late attacks occur both with and without involuntary movements.

British Journal of Dermatology and Syphilis, London

·60:41-80 (Feb.) 1948. Partial Index

Vitamin A in Darier's Disease. Z. A. Leitner and T. Moore.—p. 41.
Nodular Epithelioma. J. Pierard and A. Dupont.—p. 50.
*Pruritus Vulvae from Rubber, Due to Allergic Sensitivity to Alkali. G. H. V. Clarke.—p. 57.

Pruritus Vulvae from Rubber.—Clarke reports the case of a woman aged 27, in whom pruritus vulvae followed the use of rubber condoms. The irritant was traced to the presence of free alkali from potassium oleate used in the manufacture of the sheaths as a stabilizer. Soaking of the sheaths in a 0.5 per cent solution of sulfuric acid for twelve hours proved satisfactory. It is remarkable that the action of alkali on this woman's skin appears to be that of allergic sensitization rather than simple chemical damage.

British Journal of Industrial Medicine, London

5:1-50 (Jan.) 1948.

Studies in Incidence of Cancer in Factory Handling Inorganic Compounds of Arsenic. A.B. Hill, E.L. Faning, K. Perry and others. -p. 1.
Some Physiologic Observations on West African Coal Miners. W.S.S. Ladell. -p. 16.
Uremia in Methyl Bromide Poisoning: Case Report. A.J. Benatt and T.R.B. Courtney. -p. 21.
Toxic Effects of Nitrosomethyl Urethane. F. Wrigley. -p. 26.

British Journal of Radiology, London

21:55-104 (Feb.) 1948

Hiatus Hernia. S. C. Shanks.—p. 55.
Case of Localised Traumatic Bone Absorption in Skull. F. G. Nicholas, H. C. Furst and R. Tepper.—p. 67.
Anomalous Middle Lobe of Left Lung. G. L. Hardman.—p. 70.
Theories of Biologic Actions of Ionizing Radiations. C. B. Allsopp.—p. 72.
Note on X-Ray Absorption Coefficients of Air at Wavelengths Less Than 1.0 Ångström. J. R. Greening.—p. 75.
Construction of an Exposure Calculator for Radiography. G. D. Steven.—p. 78.
Clerical Method for Use in X-Ray Diagnostic Departments. A. A. Vickers.—p. 90.

British Medical Journal, London

1:185-238 (Jan. 31) 1948

Our Founders and Benefactors. C.E. Lakin. -p. 185.
Localization of Deep Pain. J.B. Harman. -p. 188.
Pre-Erythrocytic Stage of Mammalian Malaria. H.E. Shortt, P.C.C. Garnham and B. Malamos. -p. 192.
Role of Trichlorethylene in General Anesthesia. G. Ostlere. -p. 195.
*Homologous Serum Jaundice. K.B. Scott and G.H. Tovey. -p. 196.
*Homologous Serum Jaundice in Infancy. J. Apley and H.R.E. Wallis. -p. 197.

1:239-284 (Feb. 7) 1948

Effects of War on Child Health. R.W.B. Ellis. -p. 239.
Observations on Rationing in Tuberculosis. R.Y. Keers. -p. 245.
Generalized Infection with Virus of Herpes Simplex. R.H. Kipping and A.W. Downie. -p. 247.
Effect of Thiocyanate on Basal Blood Pressure. K.S. Alstad. -p. 250.
Treatment of Angina Pectoris by Reduction of Basal Metabolism. G. Schoenewald. -p. 251.
Chronic Hepatitis Treated with Methionine and Choline. D.G. Cameron and M.L. Newhouse. -p. 253.

Homologous Serum Jaundice.--Scott and Tovey relate the clinical history of a primipara, aged 19, who was jaundiced when she was hospitalized for an abscess in the breast. The jaundice had begun fourteen days previously. Because of a postpartum hemorrhage the patient had received a transfusion of two bottles of plasma and one bottle of group O Rh-negative blood seventy-nine days before the onset of the jaundice. The relatively high incidence of hepatitis following plasma transfusions (5 to 10 per cent) make it seem probable, therefore, that this was a case of homologous serum jaundice. Fortunately this patient made a complete recovery.

Homologous Serum Jaundice in Infancy.--Apley and Wallis describe 2 fatal cases of homologous serum jaundice in infants. In 1 child jaundice developed sixty-three days after the infusion of plasma; the infant died at the age of 5 months after a short illness characterized by vomiting and convulsions. The other child was 1 year of age when jaundice developed one hundred and twenty-two days after infusion; he died after four days' illness, having been comatose for two days. No other cases of jaundice could be traced in 17 babies who had also been treated with intravenous plasma, or in 5 babies treated with intravenous saline solution or whole blood.

1:285-332 (Feb. 14) 1948

*Aftermath of Gastrectomy. N. C. Lake. -p. 285.
Curare in Oil in Treatment of Spastic Conditions. C. A. Clarke and R. D. Hotston. -p. 289.
Louse-Borne Relapsing Fever in Persia. R. I. Bodman and I. S. Stewart. -p. 291.
What the Medical Practitioner Wants to Know. R. T. Bevan. -p. 294.
*Brodie's Abscess of Tibia: Its Treatment by Surgery. Penicillin and Sulfadiazine. S. Scott and F. S. Preston. -p. 296.

Aftermath of Gastrectomy.—Surveying the treatments that have been employed against peptic ulceration during the present century, Lake *believes* that at present gastrectomy gives better and more permanent results than most other surgical or medical treatments. He reviews observations on 615 patients whom he treated in the course of twenty-three years. A type of end to side anastomosis with a restricted and valvular orifice has been found to give good results in the vast majority of cases. The risk of the operation is being steadily reduced, chiefly as a result of greater preoperative and postoperative care. Sulfonamide therapy, used as a routine, has proved valuable in the prevention of infective pulmonary complications. Omental necrosis and early morning nausea are noted as results not previously described. The incidence of anastomotic ulceration after this operation appears to be a little under 1 per cent. Discussing the syndrome of postoperative hypoglycemia associated with a "dumping" stomach, the author cites a report by Gilbert and Dunlop, who observed it in no fewer than 17 among 45 gastrectomies. In his own material the incidence was much lower, only 20 in 615 cases. He feels that this problem is not yet completely understood and in searching for the cause he considers four possibilities: (1) dumping of the stomach contents into the jejunum with reflex effects, via the splanchnic innervation, from overdistention; (2) hypoglycemia; (3) vagus stimulation and neurosis. Other postoperative complications discussed are morning nausea, adhesions, ventral hernia, gallstones and colospasm.

Brodie's Abscess of Tibia.—Scott and Preston report the case of a man aged 52, who complained of intense, continuous, deep-seated pain situated in the lower end of the tibia. There was a history of a compound fracture of the lower third of the left tibia and fibula some thirteen years previously. This fracture had united, but there was considerable thickening of both the tibia and fibula at the junction of the middle and lower thirds. Gross swelling of the left ankle was seen, particularly over both malleoli, where two large abscesses were pointing and appeared to be about to rupture. Lymphangitis was pronounced up to the level of the knee. Radiographic examination revealed an egg-shaped cavity of the lower third of the tibia, about 2½ inches (6.35 cm.) long vertically, by about 1 inch (2.5 cm.) in breadth and in depth. There was a small beadlike pocket connecting with the lower aspect of the cavity. The whole was surrounded by dense sclerotic bone. A diagnosis of Brodie's abscess was made. The superficial abscesses were aspirated, and sodium penicillin was injected into each abscess. Repeated aspiration of the superficial abscesses, introduction of penicillin and systemic treatment with sulfadiazine and penicillin resulted in cure of the superficial abscesses. The bone was saucerized over the abscess and the bone chips were preserved in warm isotonic solution of sodium chloride. After exposure of the lining membrane of the abscess all further bone chips were discarded. The abscess was fully laid open along its whole length, and the gray pus which formed its contents was removed and retained for examination. The lining membrane was carefully curetted with a Volkmann's spoon and all debris removed. The cavity was then packed with the previously preserved bone chips. An ordinary wide bore intravenous needle was introduced into the cavity. The dressing was arranged so that the base of the needle would protrude through the dressing without interference with the wound itself, thereby enabling injections of penicillin to be carried out at three hour intervals. Bacteriologic examination of the pus from the bone abscess revealed numerous gram-positive cocci, which on culture gave profuse colonies of Staphlyococcus aureus pyogenes. This operation resulted in obliteration of the bone cavity with healing of the wound by first intention and retention of the shape and symmetry of the limb.

Journal of Mental Sciences, London

93:709-834 (Oct.) 1947. Partial Index

Excitatory Abreaction with Special Reference to Its Mechanism and Use of Ether. H. J. Shorvon and W. Sargant. -p. 709.
Existence of Critical Levels for Actions of Hormones and Enzymes, with Some Therapeutic Applications. W. R. Ashby. -p. 733.
*Cerebral Symptoms in Thrombo-Angiitis Obliterans. D. Perk. -p. 748.
Mepacrine Psychosis. D. Perk. -p. 756.
Schizophrenia in Boy of 11 Years. G. Garmany. -p. 772.
*Treatment of Epileptics with Epanutin. R. G. R. Burrows. -p. 778.

Cerebral Symptoms of Thromboangiitis Obliterans.—A man aged 29 came to Perk's attention when the man's clinical documents were under scrutiny for consideration of his claim to a pension. The fact that in the sixteen and a half months during which this man was under observation his disease was variously diagnosed as schizophrenia, mania, manic-depressive psychosis and epileptic psychosis, all as primary conditions, even though the condition of his feet was correctly diagnosed as due to thromboangiitis obliterans, indicates that the occurrence of cerebral manifestations of thromboangiitis obliterans is seldom considered. It is possible, of course, that the mental condition was not connected with the vascular one. Other authors have warned against too readily assuming a connection between the two, but the occurrence of other cerebral manifestations such as fits, diplopia and dysarthria, the earlier paroxysmal sypmtoms typical of thromboangiitis obliterans affecting the cerebral vessels, points to the probability that mental symptoms were likewise due to the vascular condition. The literature provides evidence that neurologic symptoms may be produced by thromboangiitis obliterans of the cerebral vessels. There may be muscular spasms ranging from tics to epileptiform convulsions; palsies ranging from weakness to complete paralysis, either localized to a group of muscles, commonly in the face or in an extremity, or affecting half the body (hemiplegia); sensory disturbances such as hemianopia and numbness; speech disturbances, and impairment of higher cerebral functions. In addition, mental symptoms may range from transient confusion or excitement to full fledged psychoses. Neurologic and mental symptoms may precede, though more commonly they follow, manifestations of the disease in the extremities and other parts of the body. The author discusses several views on the pathogenesis of this condition.

Journal of Royal Army Medical Corps, London

89:255-310 (Dec.) 1947

Unusual Aspects and Therapy in Amebic Dysentary. L. R. S. MacFarlane. -p. 255.
Positive Health--Its Attainment in Soldier and Army's Contribution to It in Civilian. A. E. Richmond. -p. 274.
*Infective Hepatitis. J. Mackay-Dick. -p. 290.

Infective Hepatitis.--Mackay-Dick discusses an outbreak of fulminating hepatic necrosis affecting essentially soldiers of the Polish forces of the British Army of the Rhine. At least 32 of the total of 38 patients who died are known to have had syphilis and antisyphilitic therapy. The likelihood of syringe transmission of the disease is suggested. The author stresses that of 154 patients with infective hepatitis dealt with in one British Military Hospital 89 had venereal disease and a total of 117 had had injections of some sort during the preceding six months. In the fatal cases in which the brain was examined cerebral edema was evident. Adequate sterilization of all needles and syringes used in protective inoculations and in the transmission of all fluids into the human body is of vital importance.

Journal of Tropical Medicine and Hygiene, London

51:1-22 (Jan.) 1948

*Quinine and Congenital Injuries of Ear and Eye of Fetus. C. W.F. Winckel. -p. 2.
Serial Cephalin Flocculation Curves: Their Application in Study of Tropical Diseases and Their Relation to New Resistance Factor. J.G. Makari. -p. 8.

51:23-44 (Feb.) 1948

Response of Intestinal Amebiasis to Diodoquin Treatment. P. Manson-Bahr and W.J. Muggleton. —p. 23.
Induced Malaria for Treatment of General Paralysis. J. Bylmer and C.W.F. Winckel. -p. 27.
Land Ownership and Anti-Malaria Law in Malaya. J.H. Hudson. -p. 33.

Quinine and Congenital Ear and Eye Defects.--Winckel says that some authors have ascribed congenital defects of the eye and ear in children to the fact that the mothers took quinine during pregnancy. It is by no means sure that quinine was the cause of these defects. The literature reports only 17 cases of this type, and these congenital defects appear to be no more numerous and serious whether the use of quinine has been excessive or moderate. Deafmuteness is no more frequent in endemic malarial states with a large consumption of quinine than in states without malaria where the amount of quinine used may be negligible. The 17 cases mentioned in this paper were published before there was any suspicion concerning the deleterious influence of rubella in the mother on the fetus.

Lancet, London

1:165-200 (Jan. 31) 1948

What is Gout? F.W. Jones. -p. 165.
Plantar Warts: Plea for Rational Treatment. C.R. McLaughlin. -p. 168.
Liver Disease in Johannesburg: Relation to Pellagra. J. Gillman and T. Gillman. -p. 169.
Artificial Pneumothorax: Survey of 150 Inductions on Outpatients. A. Maclean and J.S. Gemmill. -p. 173.
Seasonal Incidence of Retarded Growth in Children with Nutritive Failure. S. Dreizen, A.W. Mann and T.D. Spies. -p. 175.
Failure of Sulfonamides and Penicillin in Maduromycosis. A. Dostrovsky and F. Sagher. -p. 177.

Rational Treatment of Plantar Warts.--McLaughlin calls attention to the dangers involved in treating plantar warts with roentgen rays or radium and describes a combination of curettage and diathermy, which he has found effective. He pares down the overlying horny skin until the typical bundles of the wart are clearly defined. A Volkmann spoon, the exact size of the wart, is then driven into the foot at the edge of the wart, and swept round so that the core is shelled out complete. The hyperkeratinized collar at the neck of the cavity is trimmed with scissors, and the hole converted into a "saucer." The base, which is tough, must then be scraped until smooth and repeatedly touched with a diathermy needle or an electric cautery, using a fine point with a light touch. A small wick of ribbon gauze is inserted into the cavity and the area covered with gauze and elastoplast. The patient can usually walk with care immediately; and, after the plug has been removed in forty-eight hours, there should be little discomfort. Healing is usually complete in seven to ten days. A case is presented which illustrates both the detrimental effects of roentgen treatment and the wide scope of the described procedure.

Lancet, London

1:201-236 (Feb. 7) 1948

Country Doctor. W. N. Pickles. -p. 201.
Bronchial Carcinoma Presenting as Polyneuritis. R. Wyburn-Mason. -p. 203.
Treatment of Schistosomiasis. B. Girgis and S. Aziz. -p. 206.
*Clicking Pneumothorax. W. Fox. -p. 210.
Phosphatase and Bone Formation. A. Slessor and G. M. Wyburn. -p. 212.
Acute Subdural Hematoma Amenable to Surgical Treatment. N. Whalley. -p. 213.
Fatal Hypoglycemia in Diabetic. J. L. Winkler. -p. 215.

Clicking Pneumothorax.—Fox is concerned with the striking and dramatic physical sign termed by some observers pericardial knock, which consists of a clicking noise synchronous with the heart beat and often audible at some distance from the patient. The author cites earlier reports of cases of this type and describes 2 new cases. It has been observed in spontaneous as well as in artificial pneumothorax. The possible mechanisms of production are critically analyzed. It is suggested that the click is produced in a free pneumothorax space by the impact of the lingula against the anterior chest wall, its movement being initiated by the cardiac impulse. The production of the click in this manner has been confirmed in the cadaver.

Medical Journal of Australia, Sydney

1:1-28 (Jan. 3) 1948

Treatment of Psychoses and Psychoneuroses by Electroplexy (Electric Shock Therapy) in General Hospital. J. Bostock and B. J. Phillips. -p. 1.
Some Aspects of Female Infertility. Lorna Lloyd-Green. -p. 7.
Abortive Syphilitic Aortitis. C. Engel. -p. 12.
*Blood Transfusion with Unsuspected Rh Sensitivity. D. L. Davis. -p. 13.

Blood Transfusion and Rh Sensitivity.—Davies states that a man aged 31 was given 4 pints (1.9 liters) of blood over a twenty-four hour period, because he had an extremely low hemoglobin content following vomiting of blood and having black stools. After the transfusion the patient became jaundiced. Examination of his blood revealed gross hemolysis. Further questioning revealed that he had received 20 cc. of malarial blood by intramuscular injection at a malaria experimental station in January 1944. The patient's blood was found to belong to group O (IV) and to be Rh-negative. The patient was apparently made sensitive to Rh-positive blood by the intramuscular injection of 20 cc. of blood in January 1944, there being no history of previous blood therapy. Although the patient's serum and the donors' cells were compatible at room temperature for twenty minutes, the transfusion subjected him to a grave risk. For absolute safety, either of the following precautions should be taken if there is a history of previous blood transfusion or intramuscular injection of blood: (1) the blood should be tested for the Rh factor, and if it is Rh-negative, the patient should be given Rh-negative blood; (2) the cells of the donor's blood and the patient's serum should be incubated at 37 C. for twenty minutes before being pronounced compatible.

Acta Dermato-Venereologica, Stockholm

27:339-446 (No. 5) 1947. Partial Index

Herpes Menstrualis. N. A. Andersen. -p. 330.
Two Cases of Angiokeratoma Corporis Circumscriptum. K. Bang. -p. 346.
Studies on Pathogenesis of Morphea, Vitiligo and Acrodermatitis Atrophicans by Means of Transplantation Experiments. H. Haxthausen. -p. 352.
Red Fluorescent Coating of Normal Tongue and Its Connection with Vitamin B Metabolism. G. Hagerman and H. Hirschfeld. -p. 369.

•Investigations on Etiology of Reiter's Disease or the Conjunctival-Urethral-Synovial Syndrome. E. Pastinszky. -p. 415.

Reiter's Disease.—Pastinszky reviews the earlier literature on the syndrome characterized by arthritis, urethritis and conjunctivitis, which was first described by Reiter in 1916. He reports 7 cases of this syndrome seen in a group of soldiers during World War II. The syndrome was preceded three or four weeks by diarrhea. Bacteriologic examination of the feces was impossible, but in 2 cases serologic tests revealed agglutinations of 1:200 to 1:400 with strains of Bacterium flexneri. The conjunctival and urethral secretions did not yield dysentery bacilli, spirochetes or virus. The Frei test for the virus of lymphogranuloma inguinale was negative. The syndrome must be considered as a specific allergic or para-allergic reaction after an intestinal bacillary infection, in which the reacting organs are the urethra, the bladder, the conjunctiva and the joints with eventual involvement of other organs. The allergic pathogenesis is partially confirmed by tests on the mucous membranes or by other allergic phenomena such as urticaria, leukopenia, local eosinophilia (conjunctival and urethral secretions) and general eosinophilia in the blood. The disease may be accompanied by severe generalized syndromes, such as remittent fever, or a subfebrile state. The blood formula shows deviation to the left and in certain cases eosinophilia. The arthropathies are refractory to treatment with sodium salicylate or phenylquinoline. Various antiallergic measures such as fever therapy, autohemotherapy, calcium and ephedrine and dextrose have been effective.

Acta Medica Scandinavica, Stockholm

129:415-508 (Jan 27) 1948

•Types of Diphtheria Bacillus and Clinical Diphtheria: Observations During Diphtheria Epidemic in Copenhagen in Winter of 1943-1944. E. Ammundsen, J. Bang, G. Franck, A. Hansen and others.—p. 415.
Acute Polyradiculoneuritis Arising After Peritonsillar Abscess and Accompanied by Increased Antistreptolysin Titer in Cerebrospinal Fluid. F. Iversen.—p. 441.
Electrocardiogram in Mitral Stenosis with Special Regard to Its Development: Study of 100 Cases. H. Rasmussen and G. Nyhus.—p. 446.
Three Cases of Polycythemia with Fibrinopenia. S.E. Bjorkman.—p. 472.
Price-Jones Curve in Initial Pernicious Anemia. G. Totterman.—p. 478.
Etiology of Edema During Anemia. M. Foldi, A. Koranyi and G. Szabo.—p. 486.
Penicillin Therapy in Diphtheria. S.J. Wszelaki and L.J. Handzel.—p. 493.

Types of Diphtheria Bacillus and Clinical Aspects.--Ammundsen and his associates report that during the winter of 1943-1944 a total of 403 patients with diphtheria were treated at the Blegdam Hospital in Copenhagen. The fact that 70 per cent of the patients were adults is regarded as due to the fact that 90 per cent of the school children have been inoculated against diphtheria since 1941. Of 299 cases in which the diphtheria bacilli were typed, the organism proved to be of the mitis type in 133 and of the gravis type in 141. Of those with a mitis infection 6 per cent died and of those with a gravis infection 14 per cent died. The incidence of severe cases was 15 per cent in the mitis group, 27 per cent in the gravis group. Of 112 patients with mild diphtheria none died. There was one death among 164 patients with moderately severe diphtheria, but no less than 20 deaths in the group of 64 severe cases. Thus, severe diphtheria in spite of early and large doses of antitoxin is still a rapidly progressive disease, with a death rate of 30 per cent. Nearly three fourths of the patients in whom diphtheria developed had not been vaccinated; 62 had had one or two injections, and only 44 had been adequately inoculated with three injections. Whereas 22 per cent of the unvaccinated patients belonged to the group with severe diphtheria, the incidence fell to 5 per cent among those partially vaccinated; only 2 fully vaccinated patients had severe diphtheria. Not a single patient who had been adequately vaccinated died from diphtheria.

Helvetica Medica Acta, Basel

15:1-104 (Jan.) 1948. Partial Index

•Effect of Methylthiouracil on Histologic Picture of Thyroid Gland in Hyperthyreosis. C. Wegelin. -p. 3.
•Treatment by Intra-Arterial Injections. A. Kappert. -p. 25.
Tuberculous Morbidity in a Training-School for Nurses and Primary Results of Systematic Vaccination with B. C. G. by Scarification of Skin. A. Delachaux. -p. 42.
•Hemopsonins; Phagocytosis of Erythrocytes in Peripheral Blood. W. Baumgartner. -p. 61.

Methylthiouracil in Hyperthyreosis.—Wegelin treated 31 patients with hyperthyreosis with methylthiouracil ("thiomidil") prior to doing partial thyroidectomy. Twenty-nine of the patients were women between the ages of 22 and 66 and 2 were men aged 48 and 37, respectively. The clinical picture varied from severe diffuse toxic goiter to mild hyperthyreosis. The daily dose of the drug varied from 0.0375 to 0.375 Gm. In the majority of the cases treatment was continued for two to three weeks but in some cases for longer periods up to six months. The smallest total dose was 1 Gm. in five days; the largest, 27.5 Gm. in ten weeks. Microscopically, the removed thyroid tissue was not uniform. A more pronounced epithelial proliferation did not correspond with the administration of larger doses of the drug. The thyroid tissue of the patient who received the largest total dose of the drug showed the greatest abundance of colloid. Epithelial proliferation was not evident in all cases, and a considerable number of cases were conspicuous for their high colloidal content. These differences cannot be explained by the additional administration of iodine, which was given in only 6 cases, or by the dosage and duration of treatment with methylthiouracil. The chemical examination of some of the removed thyroids suggested that methylthiouracil may reduce the synthesis of thyroxin. Loosening of epithelium, nuclear pyknosis and colloidal atrophy of the thyroid was demonstrated on microscopic examination of the thyroid tissue of rats which were given methylthiouracil; regeneration was suggested by the frequent occurrence of mitosis.

Intra-Arterial Injections.—According to Kappert, treatment by intra-arterial injections is principally indicated for disturbances of the peripheral blood circulation to control arterial spasms. Drugs best suited for this purpose are those which act on the autonomic nervous system, i.e., on the vegetative innervation of the blood vessels. In addition to such drugs as procaine hydrochloride, 2-benzyl-2-imidazoline ("priscol"), acetylcholine and "embran" (muscle extract), intra-arterial injections of calcium (calcium gluconate in a 10 to 20 per cent solution) have been used for circulatory disorders at the medical policlinic in Bern. In a man aged 65 with arterial embolism, paresthesis in the left arm subsided and pulsation at the bend of the elbow and in the radial artery was restored after eight injections of 10 cc. of 10 per cent solution of calcium into the brachial artery. In a woman aged 23 with lymphedema of the leg, the swelling subsided after the intra-arterial injection of 10 cc. of a 10 per cent solution of calcium three times a week for two weeks. Combined intra-arterial injections of 50,000 units of penicillin with 10 cc. of a 10 per cent solution of calcium gluconate in addition to one intramuscular injection of 150,000 units of penicillin daily (one series of ten injections) are recommended for lymphedema of inflammatory origin, for acute attacks of inflammation of connective tissue and for lymphangitis. Intra-arterial injections of penicillin combined with a vasodilator ("priscol") proved effective in cases of necrosis and gangrene associated with functional and organic disorders of peripheral vessels. Cramps in the calf on walking and feeling of heaviness in the left leg in a man aged 66 subsided after seven injections into the femoral artery of nicotinamide combined with nicotinic acid. In cases of vascular spasm, therapeutic trials with intra-arterial injections of 0.5 to 1 mg. of dihydroergotamine showed that this drug is a vasodilator causing dulness of the sympathetic tonus.

Hemopsonins.--According to Baumgartner, leukocytes that ingest erythrocytes present a rare species of cells of the peripheral blood. Hematologic reports in the literature show that these phagocytic cells may be observed in relationship with certain hemolytic syndromes but also in the course of bacterial diseases, particularly in sepsis lenta and in certain intoxications. The phagocytosis of the erythrocytes in the peripheral blood as well as in the reticuloendothelial system results from a preceding "opsonization" of the red blood cells. Experiments demonstrated that an opsonic effect may be produced by the rhesus antibodies in addition to that produced by the antibodies which are specific for the blood groups. Consequently, phagocytosis of the erythrocytes may be interpreted as a *symptom of the two morbid conditions* which are related to the isoantibodies, i.e., the accidents occurring after the transfusion of blood from donors whose blood groups and Rh factors are different from those of the recipients, and fetal erythroblastosis. The autoantibodies which are responsible for certain hemolytic diseases behave like the isoantibodies. They are able to act not only as agglutinins and hemolysins but occasionally as opsonins. This has been confirmed by clinical observations of phagocytosis of erythrocytes in acute hemolytic anemia and in paroxysmal hemoglobinuria. Phagocytosis of the erythrocytes occurred in infectious diseases such as streptococcicosis and in certain intoxications. It is suggested that the microbes in question or their toxins and certain hemolytic poisons may exert an opsonizing effect. Phagocytosis of the abnormal blood cells of sickle cell anemia and pernicious anemia may occur in the peripheral blood without a preceding opsonization, and it may be due to the pathologic condition of the surface and the shape of these cells. The observation of erythrocyte-containing cells in blood specimens suggests that one should watch for antibodies specific for erythrocytes or for poisons and micro-organisms which are known to be harmful to the red blood cells.

Klin. Monatsbl. für Augenheilkunde, Stuttgart

112:1-96 (May) 1947. Partial Index

Intraocular Tuberculosis. K. A. Reiser. -p. 1.
When to Perform a Prophylactic Attachment of Retina. F. Fleischer. -p. 29.
*Changes in Fundus Oculi in Panmyelophthisis: Pathogenesis of Detachment of Retina. H. Krümmel. -p. 39.
Retinal Vessels in Hypotension. A. Jäger. -p. 44.
*Involvement of Eye in Typhus. G. Wilhelm. -p. 48.

Detachment of Retina in Panmyelophthisis.--Krümmel reports the case of a woman, aged 26, who died of severe anemia which was refractory to all treatment and in which all blood cell systems were destroyed. In the terminal stage multiple necrotic and hemorrhagic processes were visible in the eyegrounds and there was secondary detachment of the retina. On the basis of microscopic observations in the course of necropsy, the author discusses the currently accepted theory of detachment of the retina by cystic degeneration and subsequent rupture and raises the question of "detachment of the retina without tear." Microscopic details show that as a rule it is not the entire retina with its pigment epithelium that becomes detached from its base, but only the true retina from the pigmented layer. Discussing the topography of retinal hemorrhages, the author says that all three forms are really intraretinal and the terms subretinal and preretinal do not correspond with the microscopic observations. It would be more correct to speak of deep and superficial hemorrhages and to designate the third kind as interstitial hemorrhage.

Involvement of Eye in Typhus.--According to Wilhelm the eyeball may be involved in typhus. Typical nodules have been detected in the arteriolar walls of the orbital tissues and of the rectus muscles of the eye. The initial conjunctivitis of spotted fever is caused by roseola of the conjunctiva. The involvement of the cornea in typhus is always secondary. The nodular iritis usually subsides completely. In the choroid the vascular wall nodules are found chiefly in the arteries in the layer of the medium and larger vessels. The retina either shows secondary changes in the form of circumscribed detachment of the retina and retinal edema over the choroid foci or shows the typical nodules in the retinal arteries near the papilla. The involvement of the optic nerve in typhus takes the form of diffuse infiltration of the arachnoidal sheath and of the endoneural septums; typical vascular wall nodules are found in the central artery. The most frequent change of the fundus oculi in typhus is the prominent papilla, which is usually interpreted either as incipient choked disk or as optic neuritis. Circumscribed infiltrations of choroid and retina, the latter connected with a retinal artery, are also eyeground changes typical of typhus. Arteriolar changes near the papilla, which appear early in typhus, are most probably the result of perivascular infiltrations. Hemorrhages which are observed in the nerve fiber layer probably result from the venous stasis that accompanies optic neuritis or from the venous thrombosis that is brought on by the lowered blood pressure. Most changes in the fundus oculi subside without sequelae in several weeks. The only lasting complication is postneuritic atrophy of the optic nerve, but this is rare.

Medicina, Buenos Aires

7:393-496 (Oct.) 1947. Partial Index

Penicillin Treatment of Subacute Bacterial Endocarditis. A. C. Taquini and B. B. Lozada. -p. 417.

Penicillin in Subacute Bacterial Endocarditis.--Taquini and Lozada resorted to penicillin therapy in 7 cases of subacute bacterial endocarditis caused by streptococci of the viridans group. The patients were between the ages of 15 and 30 years. The previous cardiac disease was rheumatic fever in 6 patients and congenital heart lesion in one. Clinical and bacteriologic recovery was obtained in 6 cases. Repeated blood cultures made at intervals of four or five days offer the most efficient method for regulating the adequate dosage of penicillin and observing the course of the disease. The initial daily dose was 500,000 units. Negative blood cultures by the end of the first week of treatment, indicated that the daily dose was adequate and that it should be administered for at least four consecutive weeks. Positive blood cultures after the first week of administration of 600,000 units of penicillin a day indicated progressive increase of the dose. The dose was then maintained for at least twenty-one days. Daily doses of from 600,000 to 1,200,000 units of penicillin were required in 3 of the 7 cases. The authors prefer intramuscular injections at three hour intervals. Continuous intravenous administration of penicillin with heparin is inconvenient and painful. The trocar for intravenous administration produces edema of the walls of the veins and their consequent obstruction.

Praxis, Bern

37:81-104 (Feb. 5) 1948. Partial Index

*Chemotherapy of Diseases of Biliary Tract. K. A. Lämmli. —p. 81.
Measures Against Resistant Tuberculosis. H.O. Pfister. —p. 92.
Significance of Tuberculin Reactions in General Evolution of Tuberculosis. P. Press.—p. 95.

Chemotherapy of Diseases of Biliary Tract.--Discussing the difficulties encountered in the diagnosis of diseases of the gallbladder, Lämmli stresses the use of duodenal aspiration, which has diagnostic as well as therapeutic value. The important factors in the treatment of diseases of the biliary tract are combating infection and biliary stasis, and protection of the liver. Nicotinamide is the most promising hepatotropic substance to serve as a vehicle for antibacterial substances. The author mentions a substance (bilamid) that has been synthesized on the basis of this reasoning and which in experiments on animals showed a decided antibacterial and choleretic action and at the same time retained the pellagra-preventive action of the nicotinamide. The efficacy of the new therapeutic preparation was proved on 31 patients in whom the biliary flora was studied bacteriologically and culturally. The preparation was employed in 221 patients of whom 152 had inflammatory diseases of the biliary tract. It proved valuable not only in the biliary disorders but in acute enteritis. Effects varied in conditions like duodenal ulcer, gastroduodenitis and ulcerative colitis. The preparation can be given by mouth or intravenously. In serious cases the oral and intravenous therapy can be combined.

Prensa Médica Argentina, Buenos Aires

35:195-224 (Jan. 30) 1947. Partial Index

*Succinic Acid Stimulating Respiration. M.R. Castex, L.E. Camponovo and F.E. Labourt.—p. 195

Succinic Acid Stimulating Respiration.--Twenty patients with anoxia and 3 normal persons were given an intravenous injection of 5 cc. of a 1 per cent succinic acid solution. The respiratory rate was determined before and after administration of the drug. Greatly improved respiration was observed both in normal persons and in patients. The rhythm of respiration improved in all cases of anoxia, with a tendency to become normal. Oxygenation of blood in the lung also improved, as the blood showed a better saturation with hemoglobin. The drug did not cause any change in the arterial pressure or any other unpleasant reaction. Improvement in respiration in patients with anoxia lasted for more than forty-eight hours in 14 patients and for more than one hour in 7 patients.

Presse Médicale, Paris

56:93-104 (Feb. 7) 1948

*Administration of Ouabain in Aerosols. A. Ravina, A. Feder, M. Nory and J. Servier. -p. 93.
*Efficacy of Penicillin in Scarlet Fever and Its Complications. T. Jersild. -p. 93.
Diagnosis of Primary Tuberculosis of Cervix. P. Normand and P. Labignette .-p. 95.

Administration of Ouabain in Aerosols.--According to Ravina and his associates the cardiac stimulant ouabain is ordinarily administered by the intravenous route. If prolonged treatment is required, this will involve many injections, which may cause considerable difficulties, particularly in obese and edematous women, in whom the superficial venous network is not especially evident. It has been demonstrated that cardiac stimulants administered in the form of aerosols can be absorbed by way of the respiratory tract. Sixteen drops of a 1 per cent solution of ouabain in a glycerin-alcohol medium given in aerosol form proved as effective as the intravenous injection of 0.25 mg. of ouabain. Many patients with cardiovascular defects were treated in this manner. The authors present 5 illustrative case histories. It is sufficient to employ the aerosol once or twice a day for a few minutes.

Penicillin in Scarlet Fever.--Jersild says that at the Blegdam hospital in Copenhagen 100 patients with scarlet fever have been treated with penicillin since December 1945. Results show that a daily dose of 90,000 to 150,000 units, depending on the age of the patient, is sufficient to clear the nose and throat of streptococci in forty-eight hours. Two injections a day should be continued for six days. The higher concentrations obtained with injections every three hours are not necessary. With the two daily injections the angina is rapidly healed and the fever persists for only four or five days instead of seven days as in the cases treated with sulfonamide drugs. The average hospitalization was only eight days. Complications in the form of otitis and nephritis were never observed, whereas formerly a considerable number of patients with scarlatinous otitis required mastoidectomy.

Riforma Medica, Naples

61:405-424 (Sept. 15) 1947. Partial Index

*Blood Groups and Tissue Groups. G. Oliva and D. Furbetta. -p. 414.

Blood Groups and Tissue Group.—The authors observed that intravenous injections of juice from gastric mucosa in the therapy of hypochromic anemia caused in some cases symptoms similar to those from incompatibility of blood groups. Then they carried out experiments. The material consisted of large portions of resected stomach from patients with either gastric or duodenal ulcers, from which juice was prepared. The juice was unmistakably free from traces of blood serum. The technic for preparation of the juice is described in detail. It was found that both the blood serum of the donor of the gastric mucosa and the juice of the mucosa agglutinated erythrocytes in the blood of persons in opposite blood groups and did not cause agglutination in the blood of persons whose blood group was the same as that of the donor. Agglutination of blood of persons in opposite blood groups occurred more rapidly when blood serum of the donor was used than when juice of gastric mucosa was used. Complement fixation occurred in the blood serum of normal persons of a given blood group who received from two to four parenteral injections of juice of gastric mucosa of a donor belonging to a different blood group. The phenomenon occurred when the blood serum of the receiver was treated with the juice of gastric mucosa which was previously used for sensitization. It did not occur when the donor of gastric mucosa and the receiver of its juice were of the same blood groups. The authors therefore conclude that gastric mucosa has specific group properties corresponding to those of blood groups. The authors' article is a preliminary note.

Book Notices

Endocrine Therapy in General Practice. By Elmer L. Sevringhaus, M.D., F.A.C.P., Director, Endocrine and Nutritional Clinics, Gouverneur Hospital, New York. Sixth edition. Cloth. Price, $4. Pp. 264, with 49 illustrations. Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1948.

This helpful little volume will be appreciated by the general practitioner who is confused and has difficulty with the intricate and complex ramifications of endocrine relationships. As with the preceding editions, it is simply written but contains the essentials necessary to the sound practice of endocrinology. This latest edition has been polished and been treated to eliminate some of the minor ambiguities present in the earlier ones. The reviewer has fault with only two sections of this volume: the scant attention to the psychologic factors in the development and treatment of overweight and the lack of a systematic discussion of the ovarian dysfunctions. In regard to the latter, most physicians would be appreciative if this chapter contained headings of the various ovarian dysfunctions and their specific treatment rather than a more or less generalized discussion of these problems. Otherwise, this book is to be commended for its value to practitioners.

Endotracheal Anesthesia. By Noel A. Gillespie, D.M., B.Ch., M.D., Associate Professor of Anesthesia in the University of Wisconsin, Madison. Second edition. Cloth. Price, $4. Pp. 237, with 57 illustrations. University of Wisconsin Press, 811 State St., Madison 5, Wisconsin, 1948.

Any one who has been fortunate enough to read the first edition of this book (1941) will be pleased to know that in the second edition the author has expanded the book from 187 to 237 pages. He has enlarged certain portions of the text and has corrected any errors that he has discovered or that have been brought to his attention. He fortunately has had a fine response from his readers and has received many constructive suggestions which have been followed. However, he has not departed from his original plan of writing a book which is aimed at increasing the clinical skill of the anesthesiologist without necessarily preparing him for examinations. Well written books devoted to one subject are valuable; however, when a second edition appears, it has all the advantages of containing not only the opinions of the author but those of a great many of his readers. Every anesthesiologist should obtain a copy of this book.

Gynecological and Obstetrical Urology. By Houston S. Everett, A.B., A.M., M.D., Associate Professor of Gynecology, the Johns Hopkins University, Baltimore. Second edition. Cloth. Price, $6. Pp. 539, with 232 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1947.

The need for fair and balanced presentation of related specialties is self evident. This applies particularly to conditions which confront the obstetricians, gynecologists and urologists. This second edition contains ample information about the anatomy and physiology of the urinary system. The relationship of this system to the reproductive system receives proper considerations. The illustrations are ample, clear and logical.

More emphasis has been placed on gynecologic complications than on conditions in pregnancy, labor and the early puerperium. In the next edition it is suggested that the present adequate obstetric aspects be expanded to match the gynecologic considerations. This imbalance is natural, inasmuch as Dr. Everett is a gynecologist. The urologist should note the author's understanding of urology and urologic conditions.

The author has brought together problems which the urologist, gynecologist and obstetrician must treat and offers thorough diagnostic and therapeutic procedures. For these reasons alone every urologist who sees obstetric and gynecologic patients should possess or have access to the valuable material in this volume. For the same reasons also this edition is recommended to obstetricians and gynecologists, to general practitioners who do obstetrics and to general surgeons who treat pelvic conditions.

The publishers deserve credit, too, for the quality of paper and style and size of type.

Developing Your Child's Personality. By Gelolo McHugh, Ph.D. Cloth. Price, $2.75. Pp. 234. D. Appleton-Century Co., 35 W. 32d St., New York 1, 1947.

This is a pleasantly written discussion of early training and rearing of children. The emphasis is upon the parent's responsibility for healthy emotional and social growth of the child, as the title indicates. The author starts with "Planning for Parenthood," and the final chapter is "Preparing for the Second Child." The material presented in this book is good and can be profitably read by expectant parents or parents of small children. An easy, chatty style in which the reader is consistently addressed in the second person is generally acceptable, though the reader at times feels that he is being lectured. The author makes of baby rearing something relatively simple, a pleasant experience for parent and child. On the whole, this is a good attitude to adopt in talking with parents. But the author overlooks or ignores, at least in this book, the deeper powerful influences of family relationships as they reflect themselves in character structure and in healthy or unhealthy life attitudes. The following sentence indicates his point of view: "There is really no more mystery about the hampering fears from which children and adults suffer, or about their inability to get along with others, than there is about dislikes for milk or learned unwillingness to try new foods." It is true that there is no mystery about basic human relationships, but the author implies that a simple conditioning, all consciously imposed by the parents, is all that is involved in early child rearing. This approach is adequate for a large number of parents who themselves have been reared in a rather healthy manner and who can carry this experience over into their dealings with their children. For a large number of parents not as well equipped, a more penetrating understanding of the nature of childhood and parental likes and dislikes, fears and hostilities would be required. This book can readily be recommended to parents.

Psychoanalytic Therapy: Principles and Application. By Franz Alexander, M.D., and Thomas Morton French, M.D., [with Staff Members of the Institute for Psychoanalysis, Chicago]. Cloth. Price, $5. Pp. 353, with 1 illustration. The Ronald Press Company, 15 E. 26th St., New York 10, 1946.

Renewed interest in the problems of emotional disturbances and their effects on body changes have made an understanding of basic principles of psychoanalysis a necessity for the modern physician. Drs. Franz Alexander and Thomas M. French with the assistance of the staff of the Chicago Institute of Psychoanalysis have written a compact, readable textbook of the latest developments in the field of dynamic psychiatry. A careful review of 292 patients seen at the institute, many private patients and the broad experiences of Drs. Alexander, French and other staff physicians formed the basis for the book.

Emotional and personality changes were viewed from a broad basis that included not only infantile experiences, but adolescent and adult reactions. Unlike the standard psychoanalysis, the authors did not confine themselves to the problems of the chronic neurotic patients, but included a study of acute neurosis and incipient neurosis. From their observations they were able to develop a better appreciation of the painful reactions to the ego that often occurred in adult life as well as a knowledge of the mechanisms by which adults met such situations. This led to a better understanding of the development of personality and gave meaning to the dynamic approach of certain psychiatrists.

Treatment of emotionally disturbed patients has been developed along the lines of their individual needs. Traditional daily psychiatric interviews, long held by some as essential for the proper understanding of patients, have been questioned. The use of the couch as a means of enabling the patient to express freely whatever enters his mind, called free association, should be followed by a careful, subtle and effective means of emotional reeducation. It was felt that discreet remarks from the analyst may speed up the process and have the patient reorient himself more quickly than by the standard practices of prolonged analysis. In a sense it was individualizing the treatment of patients just as is done in other fields of medicine.

Flexibility in psychoanalysis was essential to meet the varying problems confronting the analysts. Patients who showed favorable response to treatments should have their interviews spaced farther and farther apart to avoid dependence on the analyst. Often judicious scheduling of interviews allowed the patient to translate and incorporate much of what he learned while on the couch into actual life experiences and thus develop his personality so that he could more effectively cope with future interpersonal relations. Treatment should not be considered to continue for a long period of time merely so that all phases of the patient's personality can be explored, but when a satisfactory adjustment of the salient problems has been met in the opinion of the psychiatrist, the patient should be allowed to demonstrate his progress. Psychoanalysts trained in the traditional methods will not agree with the authors; however, the results obtained at the institute indicate that Drs. Alexander and French have more realistically met the needs of many different kinds of emotional disturbances than has been accomplished in the past. Their dynamic approach also makes it possible for more persons with acute, latent or mild neurosis to be benefited by psychiatric treatment.

The second part of the book contains illustrative cases of the various methods of psychoanalytic therapy. Efficacy of short interviews and treatment, value of supportive therapy and emotional reeducation, various methods of using transference, alleviation of rigid standards and narcosynthesis in war neurosis each form individual chapters. One or several patients' histories were given in detail, followed by a short discussion of the important features and in some instances a brief summary of the material presented in the chapter.

In the concluding chapter Dr. Alexander ably presents the development of psychoanalysis from Freud to the present, gradual acceptance of the dynamic concept of personality development and the need of further experimentation to find easier and better methods of treating all emotionally ill persons.

The book should be of help to general practitioners, medical students, psychiatrists, psychologists and social workers. Each staff member is credited with his contribution, and Miss Helen Ross, administrative director of the institute, was responsible for making it a readable interesting handbook of treatment rather than a disorganized compilation of many observations and points of view. The book is printed in easily readable type, well indexed and is recommended to all interested in understanding psychosomatic medicine as well as the larger aspect of improving man's ability to live with man.

Beiträge zur Kenntnis der Blutgerinnung. Von W.K. Rieben, Professor für experimentelle Medizin an der Universität Oregon. Paper. Price, 9 Swiss francs. Pp. 96, with 26 illustrations. [Imported by Grune & Stratton, Inc., 381 4th Ave., New York 16]; Benno Schwabe & Co., Klosterberg 27, Basel, 1947.

This little monograph contains some original contributions of the author to the confusing problems of blood coagulation. First a relatively simple two step method for the determination of prothrombin is described. Although the practical clinical significance of Quick's one step method is acknowledged, the theoretical foundation of the Quick test is severely criticized. After description of the influence of many factors on the determination of the prothrombin time, the effect of amino acids, ascorbic acid, taurin and cystein are particularly mentioned. Dihydroxyphenylalanine was found to inhibit coagulation in vitro and in vivo and is recommended for a clinical trial in thromboembolic disease. The book contains contributions of interest to the investigator in the field of coagulation.

Textbook of the Ear, Nose, and Throat. By Francis L. Lederer, B. Sc., M.D., F.A.C.S., Professor and Head of Department of Otolaryngology, University of Illinois College of Medicine, Chicago, and Abraham R. Hollender, M. Sc., M.D., F.A.C.S. Second edition. Cloth. Price, $7. Pp. 596, with 182 illustrations. F.A. Davis Co., 1914-16 Cherry St., Philadelphia 3, 1947.

This is a textbook designed for medical students; it should be of great value to the general practitioner. Among its finely illustrated pages are to be found practically every condition which might be included in otolaryngology. Because the authors appreciate the limitations of those for whom the book is intended, they adhere to a simple clear style which serves their purpose well. Essential fundamentals are stressed. The first section, consisting of five chapters, deals with general considerations under the general heading: "Introductory"; it is well done. The book is divided into nine sections comprising seventy-two chapters. Deserving of special mention are the previews which serve as a background or basis for the text which follows, and the one hundred and eighty-two illustrations, which are consistently of high quality.

Within its scope this is a comprehensive and complete textbook which has already gained wide usage and favorable recognition. The style, the print, the paper, the general format, all combine to encourage those who may peruse it to utter words of praise and commendation. The authors and their publisher are to be congratulated.

Congenital Malformations: A Study of Parental Characteristics with Special Reference to the Reproductive Process. By Douglas P. Murphy, M.D., F.A.C.S., Assistant Professor of Obstetrics and Gynecology and Research Associate in the Gynecean Hospital Institute of Gynecologic Research, University of Pennsylvania, Philadelphia. Second edition. Cloth. Price, $5. Pp. 127, with illustrations. J.B. Lippincott Co., 227-231 S. 6th St., Philadelphia 5, 1947.

This second edition of this monograph aims to throw additional light on some of the questions which parents of congenitally defective children are likely to ask their doctors. The material for this study represented the families of malformed children who had died. The names were obtained from stillbirth and death certificates in Philadelphia and its environs.

The author concludes that malformations are congenital or environmental in origin. There are only two environmental conditions which lead to malformations, rubella and therapeutic irradiation of the pelvic organs during pregnancy. Rubella early in pregnancy results in a high incidence of malformations of the fetus. Preconceptional rubella probably does no harm to the offspring. In a study of 38 unhealthy children born after postconceptional pelvic irradiation, in 28, or 73.6 per cent, the defect could be definitely attributed to radiation. The majority of them were mentally defective. Although irradiation to the maternal pelvic organs during pregnancy is likely to cause serious damage to the fetus, there need be little fear of damage to the germ plasm and subsequent abnormal fetuses. This conclusion by the author is premature, for much more extensive data will be available in the near future on this subject.

Most of the malformations are genetic in origin. The chance that any couple will have a defective offspring is 1 in 200. The likelihood that a subsequent malformed child will be born to a family which has had a malformed child is increased twenty to twenty-five times. The hazard of malformations increases with the age of the mother, rising progressively year by year after the mother has passed 30, and is three times as great after 40 as after 30. Again, youth is the best safeguard for normal reproduction.

400 Years of a Doctor's Life. Collected and Arranged by George Rosen, M.D., and Beate Caspari-Rosen, M.D. Cloth. Price, $5. Pp. 429. Henry Schuman, 20 E. 70th St., New York 21, 1947.

Among the most inspiring contributions to medical biography is this contribution of collections from some of the best known biographies in medical biographic literature. The authors have divided selections from great numbers of biographies into such headings as early years, school days, the medical student, the doctor marries, the doctor goes to war and reflections on life and death. Interspersed are brief notes as to the individual physicians whose contributions are included. This book can be read with profit by every senior medical student and intern, by every physician who is at all concerned with the philosophy of medicine. Many a graduating class would profit more by the reading of selections from this volume than by the rehashes of medical lore and opinion which are usually accumulated in the form of convocation addresses.

Catalogue of Medical Films. Compiled by The Royal Society of Medicine and The Scientific Film Association. Paper. Price, 7s.6d. Pp. 125. ASLIB (Association of Special Libraries and Information Bureaux), 52 Bloomsbury Street, London, W. C. 1, 1948.

This catalogue consists of two parts, namely: Part I, an alphabetical index of eight hundred titles of motion pictures subdivided by subject groups such as anatomy, dermatology and endocrinology, and a numerical cross reference. Part II contains the names of two hundred abstracted films which appear to be rather complete; however, no evaluation has been made on any of the listed films. In the numerical cross reference section, seventy-four catalogue numbers are included without titles.

In addition to films for the medical profession, motion pictures on such subjects as health, dentistry and veterinary medicine are also included.

Films representing several countries other than Great Britain, such as United States, Germany, Australia, Sweden and Scotland, are listed in this catalogue

The appendix consists of a brief history of the following societies: The Scientific Film Association, organized in 1943 and devoted to the interest of film users, The Royal Society of Medicine and the Association of Special Libraries and Information Bureaus, which acts as a clearing house for specialized information and to help remedy a certain lack of knowledge of sources of information.

The organizations concerned in the preparation of this catalogue are to be commended for publishing this consolidated list of medical motion pictures. However, the publication would be of little practical value to the members of the medical profession in the United States inasmuch as the films would not be readily available for their use.

Mind and Memory Training. By Ernest E. Wood. Reprint of second edition. Cloth. Price, $2.50. Pp. 188, with illustrations. Pitman Publishing Corporation, 2 W. 45th St., New York; Sir Isaac Pitman & Sons, Ltd., Pitman House, 39-41 Parker St., Kingsway, London, W. C. 2, 1945.

This book attempts to set up a natural and spontaneous memory system patterned after the mind processes of persons with good memories. Many of the author's conclusions are based on study and observation of the memory systems of Europe and India.

Four "Roads of Thought" which hold ideas together in the mind are suggested and labeled as the laws of class, parts, quality and proximity. Connecting ideas according to these laws in rational order is held to be the secret of memory training. Concentration, for example, is simply the art of detailed examination of an object in the light of these four laws.

The value of creating clear mental images, the constructive use of imagination, the relation of study and reading to memory training, and methods which may be used to simplify or symbolize abstract or complex ideas are discussed in detail. Ways of developing and utilizing a logical series and expanding ideas are among other processes given considerable attention. Memory tricks and some of the feats of the memory men of India are analyzed and described.

The methods advocated are a departure from commonly accepted procedures. While the book makes interesting reading and certain of the devices may have practical merit, it is difficult to see their value for those whose patterns of thinking and study have been established along rather fixed lines.

Diabetes and The Diabetic in the Community. By Mary E. Tangney, R.N., Diabetic Supervisor, Hartford Hospital, Hartford, Connecticut. Cloth. Price, $2.75. Pp. 259, with 18 illustrations. W. B. Saunders Co., W. Washington Sq., Philadelphia 5, 1947.

Where Miss Mary E. Tangney, R.N., confines herself to advice to patients from the nurse's point of view and to the place which the nurse holds in the field of diabetes she does a good job; the fault with this book is that the authoress takes over too much the function of the physician. She says that "The physician usually orders a small dose of protamine zinc insulin, approximately 20 units, at the first visit, after diagnosis has been established. If the patient is young, 30 units may be ordered; if the patient is elderly, 10 to 16 units." Many physicians do not follow this practice; the layman or nurse who reads this book may say that his physician is not giving the proper treatment. This is a sample of the many controversial questions, such as the type of insulin that is most effective in the treatment of diabetes, the use of alkali in the treatment of coma, the various methods of testing for urine sugar, on which the author reaches definite conclusions. Since physicians are not agreed on these subjects, a nurse should hesitate to decide for the public what is the truth.

In the preface Miss Tangney says that the book is written primarily for the person in a community not accessible to hospitals. Later in her discussion of the coma treatment she states that "when the blood sugar falls to a level of 200 milligrams, glucose may be added to the saline, or carbohydrate may be given orally. Dr. Howard Root does not believe the glucose should be added until the blood sugar has fallen to this level." Dr. S. Soskind and his followers do not agree with this. The instance just mentioned is one of several in the book in which the author takes a stand with doctors of a certain group of thought, opposed to the opinions of another group. The patient is only confused by such statements, and not helped.

Pasteurisation. By Harry Hill, F.R.San.I., A.M.I.S.E., F.S.I.A., Provincial Milk Advisory Officer, Ministry of Agriculture and Fisheries. Second edition. Fabrikoid. Price, 21s. Pp. 296, with 73 illustrations. H.K. Lewis & Co., Ltd., 136 Gower St., London, W.C. 1, 1947.

In a thorough, concise manner the author has presented the essential arguments in a brief supporting " pasteurisation " as a public health safeguard for fluid milk supplies. The need for safeguarding milk consumers against milk-borne infectious diseases is reviewed and the usual criticisms advanced against pasteurization are answered. The essentials of the safe, quality milk supply are set forth as (1) clean milk, (2) licensing of milk pasteurization plants, (3) medical control personnel, (4) routine inspection, and (5) laboratory control. The major part of the text is devoted to a detailed discussion of dairy plant construction, maintenance and operation. The necessity for efficient supervision of milk pasteurization plants by both management and public health officials is emphasized. The various methods of applying the pasteurization process to milk and milk products is discussed in detail. This subject has been treated thoroughly and provides a splendid analysis of the various types of equipment developed for the application of the pasteurization process. The information contained relative to pasteurization processes will be of particular interest to dairymen as well as health authorities. The postpasteurization processes involved in the packaging and distribution of pasteurized milk and milk products as well as the sanitationn of processing equipment are probably of specific interest to dairymen; however, the author stresses the efficiency of these processes in relation to safe milk supplies. The importance of routine inspections and laboratory control is also discussed; in particular, methods of making inspections and the various chemical and bacteriologic devices available for use by milk-control agencies. Throughout the entire book, efficiency is cited as the method of dissipating suspicion of the pasteurization process and improving its commercial application. The responsibility for efficient application rests with the progressive operators of plants for milk pasteurization and adequate legislative control.

A Textbook of Surgery for Nurses. By Edward S. Stafford, B.A., M.D., F.A.C.S., Assistant Professor of Surgery, The Johns Hopkins University, Baltimore, and Doris Diller, B.A., R.N. Instructor and Supervisor, Surgical Nursing, The Johns Hopkins Hospital School of Nursing, Baltimore. With a foreword by Anna D. Wolf, M.A., R.N., Director of the School of Nursing and Nursing Service, The Johns Hopkins Hospital. Cloth. Price, $3.25. Pp. 577, with 170 illustrations. W. B. Saunders Co., W. Washington Sq., Philadelphia 5, 1947.

This book is written by a noted surgeon and teacher of surgery, in collaboration with an experienced surgical supervisor and teacher of surgical nursing. Believing that the more the nurse knows about surgery, the aims of the surgeon and what has been done in the operating room, the better will she be able to care for the surgical patient, the authors' chief purpose in writing the book is to furnish this background of surgical information. This they accomplish unusually well. The material is up to date and well presented. It is arranged in fourteen units which adequately cover the field of general surgery and all the surgical specialties (several chapters are contributed by colleagues). The specific nursing care of each condition is described carefully, so that the nurse is fully aware of her exact duties in every situation.

The book is written in clear, simple language. It is concise and singularly free from nonessentials and unnecessary technicalities.

Outstanding are the numerous pen and ink sketches made especially for this work by members of the Art Department of the Johns Hopkins Medical School. These excellent and accurate illustrations greatly illuminate the text and thus enhance its teaching value.

The book is recommended unhesitatingly for the purpose for which it is intended.

The 1947 Year Book of Obstetrics and Gynecology. Edited by J.P. Greenhill, B.S., M.D., F.A.C.S., Professor of Gynecology, Cook County Graduate School of Medicine, Chicago. Fabrikoid. Priçe, $3.75. Pp. 590, with 117 illustrations. Year Book Publishers, 304 S. Dearborn St., Chicago 4, 1948.

Here are the same excellent qualities that readers of this year book have come to appreciate in the past score of years or more. The articles reviewed are those which have worth while contributions; when necessary, controversial reports and unacceptable conclusions are pointed out by the able editor, whose comments and addenda from his rich personal experience, broad view and knowledge of the literature offer valuable and constructive critiques that help to clarify the moot questions. As in former years, the scope of the articles reviewed includes practically all, if not all, of the important papers published in 1947 dealing with obstetric and gynecologic problems. The Year Book of Obstetrics and Gynecology has a welcome place in the library of obstetricians and gynecologists, as well as the general practitioner. It fulfils a definite need for all these groups of physicians who may otherwise have missed many of the worth while publications. It brings them up to date with the literature at the beginning of each year

Chirurgie fonctionnelle gynécologique: Indications opératoires, techniques et considérations pratiques en rapport avec les acquisitions endocrinologiques. Par R. Bourg, chef du service universitaire de gynécologie à l'Hôpital Brugmann, Bruxelles. Préface de E. Douay, president de la Société française de gynécologie, Paris. Paper. Price, 750 francs. Pp. 268, with 137 illustrations. Masson & Cie, 120 Boulevard Saint-Germain, Paris 6^{e}; Editions Desoer, 21 Rue Sainte-Véronique, Liége, 1947.

This small, paper-covered volume presents the indications, technics and practical considerations for surgical procedures to correct malfunction of the pelvic organs. It is difficult to confine the discussion to this phase of gynecology because disturbed function of organs may be the result of disease as well as perverted function.

The author describes the accepted methods of evaluating ovarian function, such as biopsy of the endometrium, body basal temperature and vaginal smears. He recommends that endometrial biopsy be carried out forty-eight hours prior to menstruation rather than at the onset of bleeding. However, many of the surgical procedures on the ovary are not used in this country. We rarely puncture or resect follicle cysts. Ovarian transplantations are not done. He does emphasize the importance of conservation of ovarian function in young women.

In the treatment of sterility, he likewise suggests many operative procedures which have long been obsolete. The numerous operations on the cervix such as Bier's leech, Pozzi operation, Irabarne's tube, resections and amputations have long fallen into discard. However, operations for the establishment of tubal patency should be done more often since the introduction of newer surgical procedures.

There are many illustrations which help to clarify the text. The book is well worth reading by all interested in gynecology, for it presents a wholesome point of view in the management of many gynecologic conditions.

A Reference Manual on Modern Electric Household Refrigeration and Home Freezing. Reference Handbook No. 3, Westinghouse Educational Series. New edition. Paper. Pp. 28, with illustrations. Westinghouse Electric Corporation, Home Economics Institute, Mansfield, Ohio, 1946.

This is a useful booklet of twenty-nine pages which gives basic information with reference to home refrigeration in nontechnical terms. The refrigerator, the freezer and home methods of quick freezing are discussed. The booklet should be useful to those who have household problems in this field.

A History of the Worcester Royal Infirmary. By William Henry McMenemey, M.A. Cloth. Price, 21s Pp. 356, with illustrations. Press Alliances, Ltd., Bouverie House, Fleet St., London, E.C.4, 1947.

This book prepared for the bicentenary of the Worcester Royal Infirmary commemorates the founding of the hospital in 1746. It is an absorbing story of an institution which, founded in the spirit of charity, has rendered unselfish service to the people of its community for two hundred years under the traditional system of voluntary support. Authoritative and rich in illustrations, the book recounts the early days of the hospital, its gradual growth and development and eventual expansion into the modern hospital service which characterizes the present era. Interspersed with the hospital events which flow as the central theme is a wealth of material on administrative problems, the changing pattern of nursing service and the growth of medical practice, ethical relationships, early differentiation in medicine and surgery and the formation in 1732 of the Provincial Medical and Surgical Association, which in turn became the British Medical Association. Glimpses of contemporary social life are evident in many of the chapters, including the special accounts of physicians and other persons prominent in the history of the institution. This book with its vast amount of information, skilfully presented, is a welcome addition to the literature of the hospital field

The Occasion Fleeting. By Hugh Barber. Fabrikoid. Price, 15s. Pp. 199. H. K. Lewis & Co., Ltd , 136 Gower St., London, W. C. 1, 1947.

Here is a collection of essays most of them previously published in the Guy's Hospital Gazette and in the Practitioner. The author's style is pleasant and of the type in which many physicians indulge when sitting around a fireplace for a gossipy evening. Some of the British idioms and diction may be slightly confusing.

A Doctor in the House. By Henry Pleasants Jr., M.D., F.A.C.P. Cloth. Price, $3. Pp. 286. J. B. Lippincott Co., 227 S. 6th St., Philadelphia 5, 1947.

The author of this interesting book of medical reminiscences has a style well adapted to a public audience. The book is essentially an autobiography of its author, who has been for some years a general practitioner. His career brought him into contact with many leaders of medicine, particularly in the East. There are accounts of medical service in World War I, of the relationship of doctors to patients and medical bills, and some special discussions of child care and allergy. His chapter dwelling on the physician as a writer will be an inspiration to every young physician with similar ambitions. Unfortunately Dr. Pleasants believes that young men can be encouraged to practice in rural areas by educating a poorer quality of physicians who will enter medical school directly from the high school. Actually he believes that the way to get more physicians into the rural areas is to make medical education less difficult, but most leaders are convinced that a good country doctor ought to be even better than the general practitioner from the city.

Disease Transmitted from Animals to Man. By Thomas G. Hull, Ph.D., Director, the Scientific Exhibit, American Medical Association. Third edition. Cloth. Price, $10.50. Pp. 571, with 75 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1947.

Tremendous progress has been made in the control of many of the diseases that formerly passed from animals to man. Some, such as bovine tuberculosis and glanders, have been practically eliminated as menaces in the United States. However, diseases undergo evolution exactly as do other factors in human life. Now new chapters have become necessary on such subjects as tsutsugamushi disease, Q fever, jungle yellow fever and Haverhill fever. Moreover, what is one of the greatest outbreaks of foot and mouth disease ever to appear is now menacing cattle in Mexico and the United States It is well to have an authoritative work of this kind.

Essentials of Prescription Writing. By Cary Eggleston, M.D., Associate Professor of Clinical Medicine, Cornell University Medical College, New York City. Eighth edition. Cloth. Price, $2. Pp. 155. W.B. Saunders Co , W. Washington Sq., Philadelphia 5, 1947.

The fundamentals of prescription writing would seem to preclude radical change. But striking changes have taken place, as seen in the growing tendency to use the metric system in the substitution of English titles for the Latin by the Pharmacopoeia, the National Formulary and in prescriptions, in the dropping of the old galenicals and their replacement by chemical drugs and active principles, in the tendency to prescribe potent drugs by themselves rather than in a shotgun mixture and in the extensive employment of hypodermic and intravenous administration. We must still write prescriptions, but the finished prescription differs from that of thirty years ago.

While the author has devoted much space, as in previous editions, to the prescription in Latin, he has added a whole chapter on The Modern Prescription, and out of the old has graduated into the new as a matter of evolution. He accepts "about 5 cc." as the equivalent of a teaspoonful, though this is a variable quantity in household teaspoons. He does not urge the use of medicine glasses or the modern plastic teaspoons, which accept 4 cc. as one teaspoon and are to be had cheaply. His descriptions of the Pharmacopoeia and the National Formulary require clarification. Yet this little book, which covers the subject fully but briefly, may be just what is needed to ease the doctor's mind when he issues an order on the pharmacist in the form of a prescription.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TRICHOMONAS VAGINALIS

To the Editor:—In November 1944 a white woman, aged 25, called her physician for uncontrollable vaginal bleeding. A diagnosis of miscarriage was made and the patient was treated accordingly by nonsurgical methods. Bleeding persisted until February 1945, when I was called to see the patient. I did a dilatation and curettage, the report reading "premenstrual stage." Testosterone was given over a period of time without success. Bleeding continued despite my efforts, and as a last resort a supravaginal hysterectomy was done; the ovaries and tubes were left intact. The pathology report stated that the uterus was twice its normal size and that there was a chronic metritis.

She did well until a month ago, when she came in with the story of having noticed blood spots on the sheet on arising. She noticed this about four or five times even without intercourse. She also was aware of a profuse vaginal discharge for the past year, and recently intercourse had become extremely painful. Other than that, she had been feeling better than in years. The discharge proved to be due to a Trichomonas infection. The cervix was normal in size, shape and position; there were no erosions or polyps. A pelvic examination revealed no masses bimanually. The consultant, after his examination, was convinced this was all due to the Trichomonas infection.

I am interested to know whether this infection will give bleeding and whether another dilatation and curettage is indicated? Would a large ovarian cyst, if one was present, cause bleeding in this case?

Hilda Lang Berenson, M.D., Lynn, Mass.

ANSWER.—The data offer much room for speculation. Did the young woman actually have a spontaneous abortion? A Friedman test at the time might have given the answer, as might also the vaginal smear method of Papanicolaou. The findings of a premenstrual stage in the currettings or secretory stage are also of interest because patients rarely bleed from this type of endometrium, if normal. The finding of a chronic metritis is rather unusual and one should be on the lookout for such things as stem pessaries, pedunculated submucus fibroids, degenerating malignant growths and especially tuberculosis or possibly endometriosis of the uterus or adenomyosis.

Trichomonas vaginitis can be extremely irritating and either through intercourse or scratching produce abrasions which bleed. Also, as sometimes happens following hysterectomy, the circulation to the ovary is disturbed, leading to atrophy of these organs and a senile vaginitis which frequently bleeds with the trauma of intercourse.

Bleeding without trauma, however, is of more serious significance. Is the author sure that all of the uterus was removed, or was some endometrium left? If the uterus was removed, a curettage could not be done, but the cervical stump should be carefully investigated for cancer, particularly endocervical. Endometriosis not infrequently is seen in the cervix or vaginal wall, and these areas may menstruate if there is ovarian function. Tubercular ulceration of the cervix is rare.

Certainly a Friedman test should be done to rule out chorioepitheliomatous metastases. Vaginal smears after the method of Papanicolaou are useful in the diagnosis of cancer.

A large ovarian cyst should not cause this type of bleeding unless it was malignant and by direct extension the tumor grew through the vaginal wall.

ATHLETIC SUPPORT

To the Editor:—Does continual wearing of an athletic support result in premature enlargement of the prostate or in overstimulation of that gland?

M.D., Connecticut.

ANSWER.—No.

ARTIFICIAL EAR DRUM

To the Editor:—In many patients with a total loss of one or both ear drums the hearing can be remarkably improved by an artificial ear drum. The patients learn quickly to insert the ear drum in the proper place so that they are independent of the otologist. I have a number of patients, accustomed to an artificial ear drum, who prefer not to be without it. Can you inform me where I can obtain artificial ear drums?

Joseph Berberich, M.D., New York.

ANSWER—The American Optical Company, 8 South Wabash Avenue, Chicago, Illinois, carries a type of artificial ear drum which the patient may insert himself in suitable cases in which the drum membrane is absent and there is no active suppuration.

PROTEINURIA

To the Editor:—As an armed forces recruit medical examiner I have recently encountered an unusual increase in the number of cases of albuminuria coming to my attention. A few appear to be due to chronic nephritis, acute or chronic pyelitis, stone, abscessed teeth or recent acute illness. Irritation from drugs or poisons has appeared unlikely in all cases. It is those cases in which it is not possible to make a presumptive diagnosis that have me perplexed. Although I have been at my present duty station for fifteen months it is only in recent months (September and October, 1947) that the number of cases of albuminuria has apparently increased. During the months of June and July, 1946, physical rejections from all causes amounted to approximately 10 per cent. The applicants appeared to be of high caliber and were principally young men who had just finished high school. Rejections for albuminuria amounted to about 1 per cent. At present albuminuria causes the rejection of almost 20 per cent of applicants. However, the applicants at present are on the whole of a lower caliber. Albuminuria if constantly or intermittently present is cause for rejection, according to regulations, even if the origin *cannot be determined* (orthostatic albuminuria would be acceptable if it were possible for the medical officer to satisfy himself as to the diagnosis). It has been the practice of myself and co-workers to use Robert's reagent and then recheck all positive urinalyses by means of the heat and acetic acid test. We abide by the letter of the regulations and accordingly reject all applicants who show even traces of albumin on repeated tests, even if microscopic examination, history and physical results of examination are negative. It is not possible to give equal weight to a *negative history from an applicant and that from a patient in* private practice. The applicant frequently attempts to conceal important data for fear of rejection.

1. Is our present policy of rejecting all applicants who show persistent albuminuria, even in trace amounts and with negative microscopic examination, history, and physical examination, too severe?

2. What percentage of an average group of adolescents might be expected to show orthostatic albuminuria?

3. Have such factors as food, spices, chemical content of water or soil been *shown to cause albuminuria?*

4. Would fatigue caused by a hundred mile train ride be a likely cause of albuminuria, and how long might it be expected to persist?

5. What is the present attitude of insurance companies toward young adults with albuminuria, normal microscopic appearance of the sediment and a negative history and physical examination?

E. J. Sullivan Jr., M.D., Baltimore.

ANSWER.—The problem of proteinuria in applicants for the armed forces demands serious attention because of the high incidence in the second decade, the importance of excluding the extremely low percentage of organic renal disease and the influence of extraneous factors in producing transient proteinuria in a rather high percentage of recruits, provided frequent urinalyses are performed. A number of excellent reports on this subject have been published in recent years. While physical fitness may be involved in those cases of proteinuria associated with malnutrition, poor muscle tone, defective posture or vasomotor instability, this is only one aspect of the problem. Basically, functional proteinuria is nearly always the result of renal vasoconstriction, whether of reflex or humoral chemical origin.

1. If persistent albuminuria is not associated with abnormal urinary sediment in a highly concentrated acid urine or with evidence of origin from prostate or seminal vesicles, postural or lordotic tests should be carried out carefully before rejecting the applicant. What is meant by "persistent"? The urine should be examined several times daily for several days under the precise conditions outlined in the references. Otherwise, many applicants will be turned down unnecessarily because of proteinuria due to exercise or emotional stimulation.

2. The percentage of adolescents with orthostatic albuminuria varies with age, the procedure, the frequency of testing, the season and other factors. It is highest at 16 years of age, about 5 per cent, and drops sharply with each succeeding year to less than 1 per cent at age 20. The incidence in July and August may be twice that in other months, presumably because of more concentrated urines.

3. The consumption of a considerable amount of raw egg white or a huge quantity of irritant spices may cause transient proteinuria in a susceptible subject. Chemical factors in water or soil are of no import in this regard.

A long train ride could well produce orthostatic proteinuria but this should disappear with recumbency.

5. The large insurance companies have learned from experience that there is no abnormal mortality in subjects with intermittent proteinuria proved to be orthostatic. Suspicion is aroused if the proteinuria exceeds 50 to 75 mg. per hundred cubic centimeters. An intravenous pyelogram may be requested to exclude urologic disease. On satisfactory evidence of the functional nature of the proteinuria in an applicant under 30 years of age, insurance will be granted without rating up

PAPAYA

To the Editor:—Is there a vegetable pepsin in papaya? If so, is there more in the ripe or green papaya? Is there any vegetable pepsin in the seed of the papaya? Is the papaya of any value in tenderizing meat?

M.D., Texas.

Answer.—The green fruit of papaya, Carica Papaya, is the chief source of the proteinase known as papain, which is a powerful proteolytic enzyme and is widely used for "tenderizing" meat. Crude commercial papain is prepared from dried latex collected from green fruits of the papaya plant. The proteinase activity decreases with the ripening of the fruit. The ripe fruit is eminently edible. Other parts of the plant are known to contain some papain.

CONGESTIVE HEART FAILURE

To the Editor:—I have seen patients in failure of the right side of the heart with clinical signs of nephritis and widespread rales in the lungs. Is cardiac failure on a rheumatic basis associated with the nephritis or are the thoracic rales those of pneumonia or failure of the left side of the heart? How can one differentiate between congestive failure on the basis of an associated rheumatic fever or a pure nephritis, granting that the urine shows albumin, red blood cells and casts?

M.D, New York.

Answer.—Two possibilities exist to explain the foregoing observations First, congestive heart failure complicating rheumatic, hypertensive, coronary or other type of heart disease may produce evidence of such congestion both in the lungs (with basal rales) and in the systemic circulation with engorgement of the neck veins, liver and kidneys. Albuminuria with sediment is common in such conditions, and if there is a tendency to hypertension there is likely to be an increase thereof during the congestive failure. Most of the patients who were labeled as having cardiorenal disease in the old days actually had hypertensive heart disease with congestive failure.

The other possibility is that acute nephritis, especially of the hemorrhagic variety, may be associated with or lead to cardiac involvement and congestive failure, including edema of the lungs, which subsides after the acute renal process has cleared. Thus, it is important to note the antecedents in any case and to gage with considerable accuracy the severity of the actual renal involvement. If a patient without previous heart disease shows a picture such as that mentioned, one should look for nephritis with pulmonary edema. If, on the other hand, considerable chronic heart disease is known to have existed, then congestive failure with or without added nephritis should be suspected The history and signs of structural heart disease and detailed renal studies as a rule afford the clues. Acute rheumatism of itself seldom produces this picture. Of course, there may be coincident diseases such as pneumonia and cardiac or renal disease.

RUBBING ALCOHOL

To the Editor:—I would like information or sources of information on the toxicity of rubbing alcohol. One preparation is ethyl alcohol with some flavoring substance added, and another preparation is isopropyl alcohol. Death occurred recently in a man aged 35, who was under observations for three days with weakness of the muscles of his arms and shoulders, vomiting, temperature ranging from 100 to 100 2 F. and pronounced mental confusion. Spinal puncture was not performed because he had had an extensive fusion operation for a compression fracture of his spine ten years ago. He died suddenly and unexpectedly from respiratory failure. He was a silent alcoholic of several years' duration and supposedly had taken some rubbing alcohol (unknown amount) five days before his death. In trying to arrive at a diagnosis poliomyelitis and acute myelitis were considered, but his mental confusion did not seem to fit in with conditions in those diseases.

M.D., North Dakota.

Answer.—There is wide variation in the composition of "rubbing alcohols" used in different institutions. Usually they consist primarily of denatured ethyl alcohol or of isopropyl alcohol in 50 to 70 per cent solution. Denatured ethyl alcohol contains substances which make it unsuitable for consumption—substances which give it a disagreeable smell or taste, or which produce physiologic effects such as vomiting in order to interfere with absorption. An official "special denatured alcohol formula 23 H" contains acetone, methyl isobutyl ketone and sucrose octa-acetate. "Formula 23 G" contains methyl propyl ketone and methyl isobutyl ketone in addition to sucrose octa-acetate. Each formula may also contain various odorous or colored compounds such as methyl salicylate (wintergreen oil) or certified green dye. These substances are not present in amounts large enough to have appreciable toxic effect, especially since denatured alcohol is disagreeable to take and is apt to be vomited if ingested in quantity.

A sufficient quantity of denatured ethyl alcohol taken by a habitual drinker might well cause vomiting, mental confusion and a moderate elevation of temperature, but that episode alone would hardly explain the reported muscular weakness of arms and shoulders or sudden death after five days.

What little is known about the toxicity for man of isopropyl alcohol when taken by mouth has been summarized by W. F. von Oettingen (The Aliphatic Alcohols: Their Toxicity and Potential Dangers in Relation to Their Chemical Constitution and Their Fate in Metabolism, Public Health Service Bulletin 281, Federal Security Agency, United States Public Health Service, 1943, pp. 121-122). Dizziness, muscular and nervous disturbances and headaches have been reported; also bradycardia and lowering of the blood pressure. Ingested isopropyl alcohol becomes concentrated in certain organs, particularly in the brain, heart muscle and kidneys. Pathologically, moderate reversible fatty infiltration may be found in these organs. Large doses of isopropyl alcohol in animals cause ataxia and narcosis; paralysis and dyspnea may precede death. The minimal fatal dose for rabbits and mice is 6.0 to 7.6 cc. per kilogram of body weight. Morris and Lightbody (The Toxicity of Isopropyl Alcohol, *J. Indust. Hyg. & Toxicol.* **20**:428, 1938) believe that on account of its slow elimination isopropyl alcohol may have cumulative effects, which may be due either to the alcohol itself or to its oxidation product, acetone.

Conceivably, ingestion of a sufficient quantity of isopropyl alcohol could have caused the symptoms listed in the query, but without additional evidence it cannot be stated definitely that this patient's neurologic symptoms and death were due primarily to ingestion of "rubbing alcohol."

PRESBYOPIA

To the Editor.—Has evidence been presented to indicate that the age at which senile presbyopia develops is dependent on hormonal control? Is the early or late development of senile presbyopia a feature of any clearly demarcated endocrine disorder? Cataract is a feature of certain of the syndromes related to progeria; do patients with progeria but without cataract show senile presbyopia?

William Q. Wolfson, M.D., Chicago.

Answer.—Presbyopia is not a condition which comes on with old age, as its name implies. The eye at birth is imperfect. The ciliary muscle, which is the muscle of accommodation, is not yet ready to function. Development goes on for several years. At the age of 8 to 10 years accommodation is fully developed and reaches its maximum.

But accommodation (increase in refractive power) depends not only on the ciliary muscle and its nerve connections but on the capability of the crystalline lens to respond to the muscular action. It responds by becoming more convex not only on its surface but in its inner layers. This is possible only because of the plasticity of the crystalline lens. For a large accommodation, such as 12 D. or more, which is possible in the teens, the changes in the form of the lens are considerable.

As the child grows older the lens loses water and becomes less soft and plastic—in short, it undergoes sclerosis. This does not require any special hormone. If factors such as diet, vitamins and hormones should be found to affect the rate of progress of presbyopia, perhaps retarding it, there is no question but that the inexorable progress of presbyopia would go on—merely being delayed a few months. It is affected, of course, by the general health and metabolism of the person and by local disturbances of nutrition. Some of these result in loss of transparency and are called cataract. The outstanding fact is that the progress of sclerosis from say 8 to 10 years of age till death is steady and remarkably uniform in different persons. Probably there is no part of the body which ages so uniformly as the crystalline lens. Many (including some ophthalmologists) have tried to escape this steady progress by means of exercises and other treatment, but it is inexorable.

Presbyopia does, however, differ a little in different persons. In long-lived families the advance is a little slower, so that some persons at the age of 50 have as much accommodation—as little presbyopia—as others who are 3 to 5 years younger. It is well known that age cannot be measured in years alone. In persons with some myopia it may appear that the advance is slower. It is true that such patients can read at an older age than others, but it is not because their accommodation is of greater amplitude; it is because of their myopia, which may be due to a swelling of the lens either as it takes up more water, swells and becomes more convex or as it changes its refractive index. This accounts for the so-called second sight. Patients who were dependent on glasses to read find themselves again able to read without glasses. This is not due to any recovery of accommodation or avoidance or presbyopia It is due to the onset of cataract, which in many cases is associated with changes in the refractive power of the lens which cause myopia. These patients have better near vision but cannot see as well as before at a distance.

DUYPUYTREN'S CONTRACTURE

To the Editor:—What is the cause of and treatment for Dupuytren's contracture? My patient, a young woman, seems to have tenosynovitis involving the tendons to the middle finger of both hands. These (tendons) are prominent when the fingers are extended and painful enough at times (especially in the early morning) to interfere with rest. There has been no trauma and nothing about her work (housewife) that explains the condition.

Robert E. Cloud, M.D., Birmingham, Ala.

ANSWER.—The causative factors in the production of Dupuytren's contracture include trauma, infection and metabolic disturbances. Trauma might be acute and severe or (more important) multiple and minimal in character. Treatment of Dupuytren's contracture usually means operation.

The tenosynovitis of the palmar tendons to the middle finger of both hands brings up the subject of fibrositis. Unfortunately, the ubiquitous fibrous tissue is poorly understood and its basic disorders inadequately known. Here again the same causative factors come into focus. It is inaccurate to say that "no trauma and nothing about her housework explains the condition." The daily acts in the home constitute *multiple minimal trauma*. A few of these acts are: turning door knobs, using the broom or vacuum cleaner, carving meat, slicing bread and lifting heavy household articles. Occasionally the person with Dupuytren's contracture has a similar lesion of a foot.

FLUORINE IN DENTAL CARIES

To the Editor:—Some of my patients have asked me about the advisability of using fluorine compounds (1) by tablet, (2) in drinking water or (3) in tooth powder. In communities in which the water supply is not fluorinated, is it advisable to add a fluorine compound to the water used in the household for drinking or cooking purposes? What compound do you suggest and in what dosage? Is the addition of such a compound to dental indicated? If so, what and how much is recommended?

M.D., New Jersey.

ANSWER.—In communities in which the water supply is not fluorinated it would not seem advisable to add fluorine compounds to the water used in the household for drinking and cooking. In the cities in which the water is being fluorinated, the concentration is under professional supervision and is not permitted to exceed the optimal level. At Grand Rapids, Mich., for instance, chemical analyses are made daily.

In respect to the use of fluorine compounds in (1) tablets and (2) tooth powder, attention is called to a recent editorial (The Role of Fluorine in Dental Caries: I. Synthetic Fluoride Tablets and Bone Meal Preparations, J. Am. Dent. A. 34:345 [March 1] 1947), which says in part: "Until more convincing data are presented, therefore, the use of fluorides in dentifrices, mouth washes, tablets and lozenges cannot be recommended."

MELENA

To the Editor:—What is the chemistry involved in the production of melena? Can bleeding from the cecum produce melena?

M.D., Illinois.

ANSWER.—The chemical factors involved in the production of melena still await final clarification. Such change is usually attributed to the action of the gastric juice on blood pigment. However, factors other than such a mechanism undoubtedly also play a role, because melena has been observed with variable frequency in traumatic, ulcerative and neoplastic lesions from the level of the upper part of the jejunum downward to the ileum. Benign tumors of the small bowel and hemorrhage from an ulcer in Meckel's diverticulem are good examples of this. Probably contributing, in whole or in large part, to the blackness of the stools are such hemoglobin derivatives in the intestinal tract as *protoporphyrins and deuteroporphyrins*. In Watson's opinion there is no concrete evidence that the coproporphyrins have a similar origin. The former give a positive reaction test with guaiacum or benzidine.

Carcinoma of the cecum can produce melena on rare occasions. As a rule the amount of bleeding is too small to discolor the feces. Factors concerned with the rate and amount of blood lost and the state of intestinal motility must be taken into account. For example, a sudden hemorrhage of 1,000 cc. or more of blood from the stomach or duodenum may cause red feces containing fresh blood.

NECROPSY FOLLOWING INCINERATION

To the Editor: Please send any possible information on the points which follow: (1) Postmortem reports on loss of blood from vessels when both upper and lower extremities are burned off to torso level (also dealing with the possibility that death had occurred previous to the fire). (2) How long after death would blood or blood clots be expected to remain in the superior or vena cava? (3) Would absence of blood in the ascending vena cava while present in the abdominal aorta be of significance?

M.D., Texas.

ANSWER.—Blood does not ordinarily escape from a body, either living or dead, as the result of the destruction of tissue by heat. Heat sufficient to destroy tissue converts the blood in the region of burning into a firm coagulum.

If the collapsed great veins of an extensively burned body are observed to contain so little coagulated blood as to suggest antemortem exsanguination, the next step should be to determine whether or not death had occurred previous to the fire. If a person dies during and because of a conflagration, *the air passages are usually observed* to contain an excessive amount of soot-laden mucus. Absence of evidence that smoke had been inhaled would suggest that the person was probably dead before or soon after the fire started. The carbon monoxide content of the blood is another indication of the time of death in relation to the fire. The absence of carbon monoxide (over 5 per cent saturation) in the fluid blood of a burned body indicates that death occurred before much smoke or other gaseous combustion products had been breathed.

The length of time that recognizable blood or blood clots remain in the superior and ascending vena cava of a badly burned person will vary according to the intensity of the thermal exposure and to the duration of the postmortem interval. If the blood has been thoroughly cooked, it will remain as a firm coagulum for many days. It is possible, however, for the heat to be sufficiently intense to destroy the extremities but of insufficient duration to coagulate the blood in the superior and inferior vena cava. In such an event most of the blood contained in these vessels remains fluid. Early postmortem diffusion of the hemolyzed blood through walls of the vessels into the surrounding desiccated tissues may lead to vascular collapse and apparent loss of blood.

The "absence of blood in the ascending vena cava while present in the abdominal aorta" may be due to the fact that postmortem diffusion of hemolyzed blood occurs more rapidly through the walls of veins than it does through the thicker walls of arteries.

DRIBBLING OF URINE

To the Editor:—Please inform me whether there is any reliable treatment for dribbling of urine in a girl 7 years old, without apparent anatomic anomalies.

Adalbert Miskowiec, M.D., Santa Fe, N. M.

ANSWER.—Any reliable treatment for dribbling of urine in a 7 year old child without apparent anatomic anomalies should be preceded by careful examination and exclusion of bladder or urethral defects. This should be accompanied with a laboratory urinary examination as well as examination of the stool. In this way the following causes for the dribbling may be ruled out: pyuria, diabetes mellitus, diabetes insipidus, pinworms, urethritis and highly acid urine. Roentgenographic examination should be made to rule out spina bifida and foreign body or calculus in the bladder.

If no organic causes are observed, minor psychiatric difficulties, such as neuropathic or personality disorders, should be investigated.

The following drugs may be recommended when no organic cause has been found: tincture of belladonna, sedatives and testosterone propionate, in appropriate doses. Finally, the following nonspecific therapy has been advocated:

1. Instigation of bladder control by training the child to start and stop urinating at command; thus, "Start! Stop! Start!" may be helpful
2. General gymnastics to benefit the health of the child, especially exercises calculated to stimulate normal and uniform circulation are beneficial. Slow bending and stretching, trunk exercises and respiratory exercises are advisable.
3. Sometimes a two day rest cure is given, requiring that the child have his breakfast in bed and remain in bed until his lunch time. Such a plan may be pursued two days each week, at the beginning and the end of the week.

HELIUM IN PNEUMOTHORAX

To the Editor:—Is helium being generally used in pneumothorax? How much slower is its rate of absorption than oxygen? Is the gas used alone, or is it mixed with oxygen and, if so, in what proportion? Where can helium be obtained commercially?

I B. Oldham Jr., M.D., Muskogee, Okla.

ANSWER.—Helium is not being used generally in pneumothorax. It was advocated in a preliminary report by Lieutenant Commander E. Ricen, Medical Corps, United States Navy (U. S. Nav. Med. Bull 40:853-855, 1942) on the premise of prolonging the time interval between air injections into the pleural and peritoneal cavities for collapse in pulmonary tuberculosis. The speed with which gases disappear from body cavities is proportionate to their stability coefficients, diffusion speed and chemical affinities for substances dissolved in the blood. Helium, because of its low solubility coefficient in water and in oil, compared with the coefficients for nitrogen is recommended as a substitute for air, according to this report. Behnke and Yarbrough (U. S. Nav. Med. Bull. 36:542-558, 1938) observed that the solubility coefficients for helium in water and in oil compared with nitrogen is in the ratio of 2 to 3 for water and 1 to 4.5 for oil. Oxygen, a component of air, is absorbed much more rapidly than either of the inert gases, helium or nitrogen. Helium, being an inert element, does not enter into chemical combination with blood substances. Ricen selected peritoneal absorption speed because it offered certain advantages over the pleural cavity for conducting his investigation, since gas collects under the diaphragmatic leaves and is readily visualized by fluoroscope and the results are reasonably accurate. A series of cases of pulmonary tuberculosis with previous phrenic nerve paralysis, supplemented by pneumoperitoneum, was selected for study. All the patients had been receiving weekly injections of 1,000 cc. of air into the peritoneal cavity. In all instances a longer period of time was required for the disappearance of 1,000 cc. of helium from the peritoneal cavity than of an equal amount of air. Four to six days longer were required for the complete disappearance of 1,000 cc. of helium from the peritoneal cavity than for disappearance of an equal quantity of air. Helium was well tolerated by the peritoneal cavity. Apparently helium is used alone; no mention of mixing with oxygen is made. Helium, about 98 per cent pure, can be obtained commercially from surgical supply houses in cylinders. The price is about $3.60 for a size D cylinder. It is used with anesthetic gases.

ENURESIS

To the Editor:—What is the present status of chorionic gonadotropic preparations in treatment of enuresis? The mother of a child has brought to my attention some favorable comments by one of the medical columnists in daily papers concerning use of this preparation. I am unable to find any confirmatory reports, and it appears to me that the potentialities for harm are too great to justify use of these preparations without good cause.

John M. Higgins, M.D. Sayre, Pa.

ANSWER.—The use of chorionic gonadotropic preparations for enuresis has been generally discontinued and should be completely abandoned. Its earlier use was based on a mistaken interpretation of the fact that many girls discontinue bed wetting with the onset of the menses or after the menses are well established. This was thought to indicate a sudden development of a previously weak or undeveloped urinary tract under the stimulus of increased hormones related to the establishment of the menstrual function. For many years this mistaken idea prevented the realization that enuresis ceases with the profound psychic change that comes to every girl at that time: "I'm a woman now and must put away childish things."

After careful examination has failed to reveal any defect or infection in the urinary tract, the treatment of enuresis must be reeducation of the parents as well as the child, rather than the use of any drug, hormone, change in diet or fluid intake or any surgical instrument. Any surgical or medical treatment that is unpleasant, such as repeated injections, may cause an intelligent child to substitute some other infantile behavior for enuresis. When such a substitution is made, enuresis ceases, and the last method of treatment used gets unearned credit, while the child is left without any advance in emotional growth and development and the parents gain nothing that will help them assist their child to become an adult emotionally—a reasonable human being.

STELLECTOMY

To the Editor:—What is the accepted opinion today on stellectomy (surgical removal of the stellate ganglion) for angina pectoris? Have you available the names of the surgeons in Chicago most actively engaged in the use of this method?

H. D. Coles, M.D., Chicago.

ANSWER.—Sympathectomy for angina pectoris has limited usefulness in relieving intractable pain in patients whose *myocardial* reserve permits a two stage retropleural operation. Stellectomy alone has been observed to be insufficient for this purpose, and it is necessary to remove the ganglionated chain from below the fifth dorsal segment to above the second. This can be done by a generous resection of the third rib paravertebrally.

Surgeons doing this type of work are specialists in vascular surgery or neurosurgery. An inquiry directed to any of the medical schools in Chicago will yield further information.

ERYTHROBLASTOSIS

To the Editor:—A normal baby, weighing 8 pounds 2 ounces (about 3,685 Gm.), was born by cesarean section (disproportion). Eight hours after birth severe jaundice developed in the baby (icterus index 135). A smear showed numerous erythroblasts and 70 per cent reticulocytes. Erythroblastosis was ruled out, the mother's blood being Rh positive. Subsequent smears showed typical spherocytes. A hematologist made the diagnosis of familial hemolytic jaundice, although the spleen and liver are not enlarged and the family history reveals only one typical attack of infectious hepatitis in the father. His blood smear did not show spherocytes. The baby at present (age 7 weeks) is normal in appearance, weighing 11 pounds 12 ounces (about 5,330 Gm.), and receives a routine formula plus 5 grains of ferrous sulfate daily. However, his hemoglobin which was 110 per cent (16.9 Gm.) at birth, has dropped to 55 per cent (8.4 Gm.). The following questions arise: 1. Is this a definite case of familial hemolytic jaundice in spite of the absence of enlargement of the spleen and liver and of a family history of the disease? 2. If the disease is present, how soon is splenectomy indicated? 3. Are blood transfusions indicated at present? 4. Is the iron added to the baby's formula of any value in preventing a further drop in hemoglobin? 5. What is the prognosis after splenectomy? 6. What are the chances that the disease may appear in the baby's offspring? 7. Have there been any new development in treatment aside from splenectomy?

Mauro Rosenberg, M.D., Sherman Oaks, Calif.

ANSWER.—No mention is made of a search for spherocytes in the mother's blood. Familial hemolytic jaundice may be passed on by either the father or the mother to the child. Spherocytes, if present, would be expected to persist in the blood stream rather than to disappear.

Though familial hemolytic jaundice does appear in the early age groups, it is extremely rare in newborn babies. Though splenomegaly may be absent, this is infrequent. In this disease, particularly in the early age groups, once jaundice has appeared it tends to persist or increase. In this infant, "normal in appearance," it is assumed that there is no longer evidence of blood destruction, namely jaundice, elevated serum-linked bilirubin or increase of urobilinogen in the stools, but only anemia. There is no mention of determinations of red cell fragility. From the evidence available, it is improbable that this is a case of familial hemolytic jaundice.

Erythroblastosis is not ruled out because the mother's blood is Rh positive. Some 5 to 15 per cent of babies with erythroblastosis are born of mothers with Rh positive blood. In these cases the Rh factor is of no etiologic importance, though the mechanism is similar. Antibodies develop in the mother against the baby's blood, the type having been inherited from the father. Blood types A and B are most commonly involved. If by passive transfer this antibody titer becomes sufficiently high in the baby's blood stream, blood destruction and erythroblastosis develop. It is possible that the case described falls into this category. However, with the meager evidence at hand, this conclusion cannot be drawn with certainty.

Since the child has survived seven to eight weeks, the prognosis is probably favorable. There is no indication for splenectomy. Small carefully typed and administered transfusions are indicated. Iron therapy may be of value.

NORMAL TEMPERATURE VARIATION

To the Editor:—A 5 year old girl has been having elevation of temperature, reaching 99.6 F. (orally), each evening for the past two weeks. There are no physical observations to account for this. Examinations of the blood and the urine revealed no abnormalities. A roentgenogram of the chest revealed no abnormalities. Can such temperature variations be considered within normal limits?

Oscar M. Plotkin, M.D., Elgin, Ill.

ANSWER.—The elevation of temperature to 99.6 F. (orally) each evening in a 5 year old girl may be considered within normal limits if all sources of infection, both acute and chronic, have been ruled out. Exercise is a frequent cause of elevation of temperature, both in children and in adults. This has been demonstrated in a young girl, whose temperature was 99.9 F. after thirty minutes of exercise, but after thirty minutes of rest her temperature fell. Children with neuropathic conditions respond more readily to an increased bodily temperature after exercise than normal children. These oscillations in temperature are so universal that they should be considered normal manifestations based on a somewhat unstable heat-regulating mechanism in young children.

LIMITATION OF SHOULDER MOTION

To the Editor:—What information is available on treatment of deltroid bursitis and tenosynovitis about arm and shoulder points? I am the patient, 62 years of age, physician, 6 feet 1 inch (185.4 cm.) tall; weight 206 pounds (93.4 Kg.). Had all the diseases of childhood; pneumonia, bilateral with delayed resolution in 1919, followed by mitral murmur, bronchitis and severe sinus disease. I have remained active until about ten months ago, when my arms and shoulders became limited in action because of the aforenamed trouble. Roentgen treatment gave no relief. Salicylates do no good and upset my digestion. I will greatly appreciate suggestions.

M.D., New Mexico.

ANSWER.—It is difficult to answer the inquiry because it is not clear from what precise condition the patient is suffering and the results of roentgenography are not stated. Shoulders can become painfully limited as a result of several conditions: rheumatoid arthritis of the glenohumeral articulation, osteoarthritis of the acromioclavicular joint, calcific or noncalcific tendinitis of any one of the four small rotator muscles, degenerative changes and tears in the musculotendinous cuff, tenosynovitis of the long biceps tendon, or the "shoulder-hand syndrome." Treatment varies widely, depending not only on the condition present but also on the stage (of acuteness or chronicity) of the condition and the amount of disability resulting therefrom. Space does not permit differentiation of these varying conditions.

Perhaps the lesion which most commonly produces painful limitation of shoulders in patients more than 45 or 50 years of age is calcific or noncalcific tendinitis of the supraspinatus tendon, a condition often erroneously called "subdeltoid bursitis." This condition is thought to result from the "wear and tear" of repeated minor trauma. Symptoms may be acute and extremely painful for a short time, or they may be chronic. Treatment during the acute phase consists of rest (often with temporary immobilization of the shoulder in the abducted and outwardly rotated position), local application of heat and the use of analgesic agents for symptomatic relief. To decrease digestive intolerance, salicylates may be taken with 3 to 8 fluidounces (89 to 237 cc.) of milk, or an alkali such as sodium bicarbonate in a dose equivalent to the dose of salicylate can be employed, or enteric-coated preparations of salicylate can be used. Roentgen therapy may be tried, since it sometimes gives additional relief of symptoms. Needling and the local injection of anesthetic solutions also are used in some instances.

When symptoms are chronically present, the measures which have been described are supplemented by more intensive physical therapy including heat, massage and active or active-assistant exercises designed to increase the range of motion. An exercise program, carefully prescribed and conscientiously followed, often is a neglected but important feature of the treatment. In most instances recovery of normal or nearly normal range of motion is necessary before pain and other discomfort are relieved. When adequate trial of conservative measures does not result in satisfactory improvement, manipulation of the shoulder with the patient anesthetized, or surgical exploration, may become indicated.

SYPHILIS

To the Editor:--I have a patient with latent syphilis with tabetic changes. I intend to give him 10,000,000 units of penicillin, injecting 300,000 units in Romansky's formula twice daily. In the light of latest experiences is this treatment sufficient or should it be supplemented with a preparation of bismuth or arsenic?

M.D., New York.

ANSWER.—The terms latent syphilis and tabes dorsalis are mutually exclusive. If the patient has " tabetic changes " he cannot have latent syphilis, which by definition is that form of syphilitic infection without symptoms or physical signs and manifested only by a positive serologic test. Before offering specific advice with regard to the patient in question, it is essential to know what are the tabetic changes with particular reference to a detailed account of symptoms, physical signs and examination of the spinal fluid, including cell count, quantitative protein estimation, quantitatively titered complement fixation (not flocculation) test and colloidal gold test. It is also important to be sure that the patient has no psychiatric manifestations of dementia paralytica. The effect of penicillin in tabes dorsalis can so far be measured only in terms of changes in the spinal fluid and amelioration of symptoms. Not enough time has elapsed since the introduction of penicillin therapy to be sure that this form of treatment will arrest further progress. In tabes, as in other forms of neurosyphilis, penicillin usually brings about prompt improvement in the abnormalities of the spinal fluid, especially cell count and protein content, which in about 90 per cent of cases return to normal within a few months. In the majority of cases, likewise, this improvement is maintained at least over a period of several years. Whether or not inactivity of the spinal fluid indicates the probability of arrest of the tabetic process cannot yet be determined. As to symptomatic relief in tabes dorsalis following penicillin therapy, this depends almost entirely on the individual symptom. There is about an even chance of some relief from lightning pains, which in some instances is only temporary. Other symptoms such as ataxia, urinary disturbances and impotence, are less favorably affected.

There are differences of opinion as to whether the treatment of tabes is best accomplished with penicillin alone or with penicillin plus induced malaria. A choice between these two methods of treatment may depend on the patient's physical condition. If this is sufficiently satisfactory to indicate that he may tolerate fever therapy without undue risk, it is probable that more significant symptomatic improvement will be accomplished by this than by penicillin alone; likewise, it is probable that arrest of the process will be accomplished. Perhaps a fair suggestion is that the patient be treated with penicillin first and, if improvement does not occur within a period of six months, retreatment be given with penicillin plus induced malaria. If penicillin in peanut oil and beeswax is employed, it is unnecessary to give the drug twice a day. A single daily injection of 600,000 units is ample. There is no indication for the use of bismuth and arsenic preparations in tabes dorsalis, since these drugs accomplish comparatively little in most cases. Finally, if the patient has primary optic atrophy, a common manifestation of tabes, time should not be wasted by treatment with penicillin alone. Penicillin plus induced malaria infection should be used from the start.

SWELLING OF PAROTID GLAND

To the Editor:—Regarding the query, " Swelling of the Parotid Gland", THE JOURNAL, February 14, 1948 we submit our opinion. In Mitchel-Nelson's " Textbook of Pediatrics" the complication of manubrial swelling in mumps is mentioned, and reference is made to the description by Gellis of its occurrence.

In a patient under our care we have seen a case similar to that described which occurred during an epidemic of mumps at a nearby Army post; we believe that this may well have been the same. One must also consider the possibility of scleredema (not scleroderma), though this is less likely.

John B. Reinhart, Captain, M.C., A.U.S.

To the Editor:--Regarding the query "Swelling of the Parotid Gland" THE JOURNAL, February 14, page 511, may I add the following note: The swelling described over the manubrium has been repeatedly observed in mumps and is apparently independent of the parotid swellings. I observed 3 instances in over 600 cases of mumps in an Army training camp. Case reports of this phenomenon have been published under the title of " presternal edema." It has been variously interpreted as due to thymic or thyroid involvement by mumps, or (more likely) involvement of the substernal lymph nodes producing obstructed lymphatic drainage of the presternal tissues. I have repeatedly observed fever and leukocytosis accompanying the onset of involvement of additional glands, or other complications of mumps; hence, this would not be a reliable criterion with which to rule out the disease.

Samuel Zelman, M.D., Topeka, Kan.

ARGYRIA

To the Editor:--In Queries and Minor Notes, THE JOURNAL, February 7, page 432, subject argyria, information was requested as to the use of 2,3-dimercaptopropanol (BAL) in the treatment of argyria. In April 1947 a patient at the Veterans Administration Hospital, Aspinwall, Pa., was given two courses of BAL in oil as treatment. No silver could be recovered in the urine after treatment; there was no change in the clinical appearance of the patient, and punch biopsy of the skin before and after treatment showed no change in quantity of silver in the tissue. It was concluded that BAL is unable to mobilize silver present in tissue in the metallic state and would consequently be of no use in the treatment of argyria. This was written up for publication. The unsuccessful use of BAL in treatment of experimental argyrosis in rats has already been reported (Olcott, C.T., and Riker, W.F.: Experimental Argyrosis. II. Treatment of Rats Receiving Silver with 2,3 Dimercaptopropanol (BAL), *Science* 105:67, [Jan. 17] 1947).

Arthur P. Klotz, Aspinwall, Pa.

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TREATMENT OF ACUTE FRACTURES OF THE NECK OF THE FEMUR

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Boston

In discussing the subject of fractures of the neck of the femur, one must recognize at once certain "inevitables" which create a most difficult problem. These are (1) *the advanced age of patients affected by this* type of fracture, (2) the peculiar character of the bone that is directly involved, (3) the quality and distribution of the blood supply at the site of injury and (4) a weak anatomic location from the point of view of mechanics. One is handicapped at the very start with an old person, whose hip is broken in a place not only where the bone is narrowest and periosteal callous never forms, but where the blood supply is scanty and vulnerable and an enormous amount of mechanical strain is experienced.

The problem then, so far as treatment is concerned, is not an easy one to solve and, despite all efforts, still remains a challenge. To be sure, we surgeons have progressed far since the old days of sandbags, wooden splints and Buck's extension, and even passed a milestone when Whitman[1] advocated his abduction method of treatment, but, fortunately, we did not stop there. Instead, we have traveled on to a new and more hopeful solution, and have at present reached what may be considered another milestone of progress—the treatment of these fractures by means of internal fixation.

This new concept of treating fractures of the neck of the femur was presented by Smith-Petersen[2] in 1931 and, in the course of time, has gained almost universal acceptance. Many surgeons, as Harry Platt of Manchester, England,[3] have expressed the opinion that internal fixation with the Smith-Petersen triflange nail has entirely revolutionized the treatment of fractures of the femoral neck, giving a higher percentage of bony union, extending the scope of effective treatment in older and more frail patients, reducing the primary mortality and affording greater comfort in after-treatment. Or, as Watson-Jones[4] put it, "There can be no doubt that Smith-Petersen's discovery has not only revolutionized the prognosis of this injury from the point of view of union of the fracture, but is also to be regarded as a life-saving measure."

Similar optimism has been expressed in many parts of the world, including America, and I hope with justification, but we cannot be sure of our ground until the pitiless light of experience is shed on the facts and reveals the naked truth. Hence this symposium today.

It is high time that we took stock and decided where we are at present and how far we have yet to go; in order to do this, we must direct our thought first to the treatment of the acute type of fracture of the femoral neck.

SELECTION OF PATIENTS FOR OPERATION

Fortunately, few patients with fracture of the neck of the femur are ineligible for the operation known as hipnailing. In some clinics, it is only the moribund or acutely ill that are deprived of its advantages. Certainly, the patient's age alone has proved to be no contraindication—as is well known to all who have had patients over 90 years of age that not only have survived the operation, but have continued to live in comfort for years following it.

Groves[5] is not convinced that anything is to be gained by operative treatment of this fracture in the extremely old and feeble persons, and suggested Russell traction for these, but other authorities expressed the belief that hip nailing is especially applicable to the aged and infirm because, in spite of greater risk, it may be lifesaving Thomas King[6] of Australia stated that unless the patient was bedridden or moribund every intracapsular fracture under his care has been treated by operation. However, he always withheld operation when the temperature was raised or pulmonary changes were present.

E. I. Lloyd[7] warned against attempting to cure pneumonia in moribund old women by nailing, but Brittain[8] advised it, and Thornton and Sandison[9] also did not defer operation on this account, and they recorded no deaths in 60 patients. As the operation is not dangerous, especially when done with the patient under local anesthesia with a minimum of gas-oxygen and with the aid of chemotherapy, they stated their belief that it is humane to operate and relieve the patient's pain—thus allowing more effective nursing of the pulmonary condition in the lateral and Fowler positions.

Certainly it is true, as King[6] stated, that never before have so many fractured femoral necks been treated with the object of obtaining osseous union, and yet the general mortality has not been increased by operation, but actually decreased. It is fair to conclude, then, that because of the comfort which it gives the patient and the minimum of risk involved, hip nailing is indi-

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Read in a panel discussion on Fractures of the Upper End of the Femur before the Section of Orthopedic Surgery, at the Ninety-sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

1. Whitman, R.: A New Method of Treatment for Fracture of the Neck of the Femur, Tr. Orthopaedic A. 1902, No. 15, pp. 338-352.
2. Smith-Petersen, M. N.: Intracapsular Fractures of the Neck of the Femur—Treatment by Internal Fixation. Arch. Surg. 23:715-759 (Nov.) 1931.
3. Platt, H.: Brit. M. J. 2:89 (July 11) 1936.
4. Watson-Jones, R.: Fractures of the Neck of the Femur, Brit. J. Surg. 23:787-808 (April) 1936.
5. Groves, E. W H.: Fractures of the Neck of the Femur. Brit. M. J. 2:491-493 (Sept. 14) 1935.
6. King, T.: Closed Operation for Intracapsular Fractures of the Neck of the Femur, Brit. J. Surg. 26:721-748 (April) 1939.
7. Lloyd, E. I., cited by King.[6]
8. Brittain, H. A.: Fractures of the Neck of the Femur, Brit. M. J. 1:773-775 (April 9) 1938.
9. Thornton, L., and Sandison, C.: Recognition of the Modern Treatment of Broken Hips, South. M. J. 29:456-460 (May) 1936.

cated for all patients, irrespective of their age, who have a fracture of the neck of the femur—provided that they are not acutely or hopelessly ill.

PROPER TIME FOR OPERATING

There has been a great difference of opinion among surgeons as to the proper time for operating in these cases, varying from immediate operation as an emergency procedure to waiting three weeks, in order to assess the patient's physical status and escape the high early mortality associated with fractures of the hip. So far as end-results are concerned, there seems to be no appreciable difference between those patients operated on immediately and those operated on within a two or three week interval. In fact, Eyre-Brook and Pridie[10] reported osseous union in patients whose hips were nailed as long as thirty-three days after injury. Nevertheless, it seems logical to assume that the sooner the broken hip is nailed, the sooner will the patient be made comfortable, and the sooner will an improved circulation be established at the site of the fracture. Also, by early insuring the patient more freedom of activity, numerous complications may be avoided during convalescence.

Most writers on this subject agree that as soon as the patient is declared suitable for operation the procedure should be carried out. No mad rush is advocated, but a delay of more than one week is not generally considered advisable.

TYPE OF ANESTHESIA

There is apparently no uniformity of opinion among surgeons as to the ideal form of anesthetic to be used during the operation for fracture of the neck of the femur. Practically every kind of an anesthetic is mentioned by various writers, and none in particular is condemned. It is fair to state that, from data obtained in the recent literature, the majority of surgeons who treat this type of fracture use either spinal or some form of general anesthesia for patients under 60 years of age who are in good health. For the extremely old, feeble patients and in risky cases, however, their choice would be local anesthesia supplemented by gas-oxygen or ether at the time of the reduction of the fracture and during nailing, when complete relaxation is necessary.

TECHNIC OF REDUCTION

The importance of obtaining an accurate reduction in fracture of the neck of the femur cannot be overemphasized. Many surgeons have stated the belief that success or failure of treatment depends almost entirely on this one factor alone. Experience also would lead to the conclusion that the more accurate the reduction, the better the chances of union, and the poorer the reduction, the greater the chances of nonunion.

It behooves every surgeon who treats this fracture, then, to obtain the best possible reduction of it and, in order to do this, he must first study carefully its characteristic and distinctive features. This is not possible, as a rule, with the use only of the original roentgenograms, because in them the fracture lines are often overlapped and distorted, but after the use of traction for twenty-four or forty-eight hours, with the correction of external rotation of the limb, new roentgenograms can then be taken by a portable roentgen unit in both the anteroposterior and lateral planes, which will reveal not only the exact location of the fracture, but its obliquity and degree of comminution. It is most essential to have this data prior to operation, since such information often will determine the kind of manipulation that will be most effective in the reduction of the fracture.

It might be well to mention here the possible danger of overpulling by means of preliminary traction. Only moderate traction is necessary, as a rule. Thus, a 6 or 8 pound (2.7 or 3.6 Kg.) weight with Russell traction would be ample, depending on the size of the patient, and skeletal traction should never be required. The danger in overpulling is that the torn capsule may become stretched and elongated and that the femoral neck and head cannot then be controlled by the usual reduction maneuvers. King[6] found this to be true in a case in which finally open reduction was necessary.

As was mentioned, a careful study of the patient's roentgenograms after preliminary traction will aid in determining the proper manipulation maneuver to employ for reduction. In a great many instances, this will mean that only light manual traction on the limb, followed by internal rotation, is all that is necessary. In other instances, where a rotation of the fragments has to be corrected, the Whitman[1] method of reduction—extension, internal rotation and abduction—may have to be carried out.

If, in addition to a rotation deformity, there is overriding or shortening of the femur, then frequently the Leadbetter[11] method—hip flexed to 90 degrees, upward traction in the axis of the flexed thigh, together with slight adduction of the femoral shaft, followed by internal rotation of the thigh to 45 degrees, then circumduction into abduction, maintaining the internally rotated position—will be more effective. Many surgeons use the Leadbetter maneuver routinely for all types of central fractures of the neck of the femur, but it is perfectly apparent, that, since no two fractures are identical, it is unreasonable to expect that any single method of reduction will be suitable or adequate for all fractures of the femoral neck.

An attempt should be made at the time of reduction to procure a valgus position of the broken fragments of the neck, if this is at all possible, since the position of valgus creates a "pressure" rather than a "shearing" force at the line of fracture and will aid in securing union. A little additional pull on the leg will sometimes accomplish this by causing the femoral head to rock into a position of valgus, which is advantageous, but too much traction—just as too much abduction—can have a detrimental and deforming effect. One must be careful about the degree of abduction and not overdo it.

Whether the reduction is satisfactory must be determined by clear roentgen views of the fracture, both in the anteroposterior and lateral planes, which requires considerable time and is one of the chief bugbears in the treatment of this fracture. Just a passing glance at the wet roentgen films is not sufficient; neither are indistinct and uncertain outlines of the femoral head and neck to be considered acceptable. One must exercise patience at this stage of the procedure and insist on accuracy—both as regards bone detail in the roentgenograms and reduction of the broken fragments. Should any deformity remain after reduction, further manipulation must be carried out, until the deformity is completely corrected. This may require various maneuvers and tax the skill of the operator to its utmost, but unless the reduction is accurately obtained the operation of nailing or pinning should not be carried out, unless done by the open method—which will allow manual reduction under direct vision.

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[10] Eyre-Brook, A. L., and Pridie, K. H.: *Intracapsular Fractures of the Neck of the Femur: Final Results of seventy-five Consecutive Cases Treated by the Closed Method of Pinning*, Brit. J. Surg. 29:115-138 (July) 1941.

[11] Leadbetter, G. W.: *A New Method of Treatment for Fracture of the Neck of the Femur*, J. Bone & Joint Surg. 15:931-940 (Oct.) 1933.

Probably the most difficult and unsatisfactory fracture of the femoral neck to reduce is the subcapital vertical type, in which the inferior edge of the proximal fragment projects as a spur or prong below the corresponding surface of the distal fragment (fig. 1). Such a fracture allows mechanically the greatest amount of "shearing" force possible, and for this reason, as well as the difficulty of obtaining an accurate reduction, it often fails to unite following nailing.

McElvenny[12] recognized the importance of this type of fracture and urged extreme care in its reduction, making certain that the distal fragment of the neck be placed well below and mesial to the proximal fragment. To accomplish this, it may be necessary to reverse the usual reduction maneuver and, after placing heavy traction on the leg in order to draw down the distal fragment, to adduct the limb so as to allow the spur portion of the proximal fragment to engage the distal fragment at a point above, and not below, its inferior border (fig. 2). This maneuver, followed by abduction, will impact the two fragments in a position that will produce less of a shearing force and more of a pressure one. Other surgeons, when confronted with this vertical type of fracture of the neck, are inclined to agree with King[6] that a bone graft should be used at the time of operation, in addition to the Smith-Petersen nail (fig. 3). McMurray[13] and a few others would immediately resort to an osteotomy rather than nail this type of fracture, which gives so little hope of future osseous union.

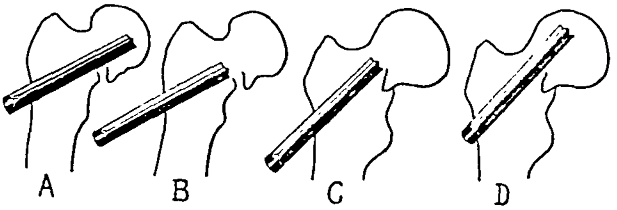

Fig. 1.—A, vertical type of fracture, with spike attached to caput femoris; bad prognosis, even with nailing. B, nail withdrawn to fracture line preliminary to manipulation. C, following manipulation (fig. 2) spur of caput femoris has been locked and impacted in cancellous bone of distal fragment. D, nail driven home.

After an accurate reduction has been obtained, some means of maintaining it during the process of nailing or pinning must be employed. Some use a fracture table for this purpose; others skeletal traction; others find manual traction by an assistant adequate and satisfactory. The advantage of having an assistant hold the involved leg is that, in addition to maintenance of the femoral shaft in the proper degree of internal rotation and abduction, the knee can be flexed and held at a right angle—thus helping to lock the fragments of the head and neck in position, by tightening the extensor group of thigh muscles.

It might be mentioned here that only a few fracture clinics in the world continue, at the present time, to reduce fractures of the neck of the femur by the open, operative method. Smith-Petersen,[2] who was the first to advocate this method, gave it up as a routine procedure in 1934 for the closed, extra-articular technic suggested by Westcott[14] and known as "blind nailing."

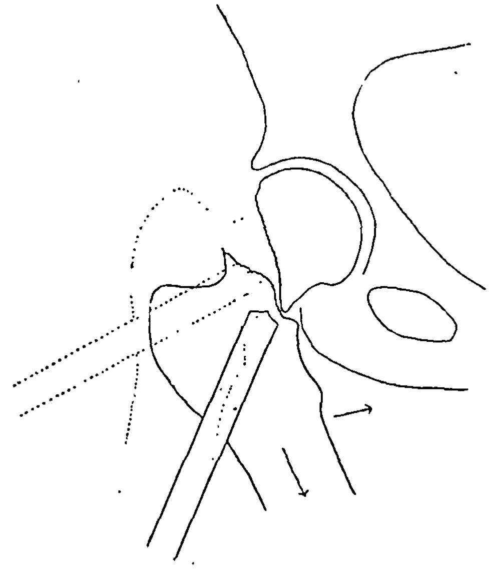

Fig. 2.—Diagram of manipulative procedure. Shaft of femur is pulled down and adducted in order to lock spur of caput femoris inside cortex of distal fragment. The fragments are then impacted by abducting the leg.

More recently, in 1935, Mr. R. Watson-Jones[15] of Liverpool, who was a strong advocate of open nail fixation, has also abandoned this method in favor of the "blind" operation—not so much on the grounds of simplification of technic as on the conviction that the less the fracture site was disturbed by the surgeon, the better. Most surgeons feel that a satisfactory reduction can usually be obtained by the closed method and that the "blind nailing" procedure produces the least amount of trauma to the patient and the least disturbance of the circulation at the site of fracture. The chances that

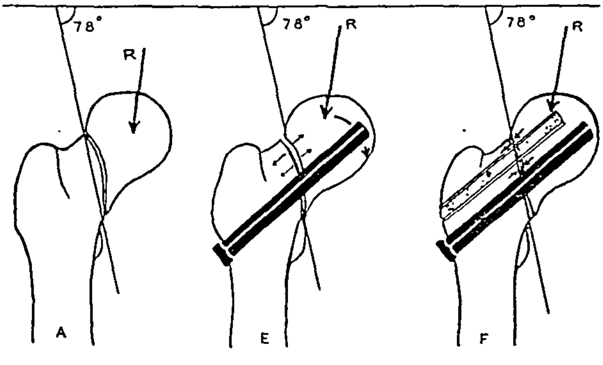

Fig. 3.—A, vertical type of fracture with fracture line 78 degrees to the horizontal; most difficult type to treat successfully. E, same fracture following reduction and nailing; shearing force still too great for successful healing. F, same fracture with additional insertion of a fibular graft to aid in fixation and union (King's method).

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[12] McElvenny, R. T.: Roentgenographic Interpretation of What Constitutes Adequate Reduction of Femoral Neck Fractures, Surg. Gynec. & Obst. 80:97-106 (Jan.) 1945.

[13] McMurray, T. P.: Fracture of the Neck of the Femur Treated by Oblique Osteotomy, Brit. M. J. 1:330-333 (Feb. 12) 1938.

[14] Westcott, H. H.: A Method for the Internal Fixation of Transcervical Fractures of the Femur, J. Bone & Joint Surg. 16:372-378 (April) 1934.

[15] Watson-Jones, R.: Fracture of the Neck of the Femur, Brit. M. J 2:235 (July 31) 1937.

a portion of the joint capsule will become interposed between the bone fragments after reduction, are so rare that this possibility, in itself, is not considered an adequate argument for the necessity of routine open reduction.

If, despite one's best and repeated efforts, an accurate reduction of a central fracture of the femoral neck cannot be effected, then two courses of procedure remain open to the operator—an open reduction or some form of osteotomy. McElvenny prefers immediate osteotomy if he fails to reduce the hip fracture or is in doubt as to the effectiveness of the reduction, while others prefer a trial at open reduction in such cases before resorting to either osteotomy or some form of reconstruction operation.

TECHNIC OF OPERATION

Here the old dictum "Every man to himself" applies with more than a grain of truth, for hardly any two fracture clinics in the world employ identical technics in the operation of internal fixation of hip fractures. It is not the purpose of this paper to discuss the relative merits of these numerous and various technics, or to mention all the materials used for internal fixation—such as lock bolts, stud bolt screws, lag screws, nails, various kinds of pins, wires and bone grafts. Nor will I be permitted in the time available to speak of the dozens of ingenious guides that have been invented for placement of the guide wire or Smith-Petersen nail.

The impression one gets in reading about so many of these different technics and pet gadgets is that the treatment of these fractured hips has become much too highly specialized and that a need for standardization is real. It is hoped that with the continuation of study on the end results of these fractures by orthopedic association committees one or two methods will be found so outstanding in their superiority that they alone will eventually be employed and standardized.

For the purpose of this paper, I will confine my remarks on the subject of operative technic to the type of procedure that is now used by the majority of the orthopedic staff at the Massachusetts General Hospital with the Smith-Petersen nail. Most of us used a guide wire technic, but Smith-Petersen and a few others prefer nailing without the guide wire.

Procedure.—The patient is anesthetized on an ordinary operating table, with an x-ray cassette or tunnel under the hips, after which the unaffected leg is flexed at the hip and its lower end comfortably placed on the arm of a portable x-ray machine that rests between the patient's legs and is aimed at the opposite, broken hip. The operator then carries out his reduction maneuver on the broken leg, placing it finally in the hands of an assistant, who is sitting beside the operating table and facing toward its head. While the assistant puts light traction on this leg in a position of slight abduction and internal rotation and with the knee flexed at right angles, roentgenograms of the fracture are obtained in both anteroposterior and lateral planes. This requires the use of two portable x-ray units, one previously placed under the good leg for the lateral view and the other a movable unit which can be swung over the hip area when needed for the anteroposterior view.

If the reduction of the fracture is considered to be satisfactory, the skin of the operative field is then prepared and draped, and the operation continued; if not satisfactory, the manipulation is repeated, being governed by the degree and character of the deformity remaining.

After accurate reduction and preparation of the operative field, a lateral incision about 5 inches (12.7 cm.) long is made over the greater trochanter and carried down to bone through the split fibres of the vastus lateralis muscle. This exposure allows ample room for the placement of the Smith-Petersen nail, and after the point for penetration of the cortex is determined, Westcott's[14] protractors or an anatomic marker is used for estimating the angle at which a 3/32 inch (0.48 cm.) guide wire should be introduced into the femoral neck and head. Care is taken not to drill this wire so deeply so as to penetrate the joint cavity. New roentgenograms are now taken in both planes to determine the location of the guide wire and whether it is placed properly—by which I mean through the lower half of the neck, parallel to the calcar femorale and centering in the proximal portion of the femoral head in both planes. A Smith-Petersen nail marker is then threaded over it and small cuts are made deeply into the femoral cortex with a fine osteotome, corresponding to the flanges of the nail. A cannulated nail of correctly measured length is now substituted for the marker and driven home over the course of the guide wire. Impaction of the fracture is then done, and a final set of roentgenograms taken to make sure that the nail is well centered and of proper depth, and that no distortion or angulation of the head has occurred.

If the roentgenograms show the first guide wire to be incorrectly placed, successive wires are introduced at the estimated proper angle and distance and new roentgenograms taken, until the operator is absolutely satisfied with the final position. Not until then should nailing proceed, keeping in mind Mr. Eric Lloyd's aphorism, "The bad results of nailing are the results of *bad nailing.*"

Whenever a fluoroscopic table is available in the operating room, I prefer to do the reduction and fixation on it. The table x-ray unit is utilized for anteroposterior views and a portable unit is used for the lateral views. Direction of the guide wire is facilitated by inserting it under intermittent fluoroscopic vision, which is controlled with extreme care and requires only a second or two. The position is then checked in both planes by ordinary roentgenograms. A roentgenologist, or trained associate, supervises the fluoroscope and judges the direction and depth of the guide wire and nail. The operator checks all necessary observations, however, by clear roentgenograms. This arrangement saves a great deal of time and, in my experience, is the ideal technic for hip nailing. In one sense, it is a two man job, but because of this team work, fewer errors are made and greater accuracy is obtained.

POSTOPERATIVE CARE

The postoperative care of patients whose hips have been nailed varies tremendously in different clinics, from no external support of any kind for the hip following operation to protection in bed with leg traction for periods up to three months. A few surgeons prefer to get their patients up the day of operation or the following day, and one has stated that "in a few hours the patient is ready for a wheelchair and may at once, if so disposed, enjoy the use of crutches." Such heroic measures are, fortunately, not endorsed by orthopedic surgeons in general. I agree with many of my colleagues, who term such drastic procedures "stunt surgery." To be sure, it may be necessary on rare occasions gently to lift a feeble patient into a chair for short periods of time, being extremely careful to support the affected leg, but as a rule this is neither necessary nor advisable.

Watson-Jones[9] protects the operated leg in bed by attaching a wooden crossbar to the heel of the patient's slipper or shoe, which necessitates the leg's resting flat on the bed at all times, and prevents any external rotation. He expressed the belief that traction in a Thomas splint is dangerous in these cases, because of the long leverage that can place strain on the hip. Eyre-Brook and Pridie[10] use no external fixation of any kind, but allow the leg to rest on a pillow.

Still others, as McElvenny,[12] have stated their belief that no attempt should be made to hurry these patients out of bed; if the patients have done well in bed, McElvenny keeps them down from three weeks to twelve weeks—depending on their age, size and ability to handle themselves. Exercises and physical therapy were started about the fourth postoperative day, however.

The practice in the Massachusetts General Hospital Fracture Clinic has been to place these patients, after their operation, back in traction for one month, then to remove the traction, but to keep them in bed for another two weeks. At the end of six weeks, they are taught to walk with crutches, allowing the foot of the affected leg to touch the floor but not to bear any real weight. No walking caliper splints have been used. Subsequent roentgenograms determine whether full weight bearing shall be permitted at the end of four months, or later. In most cases, it is considered safer to wait until at least six months have elapsed before discarding crutches. In other words, we feel, as does Watson-Jones,[4] that early weight bearing is not imperative and may be dangerous.

PROGNOSIS

In order to discuss the prognosis of these fractures, a word or two should be said about their classification. Many classifications have been suggested for fractures of the femoral neck, particularly according to their location, but the only difference among them all is in the names, not the location. Suffice it to say that most writers now speak of the three main regions of the femoral neck relating to fractures as being the subcapital, central and basal, and the subdivisions of each fracture as being either horizontal, oblique or vertical in type, with or without comminution.

It is common knowledge that not only the location, but the nature of the fracture itself has a great deal to do with its reaction to treatment. Basal fractures, for instance, if accurately reduced and fixed adequately, will invariably unite. The same can be said of impacted fractures, although it must be remembered that roentgen evidence alone of impaction is not adequate or reliable grounds for an absolute diagnosis of this condition.

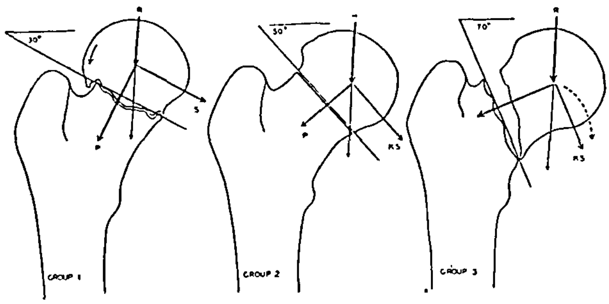

Fig. 4.—Group 1, impacted type of fracture; fracture line less than 30 degrees to the horizontal; no shearing force; good prognosis. Group 2, fracture line 30 to 50 degrees to the horizontal; some shearing force; requires accurate reduction and perfect nailing. Group 3, fracture line 50 to 90 degrees to the horizontal; prognosis bad, even with nailing. This type of fracture should be grafted in addition to nailing, or else be treated by osteotomy. (From Pauwels.[10])

F. Pauwels,[16] in his excellent monograph, "Der Shenkenhalsbruch, ein mechanische Problem," expressed the view that the obliquity of the fracture line is of paramount importance, so far as prognosis for osseous union of the fracture is concerned. For instance, he divided central neck fractures into three groups (fig. 4): (1) impacted fractures (fracture line less than 30 degrees to the horizontal) in which no shearing force occurs; the prognosis is good and no nailing is necessary; (2) fractures with their obliquity line between 30 and 50 degrees to the horizontal, in which there is some shearing strain unless the fracture is nailed; (3) vertical fractures, in which the obliquity of the fracture line is from 50 to 90 degrees to the horizontal. In these latter fractures, a long beak or spike is usually attached to the inferior edge of the caput femoris, and the prognosis is bad, even with nailing, unless a solid fibular graft is also used in the upper third of the femoral neck (fig. 3).

Pauwels' theory has had far reaching influence, not only in Germany, but in England and Australia as well. Here in America, a similar idea has been suggested by McElvenny,[12] and all of us who deal with this problem surely feel as do Thomas King,[6] A. L. Eyre-Brook,[10] K. N. Pridie [10] and others that Pauwels' group 3 fracture, the vertical type, presents the most difficult problem of all to solve. Eyre-Brook and Pridie[10] found that they had no complications in any of their fractures of the femoral neck that had an obliquity angle of less than 53 degrees to the horizontal, and they expressed the opinion that the importance of this angle clearly outweighs nearly every other factor and should control the treatment given (fig. 5). In other words, they stated their belief that when the obliquity angle is over 70 degrees to the horizontal (50 to 90 degrees, Pauwels), some modification of the pinning operation should be employed—either the addition of a bone graft or a subtrochanteric osteotomy to decrease the obliquity angle.

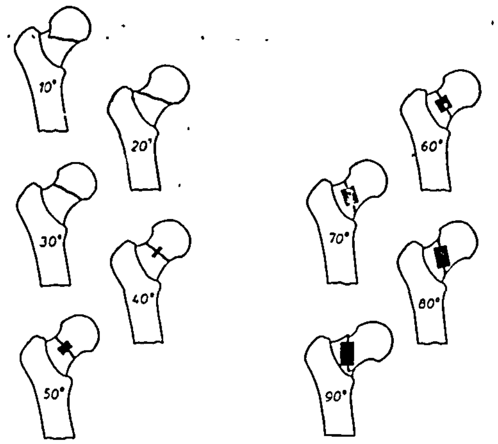

Fig. 5.—Fractures of the femoral neck with different angles of obliquity. When the angle is less than 50 degrees to the horizontal, the prognosis following nailing is good; when it is more than 50 degrees to the horizontal, the prognosis with nailing alone is poor, and there should be a bone graft as well or an osteotomy should be performed. (From Pauwels.[10])

Pauwels' work is most impressive and has led many surgeons throughout the world to consider seriously whether the end result of fractures of the femoral neck is not controlled by the nature of the fracture almost as much as by the surgeon and his nail or pins.

Another important influence affecting the prognosis of fractures of the femoral neck from the point of view of life expectancy is nursing care. We are all aware that these aged patients can and do survive the operation of hip nailing surprisingly well and can live on after it, provided they have excellent nursing care, but as soon as they are deprived of a high standard of hospital nursing and are sent away to a nursing home or to other institutions for the aged, they begin to fail and soon die.

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16. 'Pauwels, F.: Der Schenkenhalsbruch, ein mechanische Problem monograph.'

Thus far, an attempt has been made to survey various factors that enter into the treatment of acute fractures of the neck of the femur. Just how much we have accomplished, how successful we have been and how much further we have to go in order to solve our problem will be learned from the papers that deal with end results and which are now to follow in this symposium.

CONCLUSION

In closing, it would seem fitting to enumerate the following things that we have learned about the treatment of acute fractures of the neck of the femur since the advent of the hip-nailing operation sixteen years ago: (1) that age is no contraindication; (2) that the optimum time for operation is within one week of the injury, and the earlier the better, all things being equal; (3) that accurate reduction of the fracture is of paramount importance, since the more accurate it is, the better the chances of union, and the poorer the reduction, the greater the chances of nonunion; (4) that skeletal traction or a traction table is not necessary to reduce fractures of the neck of the femur or to maintain the reduction while they are being nailed; (5) that, after manipulation and reduction of the fracture with the patient under anesthesia, manual holding of the fractured leg by an assistant, with the thigh extended, the knee flexed at right angles and internal rotation and abduction of the femoral shaft, is adequate; (6) that the most difficult fracture of the femoral neck to reduce and treat successfully is the subcapital, vertical type; this being so, its treatment by nailing should be supplemented by bone grafting, or else some form of osteotomy should be performed; (7) that fixation materials (nails, screws, pins, etc.) should be made of metals which produce no ionization in the tissues; (8) that arthrotomy is not necessary for nailing the majority of fractures of the neck of the femur; (9) that the operation can be performed with little trauma or shock; (10) that the proper position for the Smith-Petersen nail is along the lower half of the femoral neck, its sharp end centering in the proximal portion of the head of the femur in both the anteroposterior and lateral planes; (11) that the lateral roentgen view is indispensable in determining the reduction of the fracture and the placement of the nail; (12) that it is rarely necessary to drive the guide wire across the joint line into the acetabulum in order to control rotation of the femoral head when nailing; (13) that if multiple wires or pins are used for internal fixation of the fracture some form of retention apparatus—such as a nut threaded on the ends of the wires—must be employed to prevent them from wandering out of their position; (14) that patients can be gotten out of bed the day of operation or the day following, but that this procedure is not necessary as a rule, is often ill advised and should be employed only in exceptional instances; (15) that the prognosis of fractures of the neck of the femur depends, to a large extent, on their location, their obliquity, and nursing care; (16) that, according to the most reliable reports in the literature, internal fixation methods of treating fractures of the neck of the femur result in a higher percentage of bony union and a much lower mortality than do other methods such as those of Whitman, Roger Anderson, well leg traction, Carl P. Jones traction and the Wilkie boot.

MANAGEMENT OF THE TROCHANTERIC FRACTURE OF THE FEMUR

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Many erroneous concepts are common as regards fracture of the trochanter. Perhaps that most frequently met is that the trochanteric fracture is a simple lesion, easily handled and usually with good result. Under such a concept a good result must be accepted as that in which the patient escapes with life and deformity. Disability and discomfort during the final ensuing years are disregarded. Only on a percentage basis of an adequate number of cases treated may one rightly draw conclusions as to what constitutes the best mode of treatment with the most satisfactory results obtainable. In a recent survey of 133 consecutive cases treated on the orthopedic service at St. Luke's Hospital this lesion was shown not to be simple and not to eventuate routinely in a satisfactory result. Percentages of results could be and were estimated from this group. Often bitter experience led to the conclusions. These we shall later enumerate.

Patients with this fracture are an elderly group. Their average age is above 75 years. This places their age as more than twelve years above that of the average of patients with intracapsular fractures of the neck of the femur. Few years of life expectancy are left. Ninety per cent of the patients are women, a fact probably explained by the less rugged bony structures and usually more pronounced atrophic osseous changes in women. As would be expected, these old persons represent a veritable museum of pathologic changes aside from their fracture. Serious and commonly associated lesions include cardiac, diabetic and senile mental changes. Renal lesions, crippling arthritis, syphilis, carcinoma, hemiplegia and many other afflictions of the aged are present. A "good risk" for any form of treatment is a rarity.

TYPE OF INJURY PRODUCING THE FRACTURE

Injury is generally trivial, consisting of a simple fall, tripping over a rug, slipping out of a chair, etc. Occasionally direct violence is responsible. Most fractures of this type occur by dissolution of continuity of bony structures preceding the fall and are not the result of the fall. Perhaps the main contributing factor to such injury lies in the elderly person's inherent instability while erect and her slow reflex response. Despite the poor outlook for these patients, their response to rapid and definitive treatment for the relief of pain and spasm is good. Their resistance even to rather extensive surgical procedure when rapidly carried out and bolstered by supportive measures is excellent.

FACTORS MODIFYING THE MODE OF MANAGEMENT

There can be no question but that on a countrywide basis all such patients cannot be treated alike to secure the most favorable results. Many such fractures must of necessity be cared for in small or rural communities

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Read in a panel discussion on Fractures of the Upper End of the Femur before the Section on Orthopedic Surgery at the Ninety-sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

where transportation is impossible and surgical help unobtainable. The experience of the available medical and surgical personnel must always have a strong influence on the mode of treatment to be selected. The equipment available is not such an important factor, since any of the hereinafter enumerated methods of treatment may be used, even in a small home in a farming community, except that of open reduction and fixation.

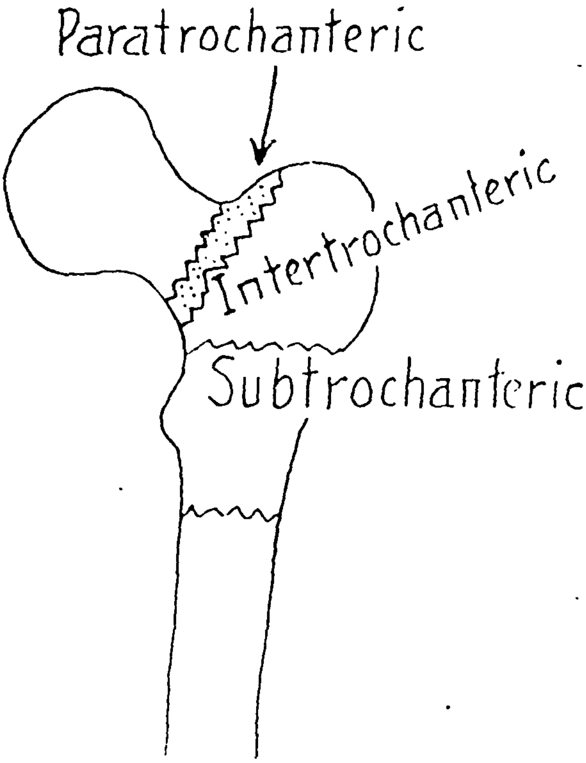

Fig. 1.—Trochanteric fractures may be roughly divided into three main classes, depending on the location of the major point of bony injury.

The type of trochanteric fracture (fig. 1) will to some extent influence the mode of treatment. It will, however not so greatly influence the mode of treatment as it will the end result to be secured and the length of time required for union. The paratrochanteric fracture will tend to result in a final external rotation deformity The pertrochanteric fracture may evantuate in shortening with external rotation deformity. The subtrochanteric fracture will tend to be difficult to control and finally may result in rotation deformity, shortening and angulation.

MODES OF TREATMENT

Simple support by sandbags, pillows, etc. has long been used in the past for these fractures and still is occasionally used. Splinting the broken extremity to the opposite well leg likewise is occasionally accepted. Both measures are antiquated. Though occasionally still employed because of a fatalistic outlook that certain patients cannot recover and that facilities of nursing and care cannot be obtained, they should be discarded completely.

A simple Buck extension or adhesive leg traction may be condoned. It is, of course, unacceptable where facilities for other forms of treatment exist, but will give relief from pain and spasm. It will allow a certain amount of motion of the patient and facilitate nursing care. This simple traction is easily understood by the family and friends, and if properly applied and occasionally supervised may lead to a favorable result. For rural communities and for the patient who because of stubbornness, senility or other reason refuses to leave his home, it is adequate, though barely so.

Russell's balanced traction, though it seems complicated at first to the uninitiated, may be readily understood and is easily applied. Where more advanced treatment is impossible, it provides the same comfort as simple traction and a far better outlook for recovery without crippling deformity. This method of applying traction has come into such widespread use that, pending other facilities for the treatment of these patients, there is but little excuse for not employing it even under decidedly adverse situations. The last two modes of applying traction are simple, promote comfort and, to a considerable extent, provide adequate management of the patient. They do not provide for mobilizing the patient.

Well leg traction may be applied by numerous forms of apparatus or, indeed, with no apparatus at all save for plaster bandages and a basswood splint. Adequate well leg traction necessitates one simple surgical operation. Traction cannot be satisfactorily applied over a long period of time merely by boot application and traction on the injured limb through the pressures exerted by the boot on the foot. Transfixion of the injured femur with a Steinman pin to be incorporated in the upper portion of the traction boot is a necessity. Sterile procedures in the insertion of this pin and adequate dressings are of primary importance. Not only this, but at time of removal of the pin adequate sterile procedures must be provided to avoid infection. Immobilization of uninjured joint structures results from the use of this method and greatly complicates the postoperative period of recovery and eventual outcome. For this reason, though we used the method for three years in consecutive cases at one institution, and sporadically at many others, we have discarded it and would discourage its application. Russell traction is fully as adequate, is much simpler and produces many less complications. Well leg traction has one advantage that methods previously mentioned do not. With such apparatus in place the patient is transportable either from bed to bed or from house to house. Despite this the unfavorable aspects outweigh this advantage.

One may not disregard the plaster spica advocated by Whitman and its use for the trochanteric fracture. By this method the patient for the first time may become ambulatory. The same faults, however, appear as in the use of well leg fraction. Joints are immobilized and stiffened over weeks and months. Though union may be obtained, the results are better with balanced traction and far better with internal fixation. Not only this, but frequently the patient with a spica does not become ambulatory, and, if the patient be obese, cast retention may be impossible. After the chest, abdomen and extremity have been covered with a cast, other complicating lesions can neither be studied and evaluated nor treated. One would hesitate to discard the use of this form of treatment entirely, since under certain circumstances and in the favorable type of patient its use might prove of great worth either temporarily for transportation purposes or permanently where necessity decreed.

INTERNAL FIXATION

Internal fixation in treatment of such fractures at first gained whirlwind acceptance and as rapidly declined in favor. The problems and disadvantage of fixation by wires, threaded wires, pins, screws and screw apparatuses rapidly forced it into the discard. Surgeons returned to an acceptance of balanced traction, well leg traction or the plaster spica. Then, following the demonstration of successful use of the Smith-Petersen three-flanged nail for intracapsular fractures of the neck of the femur, experimentation with a similar nail plus an attached or attachable plate for trochanteric fractures gradually developed. This form of treatment we now favor for routine use wherever surgical experience, equipment and outlook for continued existence of the patient make it possible.

RESULTS OF INTERNAL FIXATION AND TRACTION COMPARED

We have recently completed a survey of what we believe to be the most favorable form of conservative treatment of the trochanteric fracture, namely, balanced traction, and of internal fixation with the three-flanged nail. The nail used has a solidly affixed plate as designed by Jewett for fixation of the head and neck portion of the fracture to the shaft. A 94 per cent follow-up of 133 consecutive cases was carried out. One group of 38 patients treated by traction was compared with a second group of 95 patients treated by internal fixation. The final result is accurately known in all of the latter group. The study covered an eight and one half year period. The great bulk of the fractures were pertrochanteric (fig. 2) and generally comminuted (80 per cent). The rest were subtrochanteric (fig. 3), paratrochanteric (fig. 4) and combinations of the foregoing.

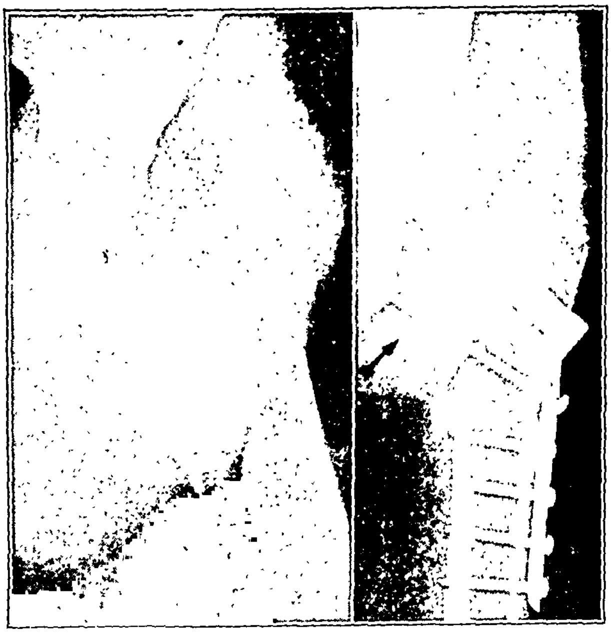

Fig. 2.—Pertrochanteric tractures constitute the majority. Nail placed in the lower portion of the head and neck and centered on lateral view (not shown) constitutes optimum position. Lesser trochanter can occasionally be affixed in place. The photograph on the right was taken seven weeks postoperatively.

Decision to attempt internal fixation as a method, replacing balanced traction, was made on a review of the records of the traction patients. A great many unsuspected complications appeared on their follow-up. Despite excellent nursing care, pressure sores over the sacrum and buttocks were the rule rather than the exception. Cystitis, bladder complications, residual stiff knees, hip contractures, permanent vascular changes, peroneal nerve palsies, muscle atrophy, senile psychoses, prolonged general inanition and debility and a high mortality were disclosed. A critical follow-up review shattered our complacency as regards the efficacy of conservative treatment and the end results secured. From past experience with the use of internal fixation with wires, screws, pins, etc., we were not sure that improvement could be gained with the angled nail. Despite this, trial seemed warranted. The flanged nail was chosen since the simple straight nail was unsatisfactory as inapplicable to the vast majority of these comminuted or displaced fractures. Pins, threaded pins, wires and screws had been discarded years previously as lacking stability. The three-flanged nail with plate affixed by nut or bolt was found to lack stability at the junction of nail and plate, and after trial was discarded. The Jewett nail was finally used and with a few minor structural changes has proved acceptable. It should be of "vitallium" or other nonelectrolytic metal. For satisfactory application such nails must be at hand with

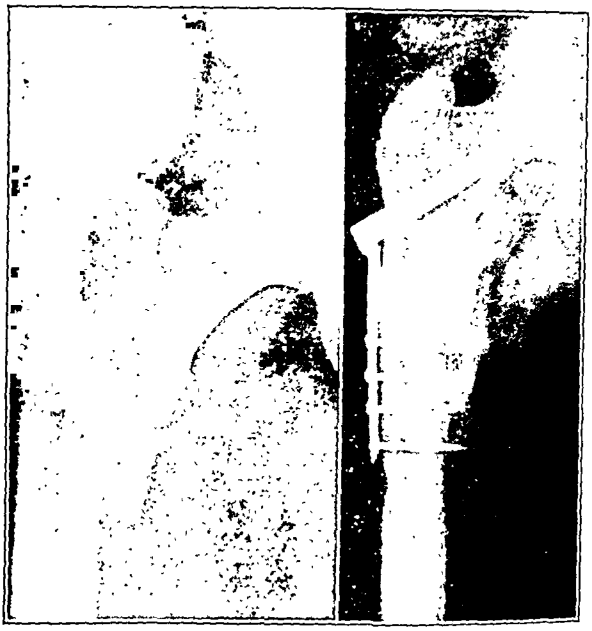

Fig. 3.—Subtrochanteric fractures, so difficult to maintain in position are easily held by the Jewett nail. The photograph on the right was taken four and one-half months postoperatively.

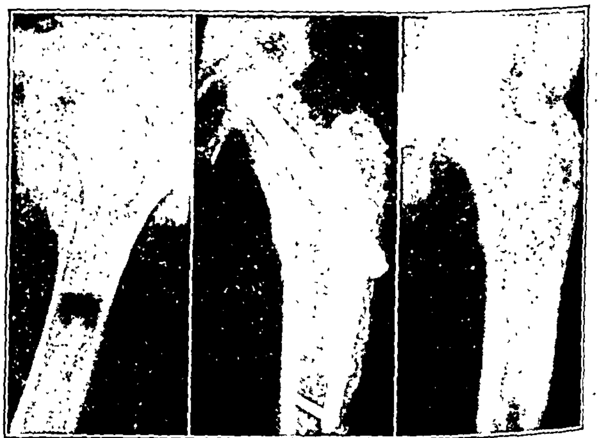

Fig. 4.—Paratrochanteric fractures reduced by the nail are maintained without deformity of neck angle or rotation. Nails occasionally may be removed though usually are left in situ. The center photograph was taken nine months postoperatively, and the photograph on the right two and one-half years.

three angles and in two lengths to accommodate the various types of fractures. With such nails the comminuted paratrochanteric and intertrochanteric fracture can be adequately stabilized as well as the subtrochanteric or high femoral shaft type of fracture, which is so difficult to control. Even in those rare fractures in which both the neck of the femur and the trochanteric region are involved, stability may be secured. While reduction and fixation of the lesser trochanter is not a necessity, it too can frequently be affixed by this apparatus. Where nailing is properly done no coxa vara or external rotation deformity will develop unless the nail breaks, bends or pulls out of the bone. The nail most frequently used is angled at 130 degrees and is of 3 inch (7.6 cm.) length.

To secure operative speed, and speed is essential, a surgical and roentgen team must work together. Mechanical details of reduction and nailing have been published elsewhere.

POSTOPERATIVE CARE

After operation patients are replaced temporarily in light traction pending application of a Thomas brace with pelvic band and knee lock. Continuance of such a brace until solid union is obtained is essential. Early full weight bearing with the brace is neither necessary nor advisable. Crutch ambulation with minimal weight bearing can rapidly be permitted. Union rarely occurs before three months and sometimes is not complete up to seven months. This can be clearly shown by progressive protrusion of the nail through the neck and head as time passes. Too early or active weightbearing can encourage this protrusion. Allowance must be made for the progressive protrusion by selection of a nail which is not too long. We would urge that early mobilization of the patient is admirable but early full weight bearing may prove disastrous.

One must continuously remain aware of the fact that these patients are old and afflicted with many debilitating factors aside from their fractures. They have been badly injured and need especial nursing attention and care. Fluids by infusion, high protein intake, close attention to skin pressure points, indwelling catheterization for incontinence, frequent change of bed linens, rapid cessation of sedation, cardiac investigation, consultation and medical care must all be carefully carried out.

COMPLICATIONS

There have been complications from this method of treatment but far less frequent and much less devastating than those found in the conservatively treated group. Four infections occurred, two of minor importance, while two were gas gangrene resulting fatally. The patients are aged and the tissues devitalized, and unless care is taken considerable muscle damage may be done. Pulmonary embolus occurred but twice among 95 patients, both times eventuating in death. The source of embolus in 1 case was proved by autopsy to be in the uninjured leg. Postoperative pneumonia occurred in 2 patients and was successfully treated. Nails broke in 3 instances and were replaced. In 4 instances the nail tore out of the bone, twice through the side of the head and neck of the femur and twice pulling the screws out of the shaft of the femur. In 2 of these the nail was replaced and in 2 others union was obtained though with some deformity. Early weight bearing against advice or refusal to wear the brace accounted for these mishaps. No cases of nonunion or aseptic necrosis of the head of the femur have occurred.

The most annoying complication has been that of overdrive. Gradual perforation of the nail through the head occurs until union takes place. If too long a nail is used in the first instance and closely approaches the cartilaginous surface of the head, gradual protrusion during healing and union may occur with perforation of the head by the nail and impingement against the acetabular margin. We had not expected this situation and discovered it by follow-up roentgenogram. Most of the patients were asymptomatic though with some limitation of motion and development of traumatic arthritic change in the acetabulum. Removal of such nails has been simple and without operative complications. Such protrusion has been most frequent in the intertrochanteric comminuted type of fracture.

Comparative Hospital Mortality.—Under conservative traction treatment there was a hospital mortality of 36 per cent. In the cases in which nailing was done there was a hospital mortality of only 12.6 per cent. Hence three times as many patients died during their hospital care under conservative treatment as did when open reduction and nailing was employed.

Comparative Development of Senile Psychosis.—Development of severe senile psychosis is apt to occur in patients of this age group. Such a complication is almost worse than death, since it divorces the patient permanently from his family and yet demands continuing expensive care and a debased and suffering existence. In 11 per cent of the patients treated by balanced traction such psychoses developed, and they were transferred permanently to mental institutions. Of the patients who were operated on and whose fractures were supported by internal fixation only 2.1 per cent experienced similar psychoses.

Other Complications.—Other complications such as incontinence, cystitis, pressure sores, stiff knees, permanent vascular changes, peroneal nerve palsies, muscle atrophy and permanent hip deformities were found to be decidedly reduced in the group treated surgically.

SURVIVAL

Considering the advanced age of these patients as a group, not many can survive for more than a few years regardless of mode of treatment. However, on reviewing the patients we found that of those treated by traction only 32 per cent survived one year from the date of fracture. Contrast this with the 72 per cent who survived one year treated by internal fixation. By the end of the second year only 29 per cent of the traction-treated patients were alive, while 38 per cent of those treated by internal fixation survived. At the end of four years only 13 per cent of the conservatively treated patients were alive, while 30 per cent of those in whom nailing was done survived.

HOSPITAL SECLUSION

A long hospitalization has many disadvantages. On humanitarian grounds one may disregard expense, but on factual grounds for a large group of patients no institution management does so. Regardless of the factor of expense, the patients themselves do not care for prolonged incarceration. Traction-treated patients remained an average of fourteen weeks, while those with internal fixation stayed but eight weeks. Even this eight weeks' stay was a kindness rather than a necessity. Clearance of bed facilities for other desperately needy patients was greatly improved by surgical treatment

SELECTION OF CASES

It is difficult to select the case in which one refuses to use nailing in view of our experience. We have refused operation twice in the past two years. In both instances the patients could undoubtedly have been given the benefit of internal fixation. We believed both moribund; yet one lived eight days and the other twelve days in traction. Responsibility of not operating on these elderly patients is serious. Clearly these 2 patients had sufficient vitality to have withstood operative procedure. Perhaps had we nailed their fractures they might have lived. Even if operation were merely the means of keeping the patient comfortable during terminal stages and free of painful complication, it would be justified. The same experience has been found in these patients with trochanteric fractures as was found in nailing fractured necks of the femur. Frequently the patients survive despite adverse preoperative opinion. We now operate on and nail all intertrochanteric fractures.

SUMMARY

Because of circumstances regarding the location of the patient, the experience of the surgeon, and the equipment available, conservative treatment of the trochanteric fracture may be necessary. The best conservative treatment we believe to be balanced Russell traction.

Internal fixation with the Jewett nail, an angled appliance, has reduced hospital mortality to one third and development of severe senile psychosis to one fifth of that sustained by patients treated in traction. All other complications are sharply reduced. It has produced a four year survival rate over twice that of conservatively treated patients while greatly improving the functional end results of the survivors.

Surgical reduction and fixation of trochanteric fractures with the angled nail is difficult and requires experience. Certain complications such as progressive protrusion of the nail and tissue necrosis may be avoided by advance knowledge of their occurrence and care in their prevention.

Two Categories of Teachers.--Thomas Lewis clearly foresaw such a danger and warned against it; but it is clear that the presence in the modern medical school of two categories of teacher, the practising consultant and the salaried academic teacher, opens the door to this disastrous dichotomy. The practising teacher is familiar in his everyday work with the individual seen against the backgrounds of his home, his family, and his work. The full tide of human needs and distresses bears down daily upon him, and the arts and techniques of medicine are his constant and exhausting preoccupation. He may cease to look beyond them.

For the cloistered academic teacher life is different. He gets his patients washed and tidied and laid out in rows in hospital wards; their importunate and exacting wives and mothers-in-law do not intrude upon his profound cogitations. No unpleasant smells or noises break in on his ordered eloquence; house-physicians and nurses wait on his bidding and tremble at his voice, and all those seeming irrelevances that are so necessary to the balanced comprehension of the patient's total situation are carefully tidied away out of his sight. He does not miss them, for he has never known them. He is rather like the florist who can arrange the plucked blooms, from which the dead leaves and the dirty roots have been removed and the earwigs shaken off, into all the combinations of form and colour his fancy dictates.--Walshe, F. M. R.; Teachers of Medicine, *Lancet* 2:817 (Dec. 6) 1947.

MEDICAL MANAGEMENT OF THE PATIENT WITH A FRACTURE OF THE HIP

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Except in rare instances when younger persons receive severe and unusual trauma such as would occur in automobile accidents and the like, persons who sustain a fracture of the hip are adults in the older age group. The general medical management of these patients therefore resolves itself largely into a problem of geriatrics. To determine the incidence and the nature of the more common medical problems and complications encountered analysis has been made of all cases of fracture of the hip treated in the Hospital for Special Surgery during ten years ending December 1946.

Seventy-two per cent of the patients were women (table 1); the largest incidence occurred between 70 and 80 years. The average age of the women was 66 years, ten years older than the average age of the men and three years older than the general average. The differences in age between sexes is clearly shown in table 1. This appears to be because men are apt to sustain severe trauma in the course of their work at a younger age than the women, who usually fall about the house or in the street.

TABLE 1.—*Age Incidence of Patients With Hip Fractures*

Cases		Years 20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	Average Age
Male	47	2	6	7	11	11	5	5	0	56
Female	121	2	4	7	19	29	42	16	2	66
Total	168	4	10	14	30	40	47	21	2	63

Many patients were obese women in the postmenopause period. Significant osteoporosis was frequent and is undoubtedly important in the etiology of fracture. Most of these patients reported a "fall and fracture" One wonders whether in some instances the fracture may have occurred first and caused the fall. No doubt in most of the cases fall caused the fracture in bone greatly weakened by osteoporosis and with the added trauma of obesity which normal bone would ordinarily withstand.

Significant complications occurred in 17 per cent of all cases (table 2). No complications were encountered in patients under 40 years of age. The patients in all but 1 complicated case were more than 50 years old; the average age was 71 years. Again, the average age of the women was ten years older than that of the men. Fatal

TABLE 2.—*Age Incidence of Common Complications in Patients With Hip Fracture*

Cases	Total	Years 40-49	50-59	60-69	70-79	80-89	90-99
Diabetes	6		1	1	2	2(2)	
Decubitus	4		2		2(1)		
Pneumonia	7			2(2)	1(1)	3(2)	1(1)
Hypertension	6			2	4		
Pulmonary Embolism	4	1	2(1)	1(1)			

Total cases with complications: 29; average age: 71
Male: 7; average age: 64
Female: 22; average age: 74

Read in a panel discussion on Fractures of the Upper End of the Femur before the Section on Orthopedic Surgery at the Ninety-sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947

From the Medical Service, Hospital for Special Surgery, New York cases are shown in parentheses; all but 1 were in patients past 60 years. Note that 6 of the 7 patients with pneumonia and 2 of the 4 patients with pulmonary infarction died.

The incidence of arteriosclerosis is not statistically analyzed because frequently no comment was made concerning sclerotic arteries, although such must have existed in most of the patients past 60 years of age. Arteriosclerosis was diagnosed usually only when it was considered responsible for some other illness. Also, the incidence of obesity could not be accurately determined, for this diagnosis was made only when it was rather severe.

Common preexisting complications were obesity, diabetes mellitus, hypertensive vascular disease and arteriosclerotic·heart disease (table 3). None of these illnesses appeared to endanger the patient or cause death, but may make management of the patient difficult should infection or vascular accident occur. Diagnosis of renal and hepatic·disease was not encountered among the cases analyzed.

TABLE 3.—*Preexisting Complications in Patients With Hip Fracture*

	Number	Percentage
Obesity	10	6.0
Diabetes	6	3.6
Hypertension	6	3.6
Arteriosclerotic heart disease	5	3.0
General arteriosclerosis and senility	3	1.8
Paget's disease (bone)	1	0.6

The most important complications were those acute illnesses which occurred after the fracture (table 4). These were chiefly pneumonia, decubitus ulcers, phlebothrombosis and pulmonary embolism. It is significant that most of the cases of pneumonia and pulmonary embolism occurred in patients confined to bed.

TABLE 4.—*Complications Following Hip Fracture*

	Number	Percentage
Pneumonia*	7	4.2
Decubitus ulcer	4	2.4
Pulmonary embolism†	4	2.4
Thrombophlebitis	2	1.2
Inanition	2	1.2
Cerebral hemorrhage (traumatic)	1	0.6
Hypertensive encephalopathy	1	0.6
Anemia	1	0.6
Pulmonary embolism or coronary occlusion	1	0.6

*Four patients were bed patients at onset of infection; 1 in a wheel chair four days; 1 in wheel chair ten days.

†Three patients were treated in bed; 1 in wheel chair four days before embolism occurred.

The over-all mortality rate was 7.2 per cent (table 5). The average age in fatal cases was 74.5 years; 67 per cent of the deaths were in women. Fifty per cent of all deaths were due to pneumonia in patients more than 60 years of age (1 was 95 years) One patient became ill on the fourth postoperative day, 2 during the fourth week and 3 during the third and fourth month after fracture. Most infections began in bed patients or in those who had just begun wheelchair activity. In these 6 fatal cases of pneumonia there was arteriosclerotic heart disease in 2, decubitus ulcers in 2, and in 1 hypertension, decubitus and arteriosclerotic heart disease occurred. Both fatal cases of pulmonary embolism were in bed patients; 1 occurred on the sixth day, and 1 on the eighth day after fracture.

When the various complications are tabulated in correlation with one another (table 6) it is noted that frequently obesity, diabetes, hypertension and arteriosclerosis coexisted in the same patient. The lethal complications (pneumonia and embolism) in about 50 per cent of the cases were associated with arteriosclerosis or hypertension.

TREATMENT OF COMPLICATIONS

Prevention of obesity would undoubtedly lower the incidence of hip fracture, another of the many reasons for maintenance of normal weight during aging. Weight reduction should be started in all obese patients, if not before, at the outset of treatment for the fracture. In these older persons whose activity is sharply curtailed because of the fracture transformation of energy is small, frequently 1,500 to 1,600 calories per twenty-four hours; so in order to accomplish satisfactory weight reduction, the diet should provide 800 calories or less during each twenty-four hour period. It should contain 60 to 80 Gm. of protein and enough bulk to be satiating by liberal use of low carbohydrate vegetables and fruits.

It should be clearly understood that osteoporosis is not primarily a disturbance of calcium and phosphorus metabolism; it is the insufficient production of osteoid tissue. Most common causes are: (1) failure of stimulation of osteoblasts due to postclimacteric deficiency of steroid hormones; (2) decrease in stimulation of osteoblasts due to reduced physical activity (disease atrophy); (3) protein deficiency which depletes the bone matrix, and (4) old age atrophy of bone matrix.[1] If the frequency of the commonest of all types of osteoporosis, postmenopausal osteoporosis, and the many fractures directly due to it were better known there surely would be better prophylaxis. Postclimacteric persons should be particularly careful to insure a generous intake of protein, calcium and phosphorus. If roentgenograms revealed significant osteoporosis treatment should be instituted according to the plan recommended by Reifenstein and Albright,[1] using adequate amounts of estrogens or androgens. Of the former, doses of 0.5 to 1 mg. of diethylstilbestrol orally daily; 2.5 to 3.75 mg. estrone sulfate or 1.6 to 3.3 mg. estradiol benzoate two to three times weekly for two or three weeks then 5 mg. weekly for four to six weeks, and then rest one to two weeks will usually be helpful. Of the male hormone, 10 to 20 mg. testosterone arally and 20 to 25 mg. intramuscularly weekly for one to two months is good. Such a series may be repeated several times. One to two 75 mg. pellets of testosterone may be implanted every four months. When used, male sex hormones, should be given for at least two or three months. Retention of nitrogen and calcium, production of osteoid tissue and calcification of bone result, but benefit is notoriously slow. Treatment may be needed for many months. The value of prophylaxis should be emphasized.

Prolonged rest quietly in bed should be avoided whenever possible, for Deitrick and associates[2] and others have shown that this aug-

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1. Reifenstein, E.D. Jr., and Albright, F.: The Metabolic Effect of Steroid Hormones in Osteoporosis, J. Clin. Investigation 26:24-56 (Jan.) 1947.

2. Deitrick, J.E.; Whedon, G. D., and Shorr, E.: Effect of Immobilization on Various Metabolic and Physiologic Functions of Normal Men, Am. J. Med. 4:3—36 (Jan.) 1948.

ments excretion of calcium and causes osteoporosis.

The treatment of hypertension and arteriosclerosis in a patient with fracture can only be ameliorative. Measures to reassure and quiet the patient are important: the wise use of sedatives is advised. Phenobarbitol in doses of 16 to 32 mg. two or three times daily is usually beneficial: combinations with vasodilators (such as mannitol hexanitrate) are popular but of limited value. In our cases these lesions had no effect or only minor influence on the course of the patient with fracture of the hip. However, severe arteriosclerosis may embarrass the course of the elderly patient; the general decline and death of some elderly persons with fracture must depend directly on advanced generalized vascular disease for which treatment is inadequate. The status of the heart and circulation should be determined promptly in all persons suffering fracture of the hip, and early correction of cardiac decompensation, if it exists, should be accomplished.

Diabetes mellitus is usually mild and easily managed in older persons and, as shown in the cases analyzed, it need not be hazardous in the patient with fracture of the hip. Proper diet and insulin, when needed, will control this disease so that it will not delay convalescence. It was pointed out by Newburgh[3] that in the older obese persons so-called diabetes is frequently due to fatty liver and the only treatment needed is a suitable reduction diet.

Table 5.—*Deaths in Patients With Hip Fracture**

Immediate Cause of Death	Age	Sex	Type of Fracture	Treatment	Onset, Days After Fracture	Onset, Days After Operation	Activity	Other Illness
Pneumonia	74	F	Intertrochanteric	Closed, plaster	71		Chair 4 days	
Pneumonia	81	F	Intertrochanteric	Traction, Closed	76		Chair 8 days	
Pneumonia	60	M	Intertrochanteric	Shanz osteotomy	139	90	Bed	Arteriosclerotic heart disease
Pneumonia	95	F	Neck	Lippman screw	9	4	Bed	
Pneumonia	87	M	Intertrochanteric	Closed, plaster	22		Bed	
Pneumonia	68	F	Neck	Smith-Petersen nail	25	23	Chair 21 days	Thrombophlebitis, decubitus, hypertensive arteriosclerotic heart disease
Pulmonary embolism	50	M	Neck	Closed, plaster	8		Bed	
Pulmonary embolism	65	F	Neck	Closed, splint	6		Bed	Obesity
Inanition†	74	F	Intertrochanteric	Blade, plate			Bed	Decubitus; arteriosclerotic heart disease
Inanition‡	80	F	Neck	Smith-Petersen nail			Bed	Diabetes; arteriosclerotic heart disease
Cerebal hemorrhage, traumatic	77	F	Neck	Smith-Petersen nail	10	9	Bed	
Anemia?§	83	M	Neck	Smith-Petersen nail			Chair 26 days	Obesity; diabetes

*The mortality rate was 7.2 per cent; the average age, 74.5.
†Death occurred fifty-four days after the fracture and forty-six days after the operation.
‡Death occurred eighty-four days after the fracture and eighty-one days after the operation.
§Death occurred thirty-eight days after the fracture and twenty-six days after the operation.

Table 6.—*Correlation of Common Complications of Hip Fracture*

		Diabetes	High Blood Pressure	General Arteriosclerosis	Arteriosclerotic Heart Disease	Obesity	Decubitus Ulcer	Pneumonia	Thrombophlebitis	Pulmonary Embolism	Only Disease
Diabetes	6			1	1	5					
High blood pressure	6			1	2	3		1	2		
Arteriosclerotic heart disease	5	1	2				2	3	1		1
Obesity	10	5	3	2			2		1	1	
Decuitus	4	1	1		1	2		1		1	
Pneumonia	7		1		3				1		4
Thrombophlebitis	2		2		1	1		1			
Pulmonary embolism	4					1	1				2

Most fatalities among the cases reviewed were due to pneumonia—50 per cent. However, penicillin became available only at the end of the period of this study; and sulfonamide compounds were available for only some cases. With antibiotic therapy now available some of these fatalities would not have occurred. It seems wise to employ prophylactic antibiotic therapy for seven to ten days after fracture or surgical treatment. Penicillin, 200,000 units orally twice daily, will usually be sufficient; protection would certainly result from 100,000 units of crystalline penicillin intramuscularly each twelve hours. Such could have prevented death in only 1 of our 6 fatal cases, for 5 patients contracted their infection twenty-four to ninety-six days after fracture, which seems too long a time to continue prophylactic antibiotic therapy. Prompt use of peni-

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3. Newburgh, L. H., and Conn, J. W.: New Interpretation of Hyperglycemia in Obese, Middle-Aged Persons, J. A. M. A. 112:7-11 (Jan. 7) 1939.

cillin when coccic pneumonia develops should greatly reduce mortality.

The second most frequent postfracture complication was phlebothrombosis, which in some cases produced pulmonary embolism and infarction. Two deaths were on this basis. Pulmonary infarcts were not more frequent in the patients treated with open surgery but were more frequent in patients who were confined to bed. The longest time after fracture that lethal infarcts occurred was eight days. Anticoagulants were not employed in our cases. Allen[4] has emphasized the postoperative value of "dicumarol" to prevent the occurrence and extension of venous thrombosis; calculation based on his statistics indicates that proper use of "dicumarol" in our cases could be expected to prevent both deaths which occurred from pulmonary infarction. It appears therefore that anticoagulants should be used prophylactically during the first ten to fourteen days after fracture of the hip, especially in bed patients, and certainly in all cases of pulmonary embolism to prevent extension of the phlebothrombosis and recurrent fatal embolism. The only danger in using anticoagulants is hemorrhage, and this is far less hazardous than is thrombosis and embolism. Hemorrhage can be prevented by proper control of coagulation time by laboratory guides. Anticoagulants should not be used without proper laboratory facilities. Vitamin K is a dependable antidote for excessive "dicumarol" effect.

Other important prophylactic measures against phlebothrombosis include leg exercises for those patients who need continued bed rest. An oscillating bed may be of distinct value if treatment for the fracture will allow its use. It is desirable to avoid long therapeutic bed rest in older patients; for this reason the nailing procedure and early ambulation are advantageous. In cases of identifiable leg vein thrombosis, in which anticoagulants are not employed, ligation and thrombectomy may be beneficial.

IMMEDIATE CARE OF THE PATIENT WITH A FRACTURE

Good nutrition is important for wound healing and for the patient's general health. The caloric value of the diet should be adjusted as indicated by the body weight: Obesity should be reduced, and the undernourished patient should have a high caloric diet. Adequate protein intake should be insured. There is now ample evidence[5] that the gastrointestinal tract of elderly persons can handle average or slightly high protein food mixtures well. Good protein hydrolysates and amino acid mixtures are now available if protein supplements are needed. It is well to give food orally whenever possible; parenteral feeding should be used only in patients who cannot eat or retain sufficient food. The only indication for a low protein intake is pronounced renal functional impairment; then the twenty-four hourly intake may need be sharply curtailed to help prevent renal failure.

Adequate vitamins should be used to prevent or correct a deficiency state. B complex and ascorbic acid are the most important vitamins and can be supplied by use of a good multivitamin capsule with 100 or 200 mg. of ascorbic acid added daily. Vitamin B complex may be helpful for anorexia. Most patients will absorb orally administered vitamins adequately, but with intestinal disease and for a short while after the operation the parenteral administration of vitamin B and C may be necessary or helpful.

Associated illnesses should be recognized and appropriately treated. The patient with arteriosclerosis or hypertension should receive special attention to prevent or correct a failing heart which may result from the embarrassment of the trauma or surgical treatment. Appropriate treatment for anemia should be instituted from the outset. Catharsis may be required for bed patients. Nervous and apprehensive patients will be helped by small doses of sedatives administered through the day; adequate sleep should be insured at night time, but generally the elderly patient requires small doses of sedatives. They should be discontinued when no longer needed.

SUMMARY

The medical care of the patient with hip fracture resolves itself into good management of an elderly, traumatized patient who may need surgical treatment. It is best provided by the close cooperation of an internist and the surgeon. Preexisting conditions seldom are important factors in survival but commonly affect the speed of convalescence. Tissue senility, degenerative and arteriosclerotic changes account for the fact that in the patients with a fractured hip the tissues have less resistance and reserve. Vigilant attention should provide best possible function of vital organs, good nutrition and proper treatment of coexisting diseases and complications. The most dangerous complications are pneumonia and phlebothrombosis with pulmonary embolism. There are now effective prophylactic measures against such complications which should be wisely employed.

The survival rate in the cases analyzed certainly indicates the improved care for patients with hip fractures due largely to improved anesthetics, better preoperative and postoperative care, greater surgical skill and improved technic. More vigilant medical care including the proper prophylactic and therapeutic use of antibiotics and anticoagulants will certainly further improve the convalescence of patients with fracture of the hip and will further increase their survival.

ASEPTIC NECROSIS OF THE FEMORAL HEAD FOLLOWING FRACTURE OF THE HIP

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The term "aseptic necrosis" has been applied somewhat loosely to designate vascular death of the head of the femur in certain fractures of the neck of the femur, traumatic dislocations of the hip and displacement of the upper femoral epiphysis. Similarly the term has been employed with the epiphysial changes seen in conditions such as Legge-Calvé disease.

It is essential to define what is meant by aseptic necrosis. It is clear in reviewing the literature that there are various concepts of the significance of the term which lead to ambiguity in diagnosis and studies on end results. Boyd's[1] recent report of complications of fractures of the neck of the femur illustrates his difficulty in differentiation of degenerative arthritis and aseptic necrosis. In our study, we have been confused as to when we could say this is definitely aseptic necrosis with arthritic changes or this is degenerative arthritis. If we regard any degenerative change in the head as resultant from aseptic necrosis, then we become confused in the changes noted in the hip joint after extensive fracture dislocations of the hip. Similar lesions are produced elsewhere in other joints by a process defined as traumatic arthritis.

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[4] Allen, E. V.: The Clinical Use of Anticoagulants, J. A. M. A. 134:323-329 (May 24) 1947.

[5] Freeman, J. T.: The Basic Factors of Nutrition in Old Age, Geriatrics 2:41-49 (Jan.-Feb.) 1947.

Read in a panel discussion on Fractures of the Upper End of the Femur before the Section on Orthopedic Surgery at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

[1] Boyd, H. B., and George, I. L.: Complications of Fractures of the Neck of the Femur, J. Bone & Joint Surg. 29:13-18 (Jan.) 1947.

The term "avascular necrosis" has been used for this entity and might be limited definitely to a generic term denoting essentially a dead head. Reparative processes make it possible to revivify the dead head with various end results, such as (1) degenerative arthritis, (2) a partial regeneration of the head with collapse of the superior weight-bearing surface of the head and (3) occasionally a regenerated normal-appearing head. "Avascular necrosis" then could well be utilized as the generic name for the entity denoting the static state, with the term "aseptic necrosis" used to denote the process of repair, a dynamic time period in which transformation of the dead or partially dead head has incompletely occurred, allowing the potential of collapse of the remaining untransformed portion of the head or lastly producing without collapse a degenerative arthritis, a descriptive term for the cartilage changes, necrosis and loss of joint space.

Avascular necrosis may, then, be defined as death to part or the whole of the head of the femur due to vascular damage primarily of the posterior and anterior circumflex femoral vessels. The vascular supply from the ligamentum teres may or may not be injured similarly. When avascular damage has been sufficient to produce necrosis, the deprivation of blood supply is immediate and the death of the bone tissue occurs in a matter of hours. The evidence clinically of death of the fragment is not manifest, however, by our best diagnostic methods roentgenologically until between the second and third month of the fracture. Density is the chief diagnostic feature, contrasting the atrophy of the distal fragment with the unabsorbed fragment of the head.

Not all fractures of the neck of the femur produce avascular necrosis. Watson-Jones[2] stated that subcapital fractures if above the site of the vascular entry inevitably, transcervical fractures frequently and basal fractures never undergo avascular necrosis.

Inasmuch as the diagnosis of avascular necrosis cannot be made clinically before the end of the second month, it is wise to regard all fractures of the neck of the femur of the subcapital type or the transcervical as potentially leading to avascular necrosis. Watson-Jones[2] stated that if avascular necrosis arises the result is a failure, but if avascular necrosis is avoided the result should be a brilliant success. His chief point here is well taken primarily, that avascular necrosis might not be the result of the original injury but can be produced by vascular damage from manipulation or by open reductions, cutting the capsule and further interfering with the blood supply.

The frequency of avascular necrosis following fractures of the neck of the femur treated by internal fixation and resulting in bony union is distressingly high. The report of a study made by the Academy of Orthopaedic Surgeons gave an incidence of approximately 40 per cent. Boyd's[1] figures are confusing but he stated in one chart that aseptic necrosis occurred in 33.6 per cent and arthritis in 33.6 per cent, which would give an aggregate of degenerative processes in 67 per cent of the healed fractures of the neck. Lawson Thornton[3] estimated that 50 per cent of the traumatic dislocations of the hip show later degenerative change. In our[4] cases of operative reduction of displaced upper femoral epiphysis the incidence of aseptic necrosis was only 4 per cent but the incidence of arthritis was 28 per cent, which again, combined in one figure, would express a degenerative process secondary to an avascular necrosis which would be significant, yet, again, degenerative arthritis in the untreated case of upper femoral displacement is the rule without evidence of avascular necrosis. This stresses the importance of defining the clinical entities seen as complications.

Brailsford[5] stated that he had not seen avascular necrosis result from external fixation. We have 5 such cases in this study; treatment by plaster spica cast was followed by bony union of the neck. We agree with Watson-Jones that the internal fixation in itself does not produce avascular necrosis. It does, however, produce a much higher group of cases in which bony union occurs even though a dead head was present, and the process of transformation of the dead head to a living head may be incomplete so as to produce collapse of the upper portion of the head as is seen in aseptic necrosis or to produce degenerative arthritis of the hip from necrotic cartilaginous changes.

CLINICAL ENTITIES COMPLICATING FRACTURES OF FEMORAL NECK

There are four main types of complications noted in the process of repair of fractures of the neck of the femur: 1. Bony union of the fracture may be followed after a period of functional use by pain, progressive loss of function with roentgen changes of varied densities in the head associated with loss of contour of the head from collapse of the superior weight-bearing surface of the head. This process we should like to term "aseptic necrosis," and we should like to confine this term to this specific lesion. 2. Bony union of the fracture may be associated with a period of function of the hip followed by pain and progressive loss of function associated with roentgen evidence of diminished joint space, normal contour of the head, areas of varying densities throughout the head and acetabular changes akin to arthritic changes. The term "degenerative arthritis" properly can be applied to this group of cases. 3. Nonunion of the fracture may be associated with a dead head. The hip has never functioned satisfactorily, and bony union has not occurred. Roentgenograms show the evidence of nonunion, and the head is dense in contrast to the distal fragment, denoting a dead head. Operative therapy for union might be successful, but the first or second complication might result later. 4. Nonunion of the fracture may be associated with a vital head. Here atrophy has occurred similarly in both fragments. The head is viable. Operative aims for union may well lead to success in healing without later degeneration of the head.

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[2] Watson-Jones, R.: Fractures and Other Bone and Joint Injuries, Baltimore, Williams & Wilkins Company, 1944, pp. 72-74.

[3] Thornton, L.: In Bancroft, F. W., and Murray, C. R.: Surgical Treatment of the Motor-Skeletal System, Philadelphia, J. B. Lippincott Company, 1945, pt. 2, p. 998.

[4] Badgley, C. [illegible] Hip for Degenerative Hip Disease, in Americ[illegible] Surgeons Lectures on Regional Orthopaedic [illegible] Orthopaedic Problems, Ann Arbor, Mich., J. W [illegible] 2.

[5] Brailsford, J. F.: *Radiology of Bones and Joints*, Baltimore, William Wood & Company, 1934.

For many years Phemister[6] has consistently added to our knowledge of the pathology of these complications. From his first paper in 1920, on "Recognition of Dead Bone Based on Pathological and X-Ray Studies," to his last paper with Dr. Sherman, in 1947, there has been a clarification of the pathologic processes which produce these complications of fractures of the neck of the femur. We can best state the facts which he has substantiated by clinical and pathologic studies: 1. Union can occur in the presence of avascular necrosis.[6b] 2. Pathologic changes in the hip joint are rare if the head is alive, but are constant and may become severe if the femoral head is dead[6]. 3. Survival of the femoral head from the fracture depends on how much blood supply was damaged. There is no evidence that death of the head occurs long after the fracture when union has failed. 4. Circulation of the head occurs through the anterior and posterior circumflex vessels which lie in that portion of the capsule reflected on the neck and more especially in the posterior portion of the capsule. 5. If the posterior portion of the capsule remains intact, vascular supply may be sufficient. (Our findings of free blood in the posterior gluteal bursa may have significance as a diagnostic sign of vascular damage.) 6. If the head remains viable, but nonunion occurs, the principal change is disuse atrophy equal in both fragments. This nonunion head never collapses and the cartilage is well preserved. Operative procedures to produce union are usually successful and degenerative arthritis does not follow. 7. In a dead head from interference with blood supply, atrophy of disuse cannot occur. 8. The process of transformation of the dead head has been well described by Phemister and Sherman.[6c] It should suffice here to say that creeping substitution from the distal fragment with increased vascularity from the lower fragment and also from the ligamentum teres vessels is the chief process of repair. 9. Depression of the unaltered weight-bearing portion of head is indicative of beginning collapse of the untransformed portion of necrotic head. 10. A new fracture line passes through the zone of invasion and of replacement of dead bone by living bone. The invading front consists of connective tissue and blood vessels replacing dead marrow and some absorption of trabeculae replaced partially by spongy new bone. 11. Pathologic fracture at the junction of dead and living bone from prolonged weight bearing is common in aseptic necrosis. 12. Degenerative arthritis is regularly present in long-standing cases of necrosis of the head with nonunion, but rarely as severe as in old cases of necrosis of the head with body union. 13. When there is nonunion of the fracture, there is usually no collapse of the necrotic head, but if the fracture unites in the presence of a dead head and weight is borne, collapse of the partially replaced head is to be expected. 14. Operation on an ununited fracture of the neck with a dead head may result in bony union. Transformation may occur, but degenerative arthritis may develop later.

PREVENTION AND TREATMENT OF AVASCULAR NECROSIS

Care to prevent further trauma to the fractured hip should be observed. Vascular damage may result from rough handling in transport. Manipulative reduction should be carefully done to avoid damage. For years we have not manipulated fractures of the neck of the femur except in rare cases. Skeletal traction through the lower part of the tibia and fibula with Russell traction principle has satisfactorily reduced most of the fractures. If manipulation is required, usually a modification of the Leadbetter method is employed. Reduction can be accomplished immediately by traction, and, when the patient's condition warrants, early internal fixation should be obtained. At one time, a study of our statistics showed 90 per cent bony union in patients treated immediately by traction with internal fixation within forty-eight hours in contrast to 65 per cent bony union after a delay of two weeks prior to fixation.[8] The intervening capsule becomes adherent to the fracture site and interferes with closed reduction and healing unless treated early so that the capture can be freed from the bone ends.

Open operation should be avoided if possible. Incision through the capsule can interfere with the anterior circumflex vessels and do further vascular damage to the head of the femur. Certain fractures, however, which cannot be satisfactorily reduced are better treated by open operation and reduction accurately obtained under inspection. We have found unusual types of fractures, not described hitherto to our knowledge, which would have made closed reduction impossible. The cortex of the neck has remained intact in a few cases with the endosteal portion pulled out like a watermelon plug and remaining with the head fragment. Again, the reverse has happened, with a portion of the neck pulled out of the head fragment and with the cortex remaining on the head fragment, preventing reduction. The oblique fractures with a long fragment remaining on the inferior surface of the head fragment particularly are apt to be displaced on nailing unless open reduction is performed. Accurate reduction is essential to coaptate fresh fracture surfaces even though open reduction is required to achieve this.

Traction in bed for some time following nailing prevents displacing the nail. In some cases, adduction of the hip alone can displace the nail from the atrophic head in the elderly patient. We advise, if the patient can tolerate it, at least six weeks of continuation of skeletal Russell traction, which allows mobility of the hip and knee and relative freedom in bed.

Avoidance of weight bearing on the injured hip is insisted on for a minimum of six months in all cases. If at the end of two to three months routine roentgen check-up shows increased density of the head, particular emphasis is placed on avoidance of weight bearing and protection until transformation of the head is complete.

Transformation of the head to viable bone covered with functional cartilage may result even in the cases of avascular necrosis, if sufficient time is given without weight bearing for complete regeneration of the head. Collapse and degenerative arthritis are practically certain to result unless recognition is made of avascular necrosis between the second and third month after the trauma and avoidance of weight bearing is continued until the avascular head is completely revived.

Wise[9] has shown in his study of the autopsied specimen of a recently nailed hip that death of the head does not necessarily occur in a transcervical fracture and more important, defended internal fixation by the fact that the "vitallium" nail in itself is a factor in bringing new blood supply to the head along the tract of the nail.

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[6] (*a*) Phemister, D. B.: Recognition of Dead Bone on Pathological and X-Ray Studies, Ann. Surg. 72:466 (Oct. 1920; (*b*) Repair of Bone in Presence of Aseptic Necrosis Resulting From Fractures, Transplantations, and Vascular Obstruction, J. Bone & Joint Surg. 12:769-787 (Oct.) 1930; (*c*) Fractures of Ne[illegible] of Hip and Obscure Vascular Disturbances Pr[illegible] of Head of Femur, Surg., Gynec. & Obst. 59:4[illegible] The Pathology of Ununited Fractures of the Ne[illegible] ecial Reference to the Head, J. Bone & Joint Sur[illegible] 9; (*e*) Sherman, M. S., and Phemister, D. B.: [illegible] ractures of Neck of Femur, ibid. 29:19-40 (Jan.) 1947.

[7] Potts, F. N., and Obletz, B. E.: Aseptic Necrosis of Head of Femur Following Traumatic Dislocation, J. Bone & Joint Surg. 21:101-110 (Jan.) 1939.

[8] Hammond, G.: Oral report.

[9] Wise, R. B.: Histological Study of Transcervical Fracture of Femur After Internal Fixation, J. Bone & Joint Surg. 23:941-947 (Oct.) 1941.

In conclusion, avascular necrosis of the head of the femur following fracture may eventuate in (1) occasionally complete retransformation of the head to vital functioning structure; (2) aseptic necrosis characterized by a partial transformation of the head by creeping substitution with, however, collapse and fracture of the weight-bearing portion of the head at the junction of the advancing zone of repair; this complication might be avoided by recognition of the avascularity of the head between the second and third month by roentgen evidence of increased density of the head and then by protecting against weight bearing until transformation is complete; (3) degenerative arthritis characterized by loss of joint space due to necrotic cartilage; collapse of the head does not occur; this may be a complication from avascular necrosis which cannot be prevented; (4) nonunion; either a dead or a live head may result after fractures of the neck of the femur; this complication occurs with minimal frequency if satisfactory internal fixation is employed.

In spite of careful treatment, avascular necrosis is a serious complication of fractures of the neck of the femur which may result in a painful, poorly functioning hip of the aseptic necrosis or degenerative arthritis type.

SELECTION OF OPERATIVE THERAPY

The selection of operative therapy for these complications depends on the type of patient, the extent of the degeneration and the therapeutic choice of the surgeon.

Arthroplasty of the "vitallium" mold type has been successfully utilized by Smith-Petersen[10] and his associates in 42 cases with 85 per cent satisfactory results to the patient and to the surgeon. They employed the routine mold arthroplasty if minimal aseptic necrosis was present; a modified Whitman reconstruction operation if aseptic necrosis involved a large part of the head, removing the head and covering the trochanter with a "vitallium" mold; a modified Colonna reconstruction in nonunion with absorption of the neck, applying a "vitallium" mold and deepening the acetabulum.

Badgley[10] reported 3 excellent, 2 good and 2 fair results out of 9 cases with aseptic necrosis treated by "vitallium" cup arthroplasty.

The Mayo Clinic reported[11] that the results from arthroplasty for aseptic necrosis of the hip were disappointing. In more than half of their cases, results were poor.

The Colonna reconstruction operation[12] has been successfully employed. In our experience this is a far better procedure than arthrodesis of the hip, allowing stability and painless motion of some functional extent. Recently Wilson[13] has added a "vitallium" mold to a Whitman type of reconstruction.

Exponents of hip arthrodesis, however, feel that successful arthrodesis can be produced in this group with high frequency, particularly with the addition of the three-flanged nail fixation. Haggart[14] reported 22 successful results in degenerative arthritis out of 24 cases. Freiberg[15] has successfully fused several such hips by the method of Brittain.

Recently Venable and Stuck,[16] 1946, have reported a muscle flap transplant for the relief of painful aseptic necrosis of the hip. This concept of reestablishing blood supply by a muscle flap transplant is a courageous attempt to fight the ill effects of avascular necrosis which may prove to be of distinct value. They reported 27 cases in which this method was used, with striking relief of pain in all but 1 case. Time and experience only will prove the success or failure of this procedure.

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[10] Smith-Petersen, M. N.: Larson, C.; Aufrance, O., and Law, A. Complications of Old Fractures of Neck of Femur: Results of Treatment by Vitallium-Mold Arthroplasty, J. Bone & Joint Surg. 29:41-48 (Jan.) 1947.

[11] Bickel, W. H.; Ghormley, R. K.; Coventry, M. B., and Mussey R. D., Jr.: Cup Arthroplasty of the Hip, Proc. Staff Meet., Mayo Clin 19:561-568 (Nov.) 1944.

[12] Colonna, P. C.: Colonna Reconstruction Operation for Ununited Fractures of Neck of Femur, J. Bone & Joint Surg. 21:701-709 (July) 1939.

[13] Wilson, P. D.: Trochanteric Arthroplasty in the Treatment of Ununited Fracture of the Neck of the Femur, J. Bone & Joint Surg 29:822 (July) 1947.

[14] Haggart, G. E.: Degenerative Disease of the Hip Joint Treated by Arthrodesis, in American Academy of Orthopaedic Surgeons Lectures on Regional Orthopaedic Surgery and Fundamental Orthopaedic Problems, Ann Arbor, Mich., J. W. Edwards, 1947, pp. 201-206.

[15] Freiberg, J. A.: Experiences With the Brittain Ischio-Femoral Arthrodesis, J. Bone & Joint Surg. 28:501-512 (July) 1946.

[16] Venable, C. S., and Stuck, W. G.: Muscle-Flap Transplant for Relief of Painful Monarticular Arthritis (Aseptic Necrosis) of Hip, Ann Surg. 123:641-655 (April) 1946.

FRACTURES OF THE HIP

Results Following Treatment

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Fractures about the hip joint may be seen in children and young adults but are injuries usually involving the aged. Approximately 80 per cent of these fractures occur in patients over 60 years of age. The fractures can be divided into two general classes—those involving the trochanteric region and those involving the neck of the femur. Both groups may be further divided into subclasses. These two types of fractures have several common characteristics. Each occurs in elderly persons, and both are more common in women (80 to 85 per cent) than in men. This is probably due to fact that women have a slightly wider pelvis with a tendency to coxa vara; they are usually less active and more prone to senile osteoporosis, and the life expectancy of a woman aged 60 is five years greater than that of a man.

Although the fractures are similar in some respects, they differ widely as to treatment and end results. The prognosis in the two fractures is entirely different in that nonunion is rarely seen in trochanteric fractures. This is due to several factors: The fractures of the neck involve a constricted area in the femur in which there is comparatively little cancellous bone; the periosteum of the neck of the femur is thin in elderly persons and there is no cambium layer.[1] The blood supply to the distal fragment is usually adequate, but

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Read in a panel discussion on Fractures of the Upper End of the Femur before the Section on Orthopedic Surgery at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11 1947.

From the Campbell Clinic.

[1] Sherman, M. S., and Phemister, D. B.: The Pathology of Ununited Fractures of the Neck of the Femur, J. Bone & Joint Surg. 29:19-40 (Jan.) 1947.

the blood supply to the proximal fragment may be impaired or absent. In trochanteric fractures, a wide area of bone is involved, the major portion of which is cancellous, and both fragments have an adequate blood supply. As a result of impairment in blood supply, aseptic necrosis of the head of the femur and late degenerative changes of the femoral head are often seen after fractures of the neck of the femur. These complications have not been seen after trochanteric fractures. In trochanteric fractures, the surgeon may anticipate union in fair position if a method of treatment is employed that will prevent coxa vara. Our mortality rate (13. per cent) is higher in trochanteric fractures for three reasons: The average patient is slightly older (approximately two and one-half years); more trauma is required to produce the fracture, and if operative treatment is employed the operation is more extensive than that used in fractures of the neck of the femur. The chief problem in trochanteric fractures is to keep the mortality as low as possible by adequate medical and surgical treatment. To accomplish this, we prefer internal fixation. In the majority of cases, a Neufeld nail is employed. With successful internal fixation, the patient is allowed to sit up in bed or turn, or may be put in a wheel chair. Cleveland and co-workers[2] have estimated that the percentage of senile psychosis in elderly persons with trochanteric fractures is five times greater in those treated in body casts than in those treated by internal fixation. The mortality is less with internal fixation than with immobilization by means of a cast.

Fracture of the neck of the femur has been called "the unsolved fracture." In view of the present statistical studies, this should probably be changed to "the partially solved fracture." A year ago we studied and reported 300 complete, central fractures of the neck of the femur that had been nailed for one year or longer. Impacted fractures of the neck of the femur and pertrochanteric fractures were excluded. Only Pauwel's[3] type 2 and 3 fractures were included in the study. A report on these cases was made at the American Orthopedic Association.[4] Since that time we have added 60 additional hips, so that the present statistics are based on a series of 360 hips.

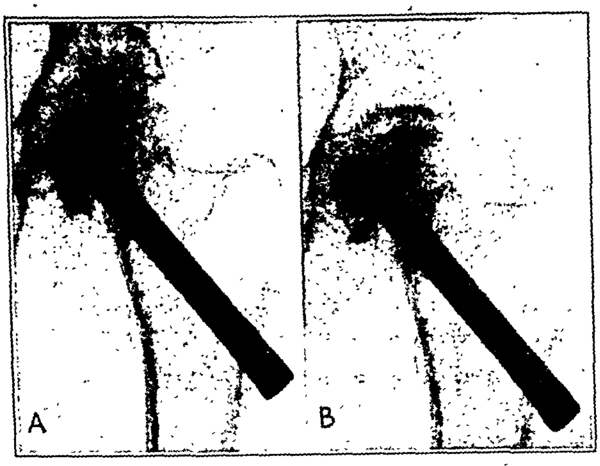

Fig. 1. A, 1 plus "arthritic changes" noted two and one-half years after nailing of a complete central fracture of the neck of the femur.
B, same hip six months later, showing 2 plus "arthritic changes."

MORTALITY

In calculating the mortality in the series previously reported, we included the known deaths up to six months following the operation. There has been some criticism regarding this method of calculating mortality. It is true that death may occur less than four weeks following the operation and still probably not be an operative mortality. Conversely, an operative mortality may occasionally occur more than four weeks after operation. In compiling statistics for this paper, all deaths have been included which occurred within four weeks of the operation. The over-all mortality is 7 per cent. Table 1 indicates the mortality for the various age groups. From the statistics seen in this table, it is noted that the prognosis as far as mortality is concerned is excellent for patients below 69 years of age. In patients 70 or above, the mortality rapidly rises by decades from 8 per cent to practically 43 per cent in the tenth decade.

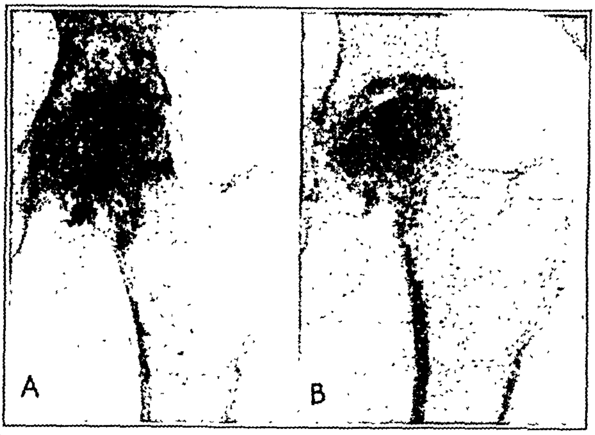

Fig. 2.—A, same hip as in figure 1 three years and three months following operation, showing 3 plus "arthritic changes."
B, same hip four years following operation, illustrating 4 plus "arthritic changes."

Table 1.—*Mortality in Fractures of the Neck of the Femur*

Age, Years	Hips	Deaths	Mortality, Percentage
Under 40	15	0	0
40-59	66	0	0
60-69	100	1	1.0
70-79	111	9	8.0
80-89	61	12	19.7
90-98	7	3	42.9
Total	360	25	7.0

The entire 360 hips were followed for a long enough period to determine the mortality. One hundred and fifty-eight hips, or 43.9 per cent, were followed less

Table 2.—*Fractures of the Neck of the Femur, Follow-up Study*

	Hips	Percentage
Follow-up less than 1 year	158	43.9
Follow-up over 1 year	177	49.1
Deaths	25	7.0
Total	360	100.0

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2. Cleveland, M.; Bosworth, D. M., and Thompson, F. R.: Intertrochanteric Fractures of the Femur: A [illegible] Traction and Internal Fixation, read at the [illegible] of the American Academy of Orthopaedic Surgeons, [illegible]

3. Pauwels, F.: [illegible]: Ein mechanisches Problem; Grundlagen des [illegible] und kausale Therapie, Stuttgart, Ferdinand [illegible]

4. Boyd, H. B., and George, I. L.: Complications of Fractures of the Neck of the Femur, J. Bone & Joint Surg. 29:13-18 (Jan.) 1947.

than one year. Follow-up studies were available on 177, or 49.1 per cent, of the hips for a one year period or longer. These statistics are shown in table 2.

PERCENTAGE OF BONY UNION

The percentage of bony union was determined on the patients followed one year or longer. In some of the patients, especially those in the lower age groups, one may occasionally see an unquestionable bony union in less than one year. On the other hand, in some cases bony union occurs after a year, especially in patients that have gradual absorption of the neck of the femur. Table 3 shows the percentage of bony union and nonunion. In 177 cases there were approximately 85 per cent bony union and approximately 15 per cent nonunion.

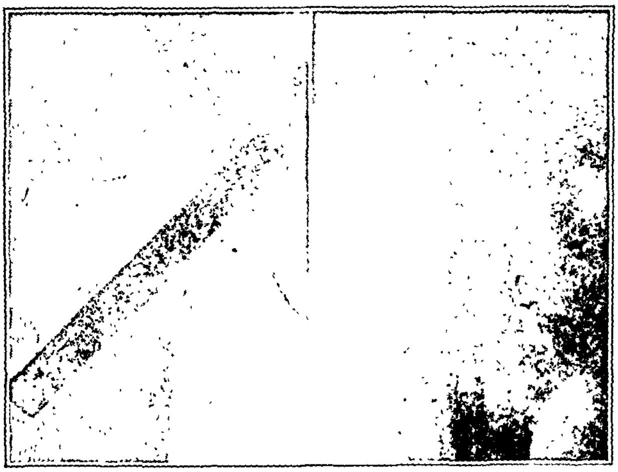

Fig. 3—Acute complete central fracture of the neck of the femur immediately after reduction and internal fixation with Smith-Petersen nail.

Table 3.—*Fractures of the Neck of the Femur, Bony Union*

	Hips	Percentage
Union	150	84.7
Nonunion	27	15.3
Total	177	100.0

Of the 150 hips that obtained union, 15, or 10 per cent, showed absorption of the neck of the femur to the extent of 1 cm. or more. This indicates that absorption of the neck in itself does not preclude union provided that the nail gradually extrudes so that no actual space develops at the fracture site.

REASONS FOR NONUNION

It has been our impression that accurate reduction and proper nailing of the fragments influence union. This impression is substantiated by the fact that 72.5 per cent of the unions had good or excellent reductions and nailings; however, there was union in 27.5 per cent in which the reduction and nailing were fair or poor. In nonunion, 13 of the 27 were attributed to poor reduction, inadequate mechanical fixation or premature removal of the nail. The remaining 14 nonunions followed satisfactory reductions and nailings, but 2 were in patients with Paget's disease involving the head and the neck of the femur.

It has been felt that the greater shearing force exerted in the Pauwel type 3 fracture renders it more prone to nonunion. In this series, the percentage of nonunion for type 2 and 3 fractures is shown in table 4. There was no significant difference between the average age (less than one year) of type 2 and type 3 fractures. From these statistics, it will be seen that the percentage of nonunion in type 2 fractures is 16.5 per cent, while the percentage of nonunion in type 3 fractures is 10.5 per cent. It is true that the number of type 3 fractures is small, but still the difference is enough to be suggestive. With adequate internal fixation, the shearing force at the fracture line is probably eliminated. If the internal fixation accomplishes this, then one would expect type 3 fractures to unite in a higher percentage than type 2 fractures, as there is more osseous tissue in apposition. Without internal fixation, as in a Whitman cast, the shearing force cannot be entirely eliminated. Under these circumstances, nonunion would probably be higher in the type 3 fractures.

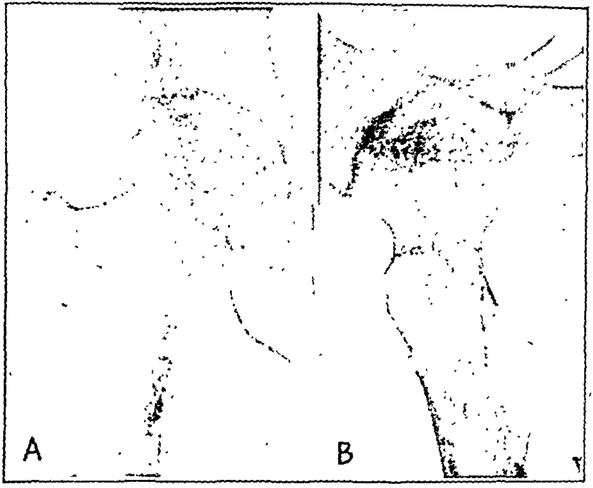

Fig. 4—Same hip as in figure 3 four years and four months following the operation, illustrating solid bony union without aseptic necrosis or arthritic changes.

Table 4.—*Comparison of Union and Nonunion in Pauwel's Type 2 and Type 3 Fractures*

	Hips	Union	Nonunion	Nonunion Percentage
Type 2	139	116	23	16.5
Type 3	38	34	4	10.5
Total	177	150	27	15.3

Aseptic necrosis of the head of the femur was present in 32.6 per cent of the patients that obtained union, 59.3 per cent of the hips with nonunion showed aseptic necrosis. These data indicate that aseptic necrosis is a factor in the production of nonunion, but that it does not preclude union.

ARTHRITIC CHANGES

The percentage of arthritic changes is shown in table 5. There were 105 hips followed from one to two years. Of these, 15.7 per cent showed moderate ar-

Table 5.—*Arthritic Changes in Hips With Bony Union*

	Hips	Arthritic, Moderate, Percentage	Changes, Severe, Percentage
Follow-up 1-2 yr.	105	15.7	5.7
Follow-up over 2 yr.	45	22.2	33.3
Total	150		

47 hips with arthritic changes, 31.3%.

thritic changes, while 5.7 per cent showed severe arthritic changes. In the 45 hips with union followed two years or longer, these percentages increased to 22.2 per cent for moderate arthritic changes and 33.3 per cent for severe arthritic changes. These data show that there is an increase in the severity of the arthritic changes with time and use. In this study, the arthritic changes in the head of the femur were classified as 1 plus, 2 plus, 3 plus and 4 plus (figs. 1 and 2). In table 5, 1 plus and 2 plus arthritic changes are classified as moderate and 3 plus and 4 plus arthritic changes as severe. Slight roughening of the head of the femur was considered 1 plus arthritis. A slight depression and irregularity of the head of the femur was considered 2 plus. Moderate but definite collapse of the head was classified as 3 plus, and pronounced collapse with irregularity of the head was classified 4 plus. From a clinical point of view, we have observed that patients with moderate arthritic changes have slight pain in the hip but are able to walk rather well, either without support or with the use of a cane. Patients with severe arthritic changes have considerable pain and often require the use of a cane or crutches. When 4 plus arthritic changes are present, there may be more or less constant pain even at rest. Such a patient may be more disabled than one with a nonunion. Orthopedic surgeons have devised many operations for the treatment of nonunion following fractures of the neck of the femur. The treatment of these patients is still a definite problem. However, the statistics presented in this paper indicate that in patients followed two years or longer there will be a larger number with severe arthritic changes than with nonunion. Accordingly, in the future it will be necessary for us to direct our attention toward the treatment of this unfortunate complication, as we have toward nonunion in the past.

CONCLUSIONS

The mortality in 360 fractures of the neck of the femur has been 7 per cent. The mortality varied from 0 in the sixth decade to 42.9 per cent in the tenth decade.

Bony union occurred in 84.7 per cent of the patients followed for one year or longer. In our experience, Pauwel's type 3 fractures have not shown a predisposition to nonunion as compared with type 2.

The incidence of aseptic necrosis is higher in patients with nonunion than in those with union, approximately 60 per cent in the former and 33 per cent in the latter.

Arthritic changes following bony union gradually increase in percentage and severity with time and use until the percentage of severe arthritic changes in patients followed two years or longer represents approximately one third of the cases. After the use of internal fixation, the percentage of patients in whom severe arthritic changes develop will exceed the number with nonunion. Consequently, the development of methods for the treatment of severe arthritic changes following union assumes even more importance than the treatment of nonunion.

While the data presented in this paper appear discouraging, this does not alter the fact that internal fixation is the treatment of choice for acute fractures of the neck of the femur. The mortality is lower, the patient is more comfortable; medical complications are less frequent, the percentage of senile psychosis is greatly reduced, the cost of hospitalization is diminished and the percentage of bony union is greater than with any other method.

TREATMENT OF UNUNITED FRACTURES OF THE NECK OF THE FEMUR

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Cleveland

As the other speakers in this symposium have pointed out, modern conceptions of treatment of fractures of the neck of the femur are focusing on the importance of elimination of shearing force on the fractured surfaces and of maintenance of circulation to the head in producing satisfactory results. The use of internal fixation has increased the number of cases in which union is obtained from about 50 to 80 per cent, but there is growing recognition that this method has not entirely solved the problems presented by intracapsular fractures, and increasing attention is now being paid to functional results. Nonunion results after simple nailing in about 18 to 20 per cent of cases, and atrophy of the head and arthritic changes also occur in another large group in which the fracture unites, so that treatment is actually unsuccessful from the functional point of view in about 35 to 50 per cent of intracapsular fractures of the femur.[1]

Those cases in which nonunion is associated with pronounced aseptic necrosis and absorption of the head and secondary arthritis changes, for which the treatment to be considered lies between a reconstruction operation or an arthrodesis of the hip, will not be dealt with at this time. This discussion of treatment of ununited fractures of the femoral neck will be confined to those cases in which it would seem possible and feasible to restore anatomic and physiologic function to the hip joint. Fortunately, the greater proportion of patients with ununited fracture of the femoral neck are reasonably suitable candidates for further surgical care. When it is recognized that nonunion is developing this fact should be accepted immediately and an appropriate operation for correction carried out. When nonunion once starts, it almost invariably goes from bad to worse, and the longer operation is delayed, thus allowing atrophic changes to develop in the head, the more problematic the end results of secondary treatment. The earlier the oper-

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Read in a panel discussion on Fractures of the Upper End of the Femur before the Section on Orthopedic Surgery at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

From the Cleveland Clinic and the Frank E. Bunts Educational Institute.

[1] (a) Boyd, H. B., and George, I. L.: Complications of Fractures of the Neck of the Femur, J. Bone & Joint Surg. 29:13-18, 1947. (b) Linton, P.: On the Different Types of Intracapsular Fractures of the Femoral Neck: A Surgical Investigation of the Origin, Treatment, Prognosis and Complications in Three Hundred Sixty-Five Cases, Acta chir, Scandinav. (supp.) 90:1—122, 1944. (c) Eyre-Brook, A. L., and Pridie, K. H.: Intracapsular Fractures of the Neck of the Femur: Final Results of Seventy-Five Consecutive Cases Treated by the Closed Method of Pinning, Brit. J. Surg. 29:115-138, 1941. (d) Fracture Committee of American Academy of Orthopaedic Surgeons; Treatment of Fractures of the Neck of the Femur by Internal Fixation, J. Bone & Joint Surg. 21:483-486, 1939.

ation is performed after nonunion has been established, the better the results that can be expected. With a better understanding of the basic principles involved in the causation, with consequent earlier recognition and treatment of beginning nonunion, it is hoped that many of the more extensive reconstruction procedures can be avoided, or at least that the need for them can be greatly minimized.

The factors of mechanics and circulation—which are closely interrelated—are of utmost significance in planning treatment of fractures of the neck of the femur which have failed to unite. In these instances, as has been demonstrated by the investigations of Pauwels,[2] Linton[1b] (fig. 1) and Eyre-Brook and Pridie,[1c] the mechanical factors are unfavorable, in that the angle of the fracture tends toward the vertical—when measured in relation to the femoral shaft—the fracture is not impacting, and shearing force tends to produce instability and pull the fractured surfaces apart. In a large proportion of these cases, also, roentgenograms show increased density of the head as compared with the femoral shaft, a finding indicating that blood supply to the amputated head is inadequate or lacking and that this portion of the bone is undergoing *aseptic necrosis*. Whether or not this bony change occurs in the head depends on the degree of interruption of the blood supply, which is determined by the position of the fracture within the capsule as well as the angle of the fracture. When circulation is preserved in both fragments, and the fracture is in an impacting position, then union results, and aseptic necrosis of the head rarely occurs. When circulation of the head fragment is greatly impaired, then union is delayed, and if the process is too slow, *aseptic necrosis of the head* may develop. In some cases in which shearing strain may prevent union, the amputated fragment of the head may remain viable because of blood supply received through the capsular vessels and perhaps the ligamentum teres.[3] However, it is well established that the principal blood supply to the head of the femur is by way of the medullary vessels which pass through the neck. In the treatment of ununited fractures, then, the earlier this main source of blood supply can be restored through the neck by impaction of the fracture and stimulation of osteogenesis and revascularization, the better the results should be.

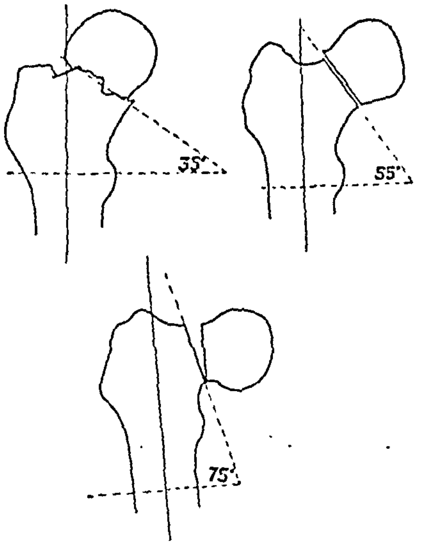

Fig 1.—Mechanical analysis of fractures at the neck of the femur, according to Linton.[1b]

BONE GRAFTING AND OSTEOTOMY

In the treatment of ununited fractures in other parts of the skeletal system, it has long been recognized that satisfactory results depend on correction of faulty mechanics and stimulation of osteosynthesis by bone grafting. In the treatment of ununited fractures of the neck of the femur, however, reliance has been placed in the past on bone grafting procedures which did not take into account the mechanical factor largely responsible for the nonunion or on osteotomy procedures attempting to place the fracture in an impacting position, which did nothing to replace the fibrous tissue that had formed at the fracture site or to facilitate osteogenesis and revascularization of the head. Hence bone grafting and osteotomy are both only partial remedial procedures, in that each fails to take into account the whole problem presented by ununited fractures of the neck of the femur. Nevertheless, both methods have produced satisfactory results in a certain proportion of cases. Hence there has been a tendency for the individual surgeon, on the basis of his experience, to develop a preference for one or the other. This empiric attitude has undoubtedly been responsible for many failures by both methods since it has failed to recognize the fact that a certain proportion of cases in which bone grafts are used will result in failure when shearing force on the fracture line remains great and—conversely—that an osteotomy will not be successful when the desired impaction is not obtained because of lack of accurate control of the rotation of the head or when the degenerative fibrous process at the fracture site has progressed so that circulation cannot be reestablished through the neck to stimulate osseous repair.

The principal technics used for bone grafting in ununited fractures of the femoral neck are those described by Albee, Henderson[5] Gallie,[6] Compere[7] and myself.[8] Bone grafting technics are much alike in principle; the differences consist largely in the source of the bone used; i. e., tibia, fibula or ilium; whether the grafts are single or multiple; the site of insertion of the graft; the type of incision and exposure used in performing the the operation, and whether or not the graft is accompanied by some method of internal fixation.

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[2] Pauwels, F.: Der Schenkelhalsbruch: Ein mechanisches Problem; Grundlagen des Heilungsvorganges Prognose und kausale Therapie, Stuttgart, Ferdinand Enke, 1935.

[3] (*a*) Wolcott, W. E.: Circulation of the Head and Neck of the Femur: Its Relation to Nonunion in Fractures of the Femoral Neck, J. A. M. A. 100:27-34, (Jan. 7) 1933; (*b*) Evolution of Circulation in the Developing Femoral Head and Neck: An Anatomic Study, Surg., Gynec. & Obst. 77:61-68, 1943.

The aim of all bone grafting procedures is to replace fibrous growth by formation of new bone, stimulated by transplantation of healthy bone into the area of degenerative change. If shearing force is not too great, and if the graft is well placed so as to aid in overcoming instability of the fracture, satisfactory results may depend partially on this mechanical factor. However, even in cases in which osteogenesis is stimulated satisfactorily, the results of the operation may be unsuccessful because the mechanical fault has not been corrected and the new bone is subjected to the same stresses that caused or contributed to the nonunion of the fracture originally.

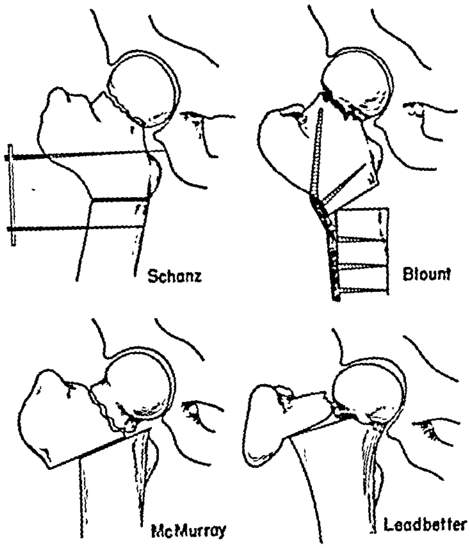

Fig 2.—Various types of osteotomy procedures for ununited fractures of the neck of the femur.

Nearly all who have used bone grafting procedures have recognized that such operations were not suitable in all cases. In general, the tendency has been to confine the use of bone grafting to patients in younger age groups. Usually bone grafting is regarded as a suitable procedure in only about 10 per cent of patients with ununited fractures of the femoral neck.[9] Published results show that operations of this type result in union in only about two thirds of this selected group of cases.[10]

The purpose of various types of osteotomy (fig. 2) is to correct the mechanical fault that is preventing impaction and to produce a stable hip.[11] In the Schanz,[11c] or wedge, osteotomy, shearing force is often overcome, giving greater stability to the hip joint, but it often does not result in union, and causes considerable loss of leg length.[12] The McMurray,[11f] or high oblique, osteotomy is now considered preferable to the Schanz procedure by most orthopedic surgeons. With this operation, union of the osteotomy surfaces occurs, thus yielding a stable hip even in cases in which nonunion between the head and neck of the femur persists. The shortening of the leg following this operation, although it may be considerable, is not so great as with the wedge osteotomy. The principal difficulty with the McMurray osteotomy is lack of definite control of the head of the femur and upper trochanteric segment and their proper placement when the shaft of the femur is displaced medially. In many instances, the head of the femur is not rotated sufficiently and the fragments are not correctly placed to facilitate bony union and repair. Impaction of the fragments is relied on entirely to break down the fibrous scar tissue, and when much scar tissue is present, or when sufficient impaction is not procured, union cannot occur. Unfavorable results with osteotomy alone, in the presence of a "dead" head, were undoubtedly due to the fact that union was not procured between the shaft and the head and consequently there was never any possibility that the head might become revascularized.

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[4] Albee, F. H.: The Bone Graft Peg in Treatment of Fractures of the Neck of the Femur, Ann. Surg 62:85-91, 1915.

[5] Henderson, M. S.: Bone Graft for Ununited Fractures of the Hip. Proc. Staff Meet., Mayo Clin. 6:17-19. 1931.

[6] Gallie, W. E., and Lewis, F. L.: Ununited Fractures of the Neck of the Femur in the Aged, J. Bone & Joint Surg. 22:76-80, 1940

[7] Compere, E. L., and Lee, J.: The Restoration of Physiological and Anatomical Function in Old Ununited Intracapsular Fractures of the Neck of the Femur, J. Bone & Joint Surg. 22:261-277, 1940.

[8] Dickson, J. A.: Treatment of Ununited Fractures of the Neck of the Femur by Means of a Bone Graft and Smith-Petersen Nail, S. Clin. North America 19:1235-1241, 1939

[9] Henderson, M. S.: Ununited Fractures of the Neck of the Femur: Treatment by the Aid of a Bone Graft, J. Bone & Joint Surg. 22:259-297, 1940.

[10] Henderson.[5] Gallie and Louis.[6] Compere and Lee.[7]

[11] *(a)* Linton.[1b] *(b)* Pauwels.[2] *(c)* Schanz, A.: Ueber die nach Schenkelhalsbrüchen zurückbleibenden Gehstörungen, Deutsche med. Wchnschr. 51:730-732, 1925. (d) Schumm, H.C.: The Schanz Osteotomy for Fractures of the Neck of the Femur, J. Bone & Joint Surg. 19:955-963, 1937. *(e)* Reich, R. S.: Ununited Fractures of the Neck of the Femur: Collective Review, Surg., Gynec. & Obst. 83:105-112, 1946. *(f)* McMurray, T. P.: Ununited Fractures of the Femoral Neck, J. Bone & Joint Surg. 18:319-327, 1936. *(g)* Reich, R. S.: Ununited Fractures of the Neck of the Femur: Treatment by High Osteotomy, ibid. 23:141-159, 1941. *(h)* Speed, J. S., and Smith, H.: Trochanteric Osteotomy for Ununited Fractures of the Neck of the Femur, South. M. J. 34:798-806, 1941. *(i)* Blount, W.: Blade Plate Internal Fixation for High Femoral Osteotomies, J. Bone & Joint Surg. 25:319-329, 1943. *(j)* Dawkins, A. L.: Treatment of Recent Fractures of the Neck of the Femur by Subtrochanteric Osteotomy, Australia & New Zealand J. Surg. 10:244-248, 1941. *(k)* Jones, E.: Trochanteric Transplantation in Treatment of Fractures of the Neck of the Femur, J. Bone & Joint Surg. 14:259-266, 1932. *(l)* Key, J. A.: Internal and External Fixation of High Osteotomies, ibid. 25:737-744, 1943. *(m)* Leadbetter, G. W.: Cervical-Axial Osteotomy of the Femur: Preliminary Report, ibid. 26:713-720, 1940.

[12] Linton.[1b] Schumm.[11d] Reich.[11e]

The Leadbetter[11m] cervical-axial osteotomy overcomes some of the difficulties of the McMurray procedure in that the osteotomy is done under direct vision and greater leg length is procured than with the other types. However, there is still lack of control of the degree of rotation of the fragments, and, except in early cases, in which operation is performed before much fibrous tissue has developed at the fracture site, the procedure is carried out with considerable difficulty.

Although the Brackett operation[13] is a reconstruction procedure, it rests on essentially the same principles as osteotomy, since its aim is to correct the mechanical fault and to remove the shearing stress from the fracture site. It has the additional advantage that it removes fibrous tissue at the fracture and thus attempts to "freshen" the bone for healing. Although this procedure is preferred to osteotomy by some surgeons,[14] and although in my hands it has produced some satisfactory results, I agree with Watson-Jones[15] that it is not to be recommended because the extensive dissection required produces much greater interference with circulation than does osteotomy, and thus may inflict further injury on an already damaged blood supply.

Thus a critical analysis of my own results with various procedures used in treatment of ununited fractures of the neck of the femur and a review of the literature reporting the different bone grafting, osteotomy and reconstruction procedures show that, although results are satisfactory in some instances, the proportion of failures is remarkably similar with all methods, amounting rather generally to 35 to 50 per cent of all cases subjected to secondary procedures.

This led to the idea that if the advantages of the various procedures could be combined, with aim of correcting faulty mechanics and restoring circulation and stimulating formation of bone in a single operation, perhaps these results might be improved. Examination of a series of roentgenograms of ununited fracture of the femoral neck showed that in most instances there was a downward rotation of the head of about 60 degrees. Furthermore, measurement of the angle of the fracture line in relation to the femoral shaft, by Linton's method, showed that in all instances this was high, i. e., over 65 degrees, and hence would fall in the group classification of Pauwels[2] and Linton[1b]; this is the group in which shearing force is greatest and mechanical factors are most unfavorable to union.

In planning the treatment of ununited fractures, it thus seemed evident that if the upper part of the shaft and head were rotated 60 degrees, the head of the femur would assume its normal relationship within the acetabulum, and the mechanical stress in the fracture line would be changed so that the fracture would have the advantage of impaction to stimulate union. That is, according to Linton's classification, it would be changed from group 3 to group 1, for the angle of inclination of the fracture would be changed from 65 degrees or over to less than 30 degrees. Thus, according to modern concepts, a controlled osteotomy is essential in the treatment of nonunion of fracture of the femoral neck.

In view of the fact that elsewhere in the skeletal system results of treatment of ununited fractures depend not only on the correction of mechanical faults but also on bone grafting to stimulate osteogenesis, it is logical and desirable that this 60 degree rotation of the head and trochanteric segment should be combined with bone grafting to stimulate osteogenesis. A bone graft gives added stability across the fracture and acts as a guide to formation of granulation tissue and aids revascularization of the head. This facilitates blood supply from the trochanteric segment to the head and leads to more rapid healing. Hence it is obvious that bone grafting is also essential in the treatment of ununited fractures at the neck of the femur. The use of cancellous bone for the graft taken from the ilium is important, as has been shown by the work of Abbott and his collaborators.[16] "Cancellous bone has a loose structure, with interlacing and branching trabeculae, every one of which is covered by endosteal cells, and has high osteogenetic power. The loose structure also permits of early and thorough revascularization."

This reasoning led to the development of the combined procedure,[17] consisting of the high geometric osteotomy in which the rotation of the head and trochanteric segment is accurately and consistently controlled and brought into a position of maximal impaction, with insertion of a bone graft from the ilium to stimulate osteogenesis and revascularization.

TECHNIC

The method employed to procure an osteotomy that will assure a 60 degree rotation and bring the fractured surfaces into a position of impaction is illustrated in figures 3 and 4. The operation is

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13. Brackett, E. G.: Fractured Neck of the Femur: Transplantation of Femoral Head to Trochanter; Report of a Case Eight Years After Operation, Boston M. & S. J. 192:1118-1120, 1925.

14. Rowe, M. L., and Ghormley, R. K.: Brackett Operation for Ununited Fractures of the Neck of the Femur, J. Bone & Joint Surg. 26:249-256, 1944. Magnuson, P. B.: Fractures of the Neck of the Femur: Evaluation of Various Methods Advanced for Treatment, J. A. M. A. 107:1439-1445 (Oct. 31) 1946.

15. Watson-Jones, R.: Fractures and Joint Injuries, ed. 3, Baltimore, Williams & Wilkins Co., 1944, vol. 2. p. 660.

16. Abbott, L. C.; Schottstaedt, E. R.; Saunders, J. B. D. M., and Bost, F. C.: Evaluation of Cortical and Cancellous Bone as Grafting Material: A Clinical and Experimental Study, J. Bone & Joint Surg. 29:381-414, 1947.

17. Dickson, J. A.: The High Geometric Osteotomy with Rotation and Bone Graft for Ununited Fractures of the Neck of the Femur: A Preliminary Report, J. Bone & Joint Surg., to be published.

17a. Since this paper was presented the technic has been modified: a single curved lateral incision between the tensor fascia femoralis and the gluteus medius muscles or an anterior femoral incision is used.

carried out through two incisions.[17a] A lateral incision, 7 to 8 inches (17.8 to 20.3 cm.) long, extends downward from the prominence of the greater trochanter. The outer surface of the bone is exposed subperiosteally, and a bed prepared for insertion of a blade plate. Then a Smith-Petersen incision is made to expose the hip joint from the front. The rectus femoris is reflected downward, allowing full exposure of the anterior surface of the femur. The joint capsule is opened and the incision carried outward with medial reflection of the muscles anterior to the femur.

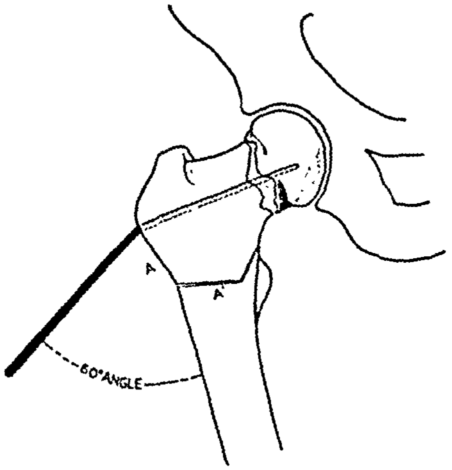

Fig 3.—Site for geometric osteotomy and control of upper segments by blade plate.

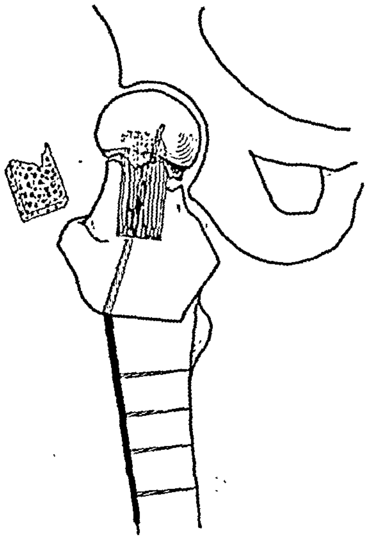

Fig 4.—Position of osteotomy after rotation and placement of bone graft.

To assure control of the head and trochanteric segments, these are transfixed by a blade plate, extending from the prominence of the greater trochanter well into the lower half of the head. A guide wire is first placed from a point about ½ inch (1.3 cm.) above the prominence of the greater trochanter into the center of the head. Then the blade plate is suitably bent so that when the blade is inserted parallel to the guide wire, the plate will extend outward from the shaft at a 60 degree angle. This is readily accomplished with the aid of a protractor. With the blade plate properly placed, the osteotomy site is then determined. In order to procure the desired rotation, the osteotomy should be cut to simulate the sides of a regular hexagon (fig. 3). Then when rotation is carried out (fig. 4) and the side A comes to A^1, the segments will fit accurately, the desired rotation of 60 degrees will be accomplished and the plate will fit along the shaft of the femur.

The osteotomy site is determined by measuring with a caliper (fig. 5) the distance from where the blade enters to the lesser trochanter. This gives the diameter of the marking chisel which is chosen from a set of six semihexagonal chisels. When the proper-sized marking chisel is used and placed on the front of the femur with the diameter extending from the entrance of the blade plate to the lesser trochanter, one side of the marker extends beyond the flare of the trochanter. If the chisel is now rotated slightly so that one side runs parallel to the flare of the trochanter, extending downward from the entrance of the blade plate, the site of the osteotomy can be marked. This brings the inner blade out just above the lesser trochanter, thus assuring a high osteotomy. If too small a marker is chosen, the osteotomy will extend into the neck, and much of the support of the head segment will be lost. If too large a chisel is used, then the osteotomy will come out below the lesser trochanter, and the impacting force of the psoas will not be procured. The measurement determining the choice of the proper marking chisel is extremely important, in order to obtain optimal results from the osteotomy.

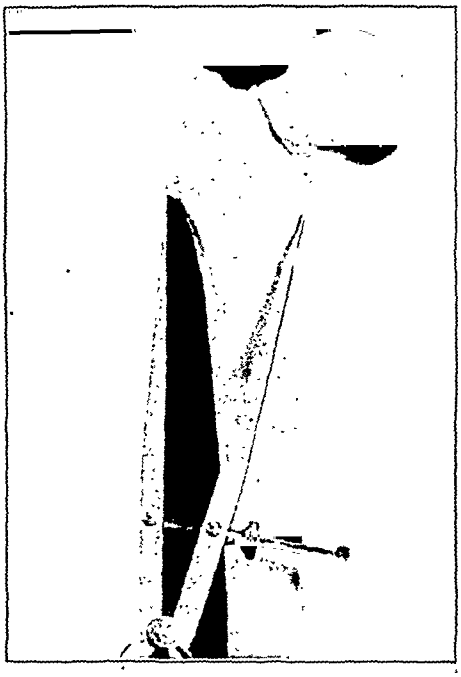

Fig 5.—Estimation of size of marking chisel to be used for osteotomy, from the point of insertion of the blade plate to the lesser trochanter.

When the osteotomy and rotation have been completed, a window is made in front of the trochanteric segment just distal to the fracture site (fig. 4). This readily allows removal of sclerotic bone and fibrous tissue and curettement up into the head to facilitate placement of the graft. Numerous chips of cancellous bone from the ilium are impacted well across the fracture line, and one large graft is then fixed into position to give added stability. The window removed can be replaced.[8] As has already been mentioned, cancellous bone is used because it has superior osteogenetic power.

Internal rotation is maintained in balanced traction, or with a plaster boot and bar, for six to eight weeks; then the patient is allowed up on crutches, with no weight bearing for a period of months. Roentgenograms are made as progress studies from time to time, and protection is continued until there is evidence that the head is throughly revascularized.

COMMENT

Fortunately, this rotation osteotomy results in equalization of leg length, and the greater the varus deformity before operation, the greater the length procured (fig. 6). Full details of the effect of the geometric osteotomy on leg length have been reported previously.[17] This approach to the treatment of ununited fractures of the neck of the femur has produced most encouraging results. In the 10 cases in which operation has been performed, solid bony union has been procured in 9. The one case in which union has not occurred has resulted in a good, stable, functioning hip. This was one of the early cases in the series, and it is believed that insufficient attention was given to the placement of the graft in this instance. Figure 7 illustrates the results obtained.

The cases dealt with in this series have not been "favorable" cases, in that the nonunion has been of long standing in most of them, and, in several, roentgenograms have indicated increased density in the head fragment, indicating considerable degree of aseptic necrosis. In these instances, there is roentgenographic evidence that healthy bone has formed in the head, which indicates that there has been reestablishment of circulation to the head through the medullary vessels of the neck as a result of the combined operation.

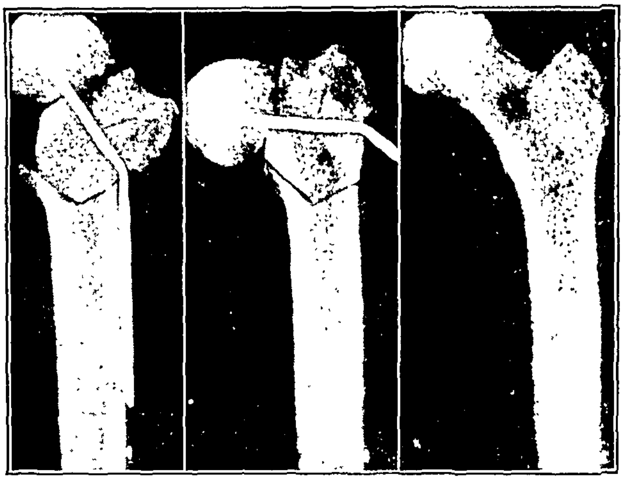

Fig 6.—Equalization of leg length by geometric osteotomy.

As these cases indicate, and as others have also shown after bone grafting[7] and after osteotomy procedures,[18] a so-called dead head can be revascularized and returned to a normal state both roentgenlogically and functionally. These findings naturally suggest that perhaps orthopedic surgeons should question carefully the present concepts regarding necrotic heads after femoral neck fractures. This is a controversial problem because, according to some orthopedic surgeons, the roentgenographic findings and the duration of nonunion in the cases shown would have been interpreted as criteria indicating the need for a reconstruction operation of the Whitman or Colonna type, with removal of the head. These operations are unquestionably necessary in some instances, and there is no intent to imply that all cases of ununited fractures of the femoral neck should be treated by the combined procedure here described. However, there is now considerable difference of opinion as to what

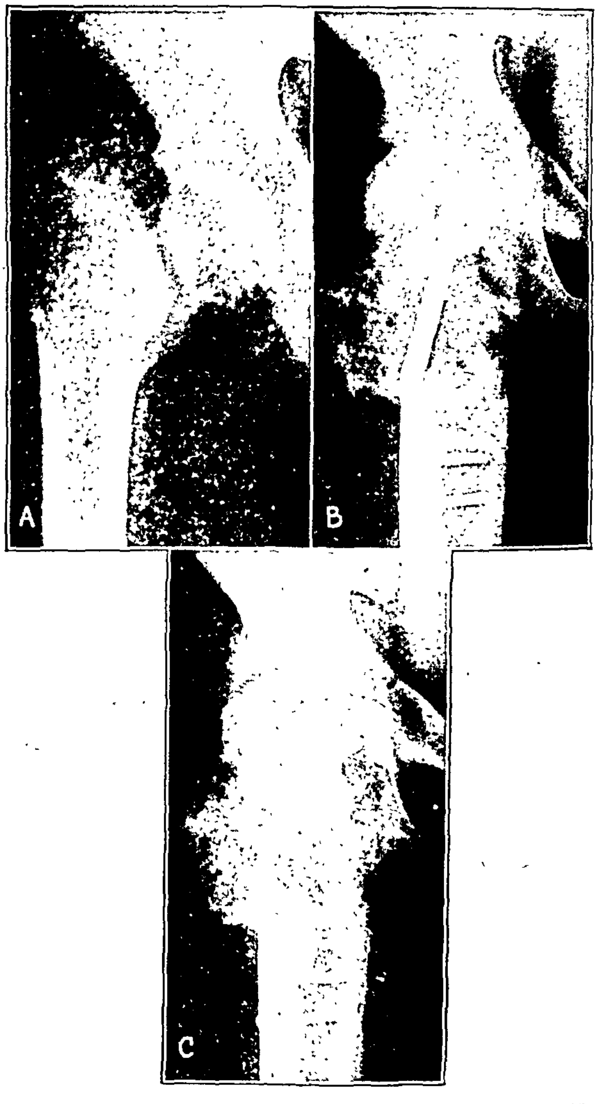

Fig 7.—(A) Preoperative anteroposterior roentgenogram of ununited fracture of femoral neck in a man, 42, twenty-one months after injury. Note roentgenographic evidence as the "dead" head. (B) postoperative anteroposterior roentgenogram of same patient, showing union and evidence of revascularization of head, six months after operation. (C) anteroposterior roentgenogram of same patient, showing solid bony union and regeneration of healthy bone in the head, eleven months after operation.

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18. (a) Linton.[1b] (b) Phemister, D. B.: The Pathology of Ununited Fractures of the Neck of the Femur with Special Reference to the Head, J. Bone & Joint Surg. 21: 681-693, 1939. (c) Sherman, M. S., and Phemister, D. B.: The Pathology of Ununited Fractures of the Neck of the Femur, ibid. 29:19-40, 1947.

constitutes a "dead" head and as to the procedures that may be effective in the presence of roentgenographic evidence of aseptic necrosis. Wolcott[3a] reported that pathologic examination of three femoral heads, removed in performing Whitman reconstruction procedures, which had shown definitely increased roentgenologic density in relation to the femoral shaft, proved that in none of them was there complete necrosis of bone.

At this point, it seems desirable to question the practice of sacrificing all so-called dead heads, as is recommended by some. It must be admitted that at present our knowledge is not sufficiently definite to permit the formulation of any dogmatic dictums regarding these cases. Nevertheless, if surgeons free themselves from rigid, perhaps erroneously pessimistic conceptions as to the potential viability of femoral heads which have been amputated by ununited fractures, it may be that many such heads, which are now sacrificed because of such conceptions, may be saved. It would seem wise to assume a cautious and conservative attitude toward removal of "dead" heads, since, according to the facts cited, there is possibility for regeneration of bone in a large proportion of these cases.

If this conservative attitude is assumed, one must not lose sight of the fact that although there may be some question as to the degree of vascular damage there is no question that the nutrition of heads which show increased density on the roentgenogram has been impaired. This means, as Phemister[18bc] has emphasized, that such a head must be protected from trauma incident to weight bearing for a prolonged period—at present just how long is not known—while the new bone is forming. For it seems inevitable that if the head is not protected during this period of regeneration, atrophic and arthritic changes will occur.

If time proves that despite the evidences of regeneration in these heads there is eventual atrophy in some of them, then, with the type of osteotomy here used, arthroplasty[19] with the "vitallium" cup, as described by Badgley, can still be employed. This would not be possible after other types of osteotomy. If this is not feasible in a particular case, then a Whitman[20] or Colonna[21] reconstruction operation, or an arthrodesis, as recommended by Gill[22] for cases in which the head is collapsed, could be performed.

Since the combined operation has resulted in evidence of regeneration and revascularization of bone in roentgenologically "dead" heads in cases of two and three years' duration, it seems logical to assume that the treatment might be expedited and the results more certainly favorable in earlier cases of nonunion. From what is now known of the effect of unfavorable shearing stress and of circulatory impairment in the causation of nonunion and of atrophic changes in the head, it is to be expected that a rationale may be developed, aiming toward the prevention of many of these complications of fractures at the femoral neck.

The mechanical analysis of the fracture angle in relation to impaction and the position of the fracture in relation to the interruption of blood supply furnish an approach toward classification and prognosis of cases at the time the fracture occurs. In cases in which preliminary study indicates that impaction is unlikely to occur with simple nailing, then some type of operation designed to bring about impaction and stability of the fracture should be performed as a primary procedure. Bone grafting has been recommended[23] for this purpose, and also osteotomy.[24] It may be that bone grafting will be effective through stimulation of osteogenesis and in adding sufficient stability in some such fractures to prevent nonunion. From the standpoint of basic principles, however, it would appear that a controlled osteotomy would be preferable to any type of bone grafting in overcoming the mechanical factors most unfavorable to union[25].

It might be, with proper selection of cases and of the primary procedure best suited to the individual case, that development of nonunion and also of atrophic changes might be largely avoided. If so, this would be a big step forward in the treatment of ununited fractures of the neck of the femur, since an ounce of prevention is worth a pound of cure. When nonunion is evident, it is important that combined osteotomy and bone-grafting operation be performed as early as possible. Slipping of the fractured surfaces is usually discerned on the roentgenogram within the first few weeks, and in the vast majority of cases in which this occurs the situation progresses steadily and there is eventual nonunion. If union does occur in such cases, it is long delayed and is usually accompanied by severe atrophic changes. In these cases, instead of waiting and hoping blindly for a favorable outcome, which almost

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19. Smith-Petersen, M. N.; Larson, C. B.; Aufranc, O. E., and Law, W. A.: Complications of Old Fractures of the Neck of the Femur: Results of Treatment by Vitallium-Mold Arthroplasty, J. Bone & Joint Surg. 29:41-48, 1947. Wilson, P. D.: Trochanteric Arthroplasty in the Treatment of Ununited Fractures of the Femur, ibid, 29:313-326, 1947.

20. Whitman, R.: Reconstruction Operation for Ununited Fracture of the Neck of the Femur, Surg., Gynec. & Obst. 32:479-486, 1921. Krida, A.: The Whitman Reconstruction Operation for Complications of Fracture of the Neck of the Femur, J. Bone & Joint Surg. 29:310-312, 1947.

21. Colonna, P.: A New Type of Reconstruction Operation for Old Ununited Fractures of the Neck of the Femur, J. Bone & Joint Surg. 17:110-122, 1935.

22. Gill, A. B.: Arthrodesis of the Hip for Ununited Fractures, J. Bone & Joint Surg. 29:305-309, 1947.

23. Eyre-Brook and Pridie.[1c] Albee, F. H.: Autogenous Bone Graft Peg as Primary Treatment for Fractures of the Neck of the Femur, Internat. J. Med. & Surg. 44:505-571, 1931. Inclan, A.: Late Complications in Fracture of the Neck of the Femur Treated by Nailing, Bone Grafting or Both, J. Internat. Coll. Surgeons 9:36-50, 1946. Bado, J. L.: Report on Fractures of the Neck of the Femur, read at the Annual Meeting of American Academy of Orthopaedic Surgeons, Chicago, 1947.

24. Linton.[1b] McMurray, T. P.: Fractures of the Neck of the Femur: Oblique Osteotomy, Brit. M. J. 1:330-333, 1938. Dawkins.[11j]

25. Dickson, J. A.: The Mechanical Factor in Fractures of the Neck of the Femur, with a Suggestion for the Treatment of Fresh Fractures, to be published.

never happens, the secondary operation should be performed immediately, assuming that the patient's general condition warrants it. This would establish impaction and revascularization and regeneration of bone before all the troublesome fibrosis and atrophic changes have occurred to complicate the situation.

If surgeons reorient their conceptions of the problem of nonunion of fractures of the neck of the femur in this direction—that is, toward early recognition of unfavorable mechanical and circulatory factors, and institute prompt treatment by means of the combined operation, it seems probable that the results in this type of case would be greatly improved.

ABSTRACT OF DISCUSSION

On Papers by Drs. Van Gorder; Cleveland, Bosworth and Thompson; Freyberg and Levy; *Badgley and Denham*; Boyd and George; and Dickson.

DR. J. R. MOORE, Philadelphia: Dr. Van Gorder has covered the fundamentals essential to the successful treatment of this type of fracture. It is important to recognize in these patients the important part that pain plays prior to reduction, which one might term as a complete change in personality. The patient becomes morose, depressed, psychotic. These findings, coupled with the general changes concommitant with age, suggest poor mental and physical health and delay surgical treatment. A vicious circle develops. The patient becomes totally invalided, suffers from complete enforced immobilization and the pain factor. A complete physical examination is essential and a roentgenogram of the chest is advisable as a matter of routine. The observations rarely delay a reduction legitimately. Adequate therapy, of course, should be employed to meet the coexisting conditions, complications in connection with surgical treatment. After the fixation of the fracture, a dramatic change in personality and general physical being occurs which bears out beyond question the significance of the pain element. The second point which I wish to emphasize deals with the method of reduction. Gentleness is essential. Violent maneuvers are unwarranted and only serve to rotate the head, perhaps even rupture the capsule or tear the blood supply attachment to the head fragment. The simple method of pulling both extremities gently to length, holding the pelvis firmly in the normal transverse axis, then gently internally rotating the fractured extremity until the internal rotation matches up with the internal rotation present on the opposite side and finally mildly abducting for a few degrees for locking brings about an anatomic reduction in the majority of instances. In case reduction is not accomplished, then one should resort to open reduction at once, refusing anything short of normal restoration. I wish to emphasize the importance of follow-up. The usual anteroposterior and lateral views should be taken, and roentgenograms should be made at monthly intervals for the first six months, at intervals of two months for the second six months, every three months for the third six months and then at intervals of six months for a minimum period of three years. It is only in this manner that early nonunion can be anticipated or diagnosed and that aseptic necrosis and avascular necrosis can be discovered and adequate treatment instituted.

DR. ROBERT H. KENNEDY, New York: The paper by Drs. Cleveland, Bosworth and Thompson is an important presentation. Comparison is made between a large group of patients treated by internal fixation and one treated by closed methods. Our experience at the Beekman-Downtown Hospital has not been exactly similar. In our group of 34 patients in the past six years, the average age was 63, as compared with 75 in Dr. Bosworth's report. Whatever variance we might find in complications and results might readily be due to a difference of twelve years. Only 20 per cent of our group were over 70, quite at variance with the group just reported. Our major treatment has been by Russell traction, and only 5 of this group had internal fixation. The mortality among patients treated in traction was 7 per cent, differing greatly from their mortality of 36 per cent when treated by traction, or 12 per cent by internal fixation. There was no mortality in our 5 patients treated by internal fixation. It seems that it makes a great difference what type of person one handles. The duration of traction in our cases averaged sixty-seven days. We no longer depend on adhesive plaster on the leg but use a Kirschner wire through the os calcis. As regards decubitus, which Dr. Bosworth and his group stated was almost the rule with traction treatment, this occurred in only 10 per cent of our patients. The frequency of stiff knees was low. We expect a good functional result following the use of Russell traction for as long a period as nine to ten weeks. There were 3 patients, 10 per cent, who experienced serious complications. One had a pulmonary infarct, and 2 had pneumonia. The hospital stay for traction cases was ninety-three days, compared with ninety-eight, and for internal fixation fifty-four, compared with fifty-seven. It is important to gain experience in internal fixation and have ready the proper setup for whatever nail one uses so that every hospital may do internal fixation when indicated. On account of low mortality, low morbidity, and lack of complications, we are in favor of continuing Russell traction in the majority of instances. In going over the paper, I did not note that it stated how soon these patients in internal fixation were allowed to be ambulatory. One must remember that in many instances, when one speaks of operating so that the persons may become ambulatory, one finds, on looking up the records, that one did not get them up early. Every one of these fractures can be expected to heal. There is little reason to go on record in favor of operating to avoid complications unless the patients are actually gotten out of bed.

DR. ALEXANDER P. AITKEN, Boston: I agree with Dr. Badgley that the terms "aseptic" and "avascular" necrosis are loosely applied. The correct term for death of the head following fracture or dislocation should be avascular necrosis. Inasmuch as death of the head cannot be determined for several months following fracture, all such fractures should be considered with suspicion. The high incidence of avascular necrosis is an argument for abstinence from weight bearing until one is reasonably sure that this condition is not going to develop. Even when there is avoidance of weight bearing, however, if the initial damage has been sufficiently severe aseptic necrosis will eventually develop. Phemister has proved that the underlying cause is rupture or thrombosis of the capsular vessels. One must therefore be most careful to prevent further damage. Consequently, all manipulation must be carefully done. I do not believe, however, that careful manipulation of a hip will do much to jeopardize the circulation of the head. I do not believe that any more harm is done by manual reduction than by the manipulation necessary in the application of skeletal traction. Dr. Badgley stated that union occurred in 90 per cent of his cases if traction was applied immediately. I do not recall, however, that he stated the incidence of avascular necrosis that occurred in this series. More careful study must be done before it is known whether or not the method of reduction plays a part in the development of aseptic necrosis. I would agree with Dr. Badgley that open reduction should be avoided whenever possible. Damage to the capsular vessels by surgical treatment must occur. However, many men are routinely operating on fresh hips, and it would be interesting to compare an incidence of aseptic necrosis in fractures treated by the open method with those treated by the pinning method. If, in two or three months or, as is more common, in six to eight months, it becomes obvious that aseptic necrosis has developed, Dr. Badgley has recommended weight bearing and protection until regeneration has occurred. If one could be sure that such regeneration would occur, such a procedure would be most advisable. The restoration of circulation with resorption of the dead bone and replacement of the head is a slow process. The chances of obtaining a normally shaped head with normal cartilage and without arthritic changes are rather small. Rather than submit our patients to such prolonged immobilization, in the presence of aseptic necrosis, my associates and I believe it wise to remove the head and perform a fusion of the hip or some type of reconstruction, despite the fact that the end results of these procedures leave much to be desired.

DR. WARREN WHITE, Greenville, S. C.: We have a rather definite responsibility in this section as regards the treatment of fractures. If you will go through some of the old programs of the American Medical Association you will notice the disappearance of papers on fractures in the Section on General and Abdominal Surgery. The responsibility, therefore, rests largely on this section, which, as I see, is being attended by so many general surgeons that we must get down to fundamentals and not be too technical in our discussions. I have a problem in South Carolina which is a considerable one. In the state there are only eight orthopedic surgeons. All eight of us cannot nail all the hips, and the general surgeons are still rather reluctant about doing hip nailing as a routine. At the risk of interjecting something which may be irrelevant to our subject this morning, I am going to ask whether one of our panel here will not discuss the more conservative method, surgically speaking, of taking care of these fractures of the neck of the femur if the surgeon is in a place where satisfactory hospital facilities are not available for hip fixation. What is the next best thing? I get many telephone calls from persons throughout the country trying to get into the hospital for fractures of the neck of the femur. We just do not have the hospital beds. I want to give these surgeons something to do that is better than Buck's extension.

DR. JOSE VALLS, Buenos Aires, Argentina: I agree, in a general way, with what the speakers said. I have used nailing in about 200 cases myself. I use traction for the first few days after admission of the patient, and I do the nailing during the first week, if it is possible. I used to handle the patients not with manipulation, but with slight traction and some internal rotation, and I succeeded in getting good reduction practically in all cases. I try to reduce the fracture not exactly, but to put the head in valgus position. That seems to me -- and I have been doing this during the last few years -- to help greatly in the union. After the nailing, I put a short plaster cast on for three months. If I need to move the patient, I use a special device to prevent weight bearing. I take off the cast after three months, and the patient walks with crutches, or some kind of braces, at least for six to nine months. I have been using a guide of my own in nailing for thirteen years. I think it is the best, but I believe that the proper position can be maintained with wires, with a screw, with bone graft or with a nail. The most important complication nowadays is aseptic necrosis. This is the field in which surgeons can do something in the next few years. In this field, Dr. Bado of Montevideo, Uruguay, claims that the bone graft, instead of nails, or screws, is better, and in his cases he has not seen so many with aseptic necrosis. In the intertrochanteric fractures, I have for many years used wire traction with the patient in bed, but now I have changed. I use a Neufeld nail, and I have about 20 cases in which this treatment was used. I am satisfied with the results because the patient can leave the bed in one week or more and go home in fifteen to twenty days. That cuts down the cost of the treatment.

DR. GEORGE W. VAN GORDER, Boston: To answer Dr. White, one realizes that there are a number of patients who are not close enough to hospitals to have the care that is necessary in hip nailing. The next best method of treating fractures of the neck of the femur, if one cannot nail them, is to use the Whitman abduction plaster of paris method. My third choice would be Russell traction. Figures on mortality mean little or nothing, unless the length of time that is involved and the complete data regarding them are known. Do I believe in leaving alone impacted types of fractures in group 1? For many years, we never nailed an impacted fracture, but we allowed it to go on to union, expecting it to unite and finding that it nearly always did unite. Later we became too certain of our judgment and on a rare occasion were deceived by the roentgenograms, only to find that the apparent impaction was not real and did not hold. In view of the uncertainties of roentgen interpretation in these cases, some of my colleagues and I now prefer to nail impacted fractures of the femoral neck as well as the unimpacted ones. I would treat the extremely high subcapital fracture in an elderly woman by internal fixation with a Smith-Peterson nail and possibly would use a bone graft as well, depending on the obliquity of the fracture line. I am asked why, in an oblique or vertical fracture of the femoral neck, the third type which is so hard to unite, I do not do an osteotomy as a method of choice. There, again, it is a matter of personal opinion. It was with extreme interest that I heard Dr. Boyd speak this morning about his results with Pauwels' group 3 type of fracture. Apparently in Boyd's experience, these patients did as well under similar treatment as those of a supposedly more favorable type.

DR. HAROLD B. BOYD, Memphis, Tenn.: If we are to learn more about aseptic necrosis, adequate follow-up roentgen studies must be made on a large number of patients. In addition to the usual postoperative roentgenograms, we endeavor to secure anteroposterior and lateral roentgenograms of the hip two and six weeks after the operation; then roentgenograms are taken every three months for a year and each six months the second year. If possible, roentgenograms should then be taken of the hip at least once a year as long as the patient lives. In regard to thirty hours. This has afforded the opportunity to compare results in the first instance with those in a group receiving the same type of penicillin alone in seven and one-half days. We have not treated early syphilis with penicillin alone in thirty hours, but the results of the second schedule may be compared to the first and to those obtained with the same amount of penicillin given by the interrupted intramuscular method over three and three-quarter days.[5]

SCHEDULE A

One hundred and twenty patients exhibiting dark field positive lesions of primary or secondary syphilis were prepared for treatment.[6] One hundred and nine patients were completely treated by the following schedule within the period from Jan. 4, through July 29, 1945. Each patient received 20,000 units of sodium penicillin intramuscularly every three hours for sixty doses, over seven and one-half days (1,200,000 units total) plus three 3 hour sessions of artificial fever at 106 F. (rectal) level on alternate days, beginning twenty-three hours after penicillin was started. No further treatment was given unless clinical or serologic failure or pregnancy occurred.

Observation of these patients over a maximum period of twenty-three months and a minimum of sixteen months is presented.

The distribution of patients according to age, sex and race is given in table 1. The age of the patients ranged from 15 to 40 years; 21.1 per cent were under 20; 43.1 per cent were 20 to 24 years of age; and 35.8 per cent were 25 or over. There were 9 (8.3 per cent) cases of primary seronegative syphilis; 27 (24.7 per cent) of primary seropositive syphilis (including 2 reinfections); 64 (58.7 per cent) of secondary syphilis (including 1 reinfection), and 9 (8.3 per cent) cases of relapsing early syphilis.

TABLE 1.—*Patients Treated According to Schedule A: Number and Percentage of Patients Grouped by Race, Sex and Age*

Race and Sex	Age in Years							
	Number				Percentage			
	Total	Under 20	20 to 24	Over 24	Total	Under 20	20 to 24	Over 24
Total... ...	109	23	47	39	100.0	100.0	100.0	100.0
Male......	46	11	13	22	42.2	47.8	27.7	56.4
Female...	63	12	34	17	57.8	52.2	72.3	43.6
White......	19	1	11	7	17.4	4.3	23.4	17.9
Male......	8	..	4	4	7.3	...	8.5	10.3
Female...	11	1	7	3	10.1	4.3	14.9	7.6
Negro......	90	22	36	32	82.6	95.7	76.6	82.1
Male......	38	11	9	18	34.9	47.8	19.2	46.2
Female...	52	11	27	14	47.7	47.8	57.4	35.9

The results of treatment at designated intervals are summarized in table 2 for the whole group, and demonstrated in chart 1 by stage of disease.

The percentages used for the chart on successes and failures were obtained by assuming that patients lost from observation would have shown the same ratio of results of treatment as those observed. The ratio of the number of patients observed in each period to the number observed in the preceding period was applied to the cumulative failure figure. Patients with positive significant serologic titers[7] after twelve months' observation have been grouped with failures. Those who were seronegative or who maintained nonsignificant titers were, for the present, considered successes.

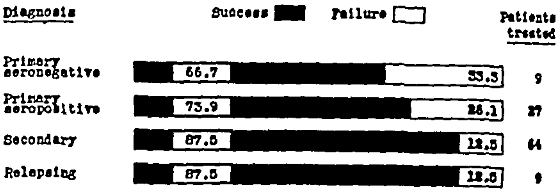

Chart 1.—Percentage of successes and failures by diagnosis at end of first year's observation of 109 patients treated according to schedule A.

TABLE 2.—*Patients Treated According to Schedule A: Results and Number of Days from Beginning of Therapy*

Number of Days from Beginning Date of Therapy	Number of Patients			
	Total Observed During Period or Later	Serologic Titer		Failures
		Negative	Positive	
0- 29	109	12	97	..
30- 59	99	23	76	..
60- 89	94	30	64	..
90-119	92	39	46	7
120-149	85	45	37	3
150-179	81	52	26	3
180-209	73	51	21	1
210-239	68	51	16	1
240-269	63	49	14	..
270-299	63	53	9	1
300-329	58	51	7	..
330-359	53	51	2	..
360-419	50	50	..	..

All lesions healed immediately after treatment. There was, in general, no pronounced difference in the rate of healing from that observed with similar amounts of penicillin alone.

Sixty-eight of the 100 seropositive patients achieved seronegativity after treatment. Four (5.9 per cent) of these subsequently relapsed. One patient was retreated because of pregnancy.

A lumbar puncture was performed on all but 2 of the patients prior to treatment. There were 29 examples of group 1 cerebrospinal fluid and 1 example of group 3 according to the criteria of Moore and Mohr.[8] Of this group of 30 patients, 4 had repeat examinations in the six month or one year interval. These revealed two normal spinal fluids and two of the group 1 type. Among the 16 patients with treatment failures 2 had abnormal fluids of the group 1 type before treatment. All the 14 patients with normal pretreatment spinal fluids whose treatment failed were reexamined at the time of failure and showed no evidence of neurorecurrence.

Treatment was known to have failed in 16 of the total patients treated. The failures consisted of 2 examples of relapsing primary syphilis; 5 of primary syphilis progressing to secondary syphilis; 5 of relapsing secondary syphilis and 4 serologic relapses. Three patients were considered to have probable reinfections.

Reactions consisted of local and systemic Herxheimer reactions which were apparent before fever was artificially induced. Eleven of the 120 patients did not complete the prescribed amount of fever and are not included in this report; 8 of these because of lack of cooperation, 2 because of cardiovascular fatigue, and 1 because of uncontrollable fever.[9] All but 1 continued to receive the full amount of penicillin. No serious reactions were noted during or after treatment in any of the 120 patients.

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[5] Bauer, T. J.; Bundesen, H. N.; Craig, R. M.; Schwemlein, G. X., and Barton, R. L.: The Treatment of Early Syphilis with 600,000 Units of Penicillin in Seven and One-Half Days, Am. J. Syph., Gonor. & Ven. Dis. 31: 45, 1947.

[6] Bundesen, H. N.; Bauer, T. J., and Kendell, H. W.: The Intensive Treatment of Gonorrhea and Syphilis, J. A. M. A. 123: 816 (Nov. 27) 1943.

[7] Four Kahn units or more.

[8] Moore, J. E., and Mohr, C. F.: Penicillin in the Treatment of Neurosyphilis, Am. J. Syph., Gonor. & Ven. Dis. 30: 405, 1946.

SCHEDULE B

One hundred and ninety patients, exhibiting dark field positive lesions of primary or secondary syphilis, were considered eligible for treatment. One hundred and eighty-eight completed treatment by the following schedule within the period from Dec. 27, 1944 through July 30, 1945. Each patient received 50,000 units of sodium penicillin intramuscularly every two hours for twelve doses beginning at 10 a. m. the day prior to fever (total 600,000 units). Following the twelfth dose, the patient was placed in the "hypertherm" and given six hours of maintained fever at 106 F. (R) level, and at each hour of elevated temperature received 100,000 units of penicillin intramuscularly (600,000 units total). This provided a total dose of 1,200,000 units of penicillin and six hours of fever in approximately thirty hours.

No further treatment was given unless clinical or serologic relapse occurred or pregnancy intervened.

Observation of these patients over a maximum period of twenty-three months and a minimum of sixteen months is presented.

The distribution of patients according to age, sex and race is given in table 3. The age of the patients ranged from 15 to 50 years; 22.9 per cent were under 20 years of age; 44.1 per cent from 20 to 24 years, and 33 per cent over 24. There were 18 (9.6 per cent) cases of primary seronegative syphilis; 35 (18.6 per cent) of primary seropositive syphilis (including 1 reinfection); 128 (68.1 per cent) of secondary syphilis (including 3 reinfections), and 7 (3.7 per cent) cases of relapsing early syphilis.

TABLE 3.—*Patients Treated According to Schedule B: Number and Percentage of Patients Grouped by Race, Sex and Age*

Race and Sex	Age in Years: Number				Percentage			
	Total	Under 20	20 to 24	Over 24	Total	Under 20	20 to 24	Over 24
Total........	188	43	83	62	100.0	100.0	100.0	100.0
Male......	81	9	31	41	43.1	20.9	37.3	66.1
Female...	107	34	52	21	56.9	79.1	62.7	33.9
White......	35	7	12	16	18.6	16.3	14.5	25.8
Male......	15	1	4	10	8.0	2.3	4.8	16.1
Female...	20	6	8	6	10.6	14.0	9.7	9.7
Negro......	153	36	71	46	81.4	83.7	85.5	74.2
Male......	66	8	27*	31	35.1	18.6	32.5	50.0
Female...	87	28	44	15	46.3	65.1	53.0	24.2

* Including 1 Japanese.

The results of treatment at designated intervals are summarized in table 4 for the group as a whole, and demonstrated in chart 2 by stage of disease. The statistical device used was identical to the one described earlier in this paper.

All lesions healed immediately after treatment; there was a tendency to require a similar amount of time as those in schedule A, which was a more prolonged form of treatment. The healing of the lesions was comparable, however, if one compared the two groups from the date of initiation of treatment.

TABLE 4.—*Patients Treated According to Schedule B: Results and Number of Days from Beginning of Therapy*

Number of Days from Beginning Date of Therapy	Number of Patients: Total Observed During Period or Later	Serologic Titer: Negative	Serologic Titer: Positive	Failures
0- 29	188	9	179	..
30- 59	174	25	119	..
60- 89	165	42	113	10
90-119	147	51	89	7
120-149	137	57	71	9
150-179	123	61	57	5
180-209	115	64	49	2
210-239	110	63	45	2
240-269	105	66	35	4
270-299	97	66	29	2
300-329	90	61	25	4
330-359	83	60	20	3
360-419	74	62	8	4

Eighty-three (48.8 per cent) of the 170 seropositive patients achieved seronegativity. Nine (10.8 per cent) of the 83 subsequently relapsed. Three patients were retreated because of pregnancy.

Treatment in 52 of the total 188 patients was known to be a failure: There were 4 examples of relapsing primary syphilis; 5 of primary syphilis progressing to secondary syphilis; 18 of relapsing secondary syphilis; 24 of serologic relapses, and 1 neurorecurrence. Four possible reinfections were considered failures.

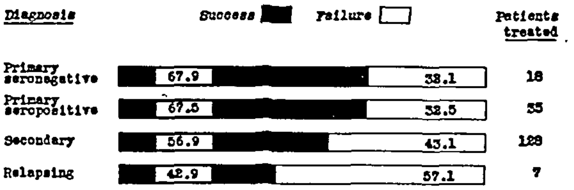

Chart 2.—Percentage of successes and failures by diagnosis at end of first year's observation of 188 patients treated according to schedule B

A lumbar puncture was performed in all but 6 of the patients prior to treatment. There were 32 abnormal spinal fluids of group 1 and 2 of group 3. Of these 34 patients, 16 had repeat examinations from six months to one year later. Seven revealed normal fluids and 9 abnormal; 7, group 1, 1 group 2 and 1 group 3.

Among the 52 whose treatment was a failure, 11 had abnormal spinal fluids before treatment. There were 9 patients with group 1 fluids and 2 with group 3 fluids. Of the 11 patients, 5 showed normal post-treatment fluids and 3 group 1 and one each group 2 and group 3 fluids; 1 patient was not reexamined. Of the 41 patients with normal pretreatment spinal fluids who later relapsed, 30 were normal when reexamined at the time of failure and 2 had group 1 fluids. Nine patients were not reexamined.

Reactions during treatment as in schedule A consisted of local and systemic Herxheimer reactions which were apparent before fever was induced. Eleven patients did not receive the prescribed amount of treatment and are not included in the evaluation, 7 because of lack of cooperation; 2 had hyperpyrexial psychosis but recovered quickly with lowering of the fever, and 2 missed one dose of penicillin, omitted through error. There were no serious reactions in the entire group.

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[9] Schwemlein, G. X.: The Effect of Elevated Body Temperature on the Cardiovascular System and the Electrocardiogram with Special Emphasis on the Chest Leads, Arch. Phys. Med. 28: 165, 1947.

COMMENT

Comparison of the results of treatment in schedule A.—i. e., 1,200,000 units of penicillin with three sessions of artificial fever with another group who received penicillin alone[10] in the same time-dose relationship makes apparent that the group receiving the additional fever has a lower failure rate. When broken down by diagnosis it is obvious that the groups may not be large enough for tests of statistical significance. However, in the group receiving penicillin alone there are 176 untreated cases of secondary syphilis with a cumulative failure rate of 35.7 per cent, while in schedule A the cumulative failure rate is 12.5 per cent in 64 cases of untreated secondary syphilis. The cumulative failure rate taken regardless of diagnosis is 29.6 per cent in 324 patients receiving penicillin alone and 17.9 per cent in the 109 patients receiving the additional therapeutic fever (chart 3).

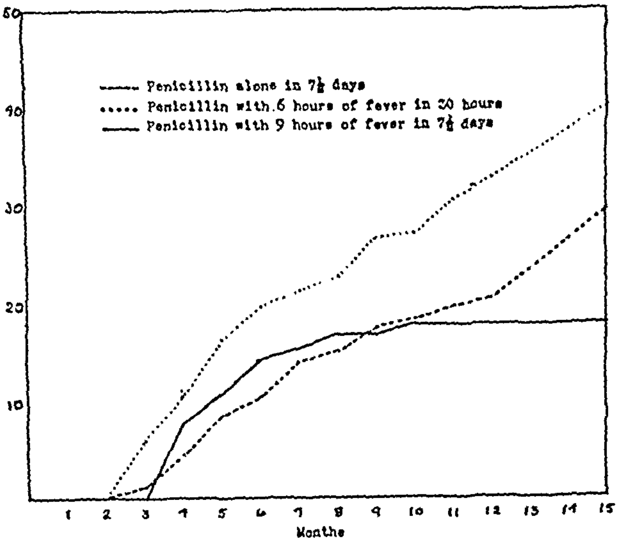

Chart 3.—Cumulative failures for patients treated with 1,200,000 units of penicillin

Schedule B is not as effective as schedule A, as evidenced by the cumulative failure rate of 43.1 per cent among 128 patients with untreated secondary syphilis and 40.1 per cent in the group of 188 patients taken regardless of diagnosis.

In chart 4[11] are shown the cumulative failure rates of the groups receiving fever therapy compared to patients receiving 300,000 units of penicillin in seven and one-half days plus oxophenarsine hydrochloride (0.04 Gm.) daily (51 per cent)[12]; patients receiving 600,000 units in seven and one-half days (40.5 per cent)[9]; 1,200,000 units in three and three-quarter days (25.2 per cent)[13]; 1,200,000 units in seven and one-half days (29.6 per cent)[10]; 10,000,000 units in twenty-four hours (67.8 per cent), and 25,000,000 units in twenty-four hours (35.2 per cent).[14] It is apparent that the group receiving 1,200,000 units of penicillin over seven and one-half days and three 3 hour sessions of fever at 106 F. (rectal) has the lowest cumulative failure rate.

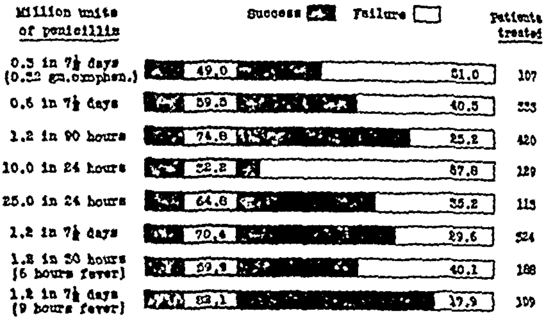

Chart 4.—Percentage of successes and failures at end of first year's observation.

The tendency toward neurorecurrence was not apparent. In the majority of patients examined there was improvement in the abnormal cerebrospinal fluid formulas.

The sodium penicillin used on the fever-penicillin schedules was the same as that used in the group receiving penicillin alone (1,200,000 units in seven and one-half days). The time of administration was, in general the same; i. e., the first six months of the year 1945.

That the fever-penicillin schedules were technically more difficult to administer is not disputed. Furthermore, it was impossible to complete the fever portion of the treatment in some patients who, because of inadequate intelligence, refused to cooperate.

SUMMARY

One hundred and nine patients with dark field positive lesions of early syphilis were given 1,200,000 units of penicillin over seven and one-half days and three sessions of physically induced fever (schedule A). One hundred and eight-eight patients with dark field positive lesions of early syphilis were given 1,200,000 units of penicillin over a period of approximately thirty hours and a single six hour session of fever (schedule B).

The cumulative failure rate in schedule A was 17.9 per cent as compared with 29.6 per cent in a group receiving the same amount of penicillin alone. Attempts to shorten the fever-penicillin treatment to thirty hours were unsuccessful in that the failure rate was 40.1 per cent.

Penicillin and fever therapy given over seven and one-half days produced the lowest cumulative failure rate among patients treated with penicillin in the studies described.

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[10] Barton, R. L.; Bauer, T. J., Bundesen, H. N.; Craig, R. M., and Schwemlein, B. X.: The Treatment of Early Syphilis with Penicillin: Report on Three Hundred and Twenty-Four Patients Treated with 1,200,000 Units over One-Half Days, to be published.

[11] The results presented in this paper must be interpreted in light of the fact that from June 1943, the date of inception of the study, to the present time, commercial penicillin has been a changing mixture of various substances. The content of "impurities" has gradually decreased as potency, in terms of units per milligrams, has increased. The relative amounts of the several identified penicillin fractions, G, F, X and K, have likewise varied from time to time. Those two changes, and perhaps others, suggest that therapeutic efficacy may not have remained constant and that it may be significantly different today than it was originally. It is not now possible to assess the extent to which these changes may have affected the results here reported.

[12] Bundesen, H. N.; Craig, R. M.; Schwemlein, G. X.; Barton, R. L., and Bauer, T. J.: The Rapid Treatment of Early Syphilis with the Combined Use of Penicillin and Mapharsen, Am. J. Syph., Gonor. & Ven. Dis. 30:175 1946.

[13] Craig, R. M.; Schwemlein, G. X., Barton, R. L.; Bauer, T. J., and Bundesen, H. N.: Penicillin in the Treatment of Early Syphilis. Four Hundred and Twenty-Nine Patients Treated with 1,200,000 Units of Penicillin in Ninety Hours, Ann. Int. Med. 27:225. 1947.

[14] Peters, E. E., and Barton, R. L.: The Massive Intravenous Penicillin Therapy of Early Syphilis, Am. J. Syph., Gonor. Ven. Dis. 30:475. 1946.

Special Article

This article is the thirteenth of a series to be published by the American Medical Association in cooperation with the American Cancer Society. The series is designed to aid in the early diagnosis of cancer and thereby to gain more effective results in treatment.

CARCINOMA OF THE ESOPHAGUS AND STOMACH

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I. CARCINOMA OF THE ESOPHAGUS

The epochal advances which have been made in the field of thoracic surgery in the past ten years have brought about a new interest in the subject of carcinoma of the esophagus, a disease which until now has been attended by a completely hopeless prognosis. This interest results from the demonstration that in a large number of the cases a resection and intrathoracic esophagogastric anastomosis can be performed. Sufficient experience with the use of this operation has been accumulated to prove that it provides by far the best form of palliation among the patients who will ultimately succumb to the disease, but more important than that is the fact that an appreciable number of patients will survive for three or more years as a result.[1] This operation, therefore, for the first time provides hope that a patient may be cured of this dread disease.

Carcinoma of the esophagus is a common disease. At the Massachusetts General Hospital approximately two thirds as many cases of carcinoma of the esophagus are seen as of carcinoma of the stomach. It has been estimated that there are approximately 40,000 deaths per year in the United States of America because of carcinoma of the stomach. It is reasonable, therefore, to assume that there are about 26,000 to 27,000 deaths per year from carcinoma of the esophagus.

Although they are characteristically of the squamous cell variety, the degree of malignancy of these tumors is of a high order. This is shown by the fact that in over 70 per cent of the patients whose growths are resectable there are already metastases to the regional lymph nodes at the time of operation.[2] Extension of the growth in the wall of the esophagus is often wide, and involvement of the adjacent organs by direct invasion frequently occurs relatively early in the development of the disease. All hope of cure therefore rests on the establishment of an early diagnosis and the prompt resort to surgical extirpation.

DIAGNOSIS

There are three important means of investigation available which when combined should make it possible to establish a positive diagnosis in every case of carcinoma of the esophagus. These are as follows:

1. *Clinical History.*—The onset of the symptoms in carcinoma of the esophagus is almost invariably the same from case to case. The first symptom is dysphagia, often intermittent, depending on the physical properties of the food swallowed. The patient usually chokes first on a large piece of meat. After that experience he is likely to do nothing about it excepting to chew his food more carefully or to avoid eating that which caused the difficulty. In a few weeks, however, he discovers that he is unable to swallow other foods. Bread usually presents the next obstacle. By the time he cannot swallow bread, he finds it necessary to have his meat ground and to eat only soft, nonbulky, solid foods. From then on the transition to the point where he can swallow only liquids is rapid. In the majority of patients the duration of symptoms from the time of onset to the time of first admission to the hospital is six months or less (table 1).

Table 1.—*Duration of Symptoms in Carcinoma of the Esophagus and Cardia (First Symptom to Entry to Hospital)*

	Location of Carcinoma			
	Cardia		Midthoracic Esophagus	
	No. of Cases	Percentage	No. of Cases	Percentage
Less than 3 months	23	22.3	23	36.5
3 to 6 months	37	35.9	16	25.4
6 to 9 months	20	19.4	10	15.9
9 to 12 months	7	6.8	5	7.9
Over 12 months	11	10.7	5	7.9
Not stated	5	4.9	4	6.3
Total	103		63	

In spite of the fact that in carcinoma of the esophagus the duration of symptoms tends to be relatively short, the disease in the majority of cases is already far advanced by the time the patient is seen by the surgeon. This observation on first thought seems difficult to understand because of the fact that the first symptom is the result of obstruction and that the diameter of the

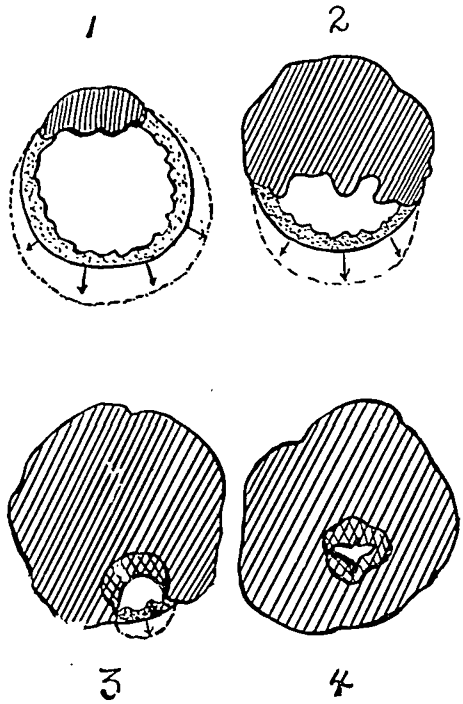

Fig 1.—Diagram representing cross sections through the esophagus at the level of a carcinoma developing in its wall 1. Early stage when there are practically no symptoms 2. Later stage representing the period when large particles may become lodged but with sufficient uninvolved esophagus to permit enough distension for the passage of a fairly liberal soft solid diet. 3 Late stage with almost complete encirclement of the circumference. A narrow strip of uninvolved esophageal wall still allows the passage of liquids. 4. Complete encirclement by tumor with total obstruction. Double-hatched area illustrates the possibility of temporary reestablishment of lumen as a result of necrosis and sloughing of the central portion of the growth.

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[1] Sweet, R. H.: Carcinoma of the Esophagus and the Cardiac End of the Stomach: Immediate and Late Results of Treatment by Resection and Primary Esophagogastric Anastomosis, J. A. M. A. **135**: 485-490 (Oct. 25) 1947

[2] Sweet, R. H.: Carcinoma of the Midthoracic Esophagus: Its Treatment by Radical Resection and High Intrathoracic Esophagogastric Anastomosis, Ann. Surg. **124**: 653-666, 1946.

esophagus is small. The explanation of the apparent paradox lies in the fact that although the diameter of the esophagus is not large, its wall is very distensible. The result of this is that even though the growth may have involved the circumference of the organ almost completely, there is still enough stretch in the remaining strip of normal esophageal wall to allow the passage of food material through the lumen. It is actually only when the encirclement of the esophagus by the growth is practically complete that the mechanical interference with its function is sufficient to produce a serious degree of obstruction (fig. 1).

Not infrequently after the patient has been almost completely unable to swallow for a period of time, he may experience a sudden release of obstruction so that he can swallow a fairly liberal liquid or soft solid diet again. This results from the necrosis and sloughing of the central portion of the growth so that temporarily at least there is a restoration of continuity along the lumen (fig. 1, no. 4).

Until the end stages of the disease, when complications resulting from distant metastases or local invasion of adjacent organs become manifest, the only other important symptom in carcinoma of the esophagus is pain. It is of two types. The first is the pain which results from local distension or muscle contraction just above the level of the obstructing growth. This is referred to the substernal region with radiation to the back and often to the neck. This pain is of a segmental nature and may be high or low, depending on the level of the tumor in any given case.

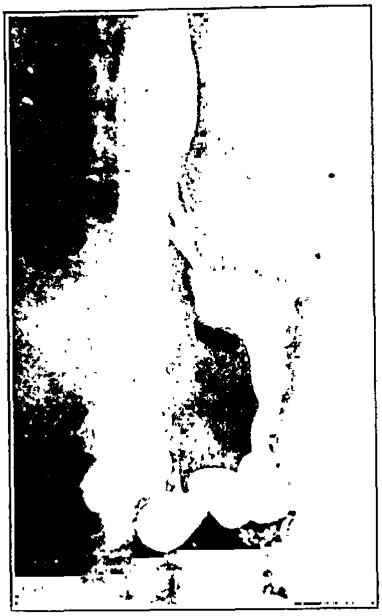

Fig. 2.—Roentgenogram of a carcinoma of the lower fourth of the thoracic portion of the esophagus. Note characteristic encroachment on the diameter of the esophagus with dilatation proximal to the tumor and small stomach below (preoperative roentgenogram).

The second type of pain is a steady, boring, aching discomfort felt deep within the chest and in the back. This is usually the result of periesophageal inflammation from a penetrating ulcerating growth. In some cases it signifies the direct invasion of surrounding structures by tumor or sometimes the presence of metastases to the spine. This type of pain is always of sinister prognostic significance and usually denotes inoperability of the growth.

On the basis of clinical history alone every patient who complains of any disturbance associated with deglutition, whether it be with or without local discomfort, should be given the benefit of further investigation by roentgen studies and often by esophagoscopy in order to determine the presence or absence of a carcinoma of the esophagus.

2. *Roentgen Examination.*—When the disease is well established, there is no difficulty in demonstrating a characteristic irregular filling defect, usually annular in extent, involving the esophagus at whatever level the tumor may be located. The appearance of the shadow seen depends of course on the nature and extent of the tumor. Three different examples, showing both the preoperative and the postoperative roentgen appearances, are presented in figures 2 to 7.

Figure 2 shows the filling defect in the lower portion of the esophagus produced by an advanced epidermoid carcinoma. The relatively long duration of the disease is suggested by the degree of dilatation of the esophagus proximal to the tumor and the small size of the stomach. Figure 3 illustrates the roentgen appearance twelve days after the operation of transthoracic partial esophagectomy and gastrectomy with intrathoracic esophagogastric anastomosis had been performed. In this case it was possible to sever the esophagus low enough so that the anastomosis could be made relatively low in the chest at the level of the inferior pulmonary vein.

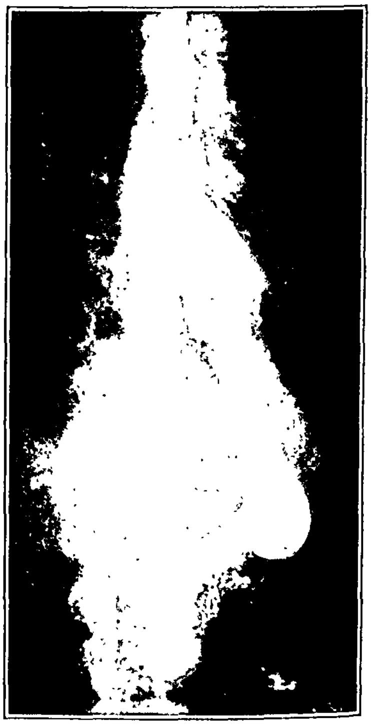

Fig. 3.—Postoperative roentgenogram in case shown in figure 2 after transthoracic partial esophagectomy and gastrectomy. Intrathoracic esophagogastric anastomosis slightly below the level of the left main bronchus which is seen clearly on the film. Actual level is opposite the inferior pulmonary vein.

Figure 4 is a reproduction of the roentgen appearance in a case of carcinoma situated slightly higher in the esophagus than in the case shown in figure 2. The same sort of operation was performed in this case, but the higher level of the growth made it necessary to perform the anastomosis just below the arch of the aorta. This is clearly shown in figure 5, which shows the postoperative roentgen appearance.

A case of carcinoma of the esophagus situated at a much higher level is illustrated by figure 6, which shows the roentgen shadow after the ingestion of barium, with an obvious filling defect situated just behind the aortic arch. At operation in a case of this sort it is necessary to displace the esophagus from behind the aortic arch and to pull the completely mobilized stomach up to the apex of the left pleural cavity for a high supra-aortic esophagogastric anastomosis. The postoperative appearance in such a case is shown in figure 7, which illustrates the location of the anastomosis at the level of the suprasternal notch.

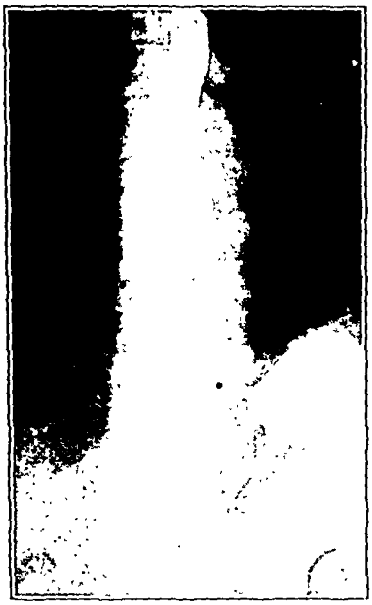

Fig. 4.—Roentgenogram of a carcinoma in the lower portion of the middle half of the esophagus showing a short length of normal esophagus below the growth and a characteristic irregular annular filling defect (preoperative roentgenogram).

From the standpoint of prognosis or even the prediction of resectability the roentgen examination cannot be relied on to be completely accurate. But in general, the larger the filling defect and the greater its longitudinal extent in the esophagus, the more likely is the growth to be inoperable. Every patient, however, should be given the benefit of an exploration if his age and general condition will permit.

If the growth happens to be an early one, on the other hand, its presence may not be detected during the fluoroscopic examination and as a result many weeks of delay ensue. The relative number of cases which are detected bears a direct relation to the skill and interest of the roentgenologist. The physician in charge of such a patient should make it clear that he suspects the presence of an esophageal lesion. If this is not done, the attention of the roentgenologist is likely to be directed toward the stomach and duodenum after a cursory routine observation of the descent of the barium through the esophagus. In general the number of cases in which at least a suggestive diagnosis of carcinoma of the esophagus cannot be made by roentgen examination is exceedingly small. If the findings of the roentenologist are negative or misleading in any case in which the clinical history suggests the presence of an esophageal lesion, direct inspection through an esophagoscope is mandatory.

3. *Esophagoscopic Examination.*—By means of the esophagoscope a positive diagnosis of carcinoma of the esophagus can be established in a large percentage of the cases. The direct visualization provided by this means makes it possible for an experienced observer to recognize the presence of a pathologic area and to obtain tissue for histologic study. It should be remembered, however, that even in the case of a suspicious-looking lesion the examination of material obtained for a biopsy may be negative for carcinoma because of the fact that the grasp of the biopsy forceps was not deep enough. In this way nothing but chronic inflammatory tissue is obtained from the inflammatory area which usually surrounds an infected ulcerated malignant lesion, although a deeper bite of the forceps would reach the tumor tissue. A repetition of the esophagoscopic examination may therefore be necessary. In some such cases it is wiser to proceed with a surgical exploration than to wait until the biopsy becomes positive because of the obvious undesirability of postponing the extirpation of the growth.

TREATMENT

The treatment of carcinoma, in no matter what organ it may arise, should be calculated not only to bring about a cure in the favorable cases, but also to provide the maximum relief of discomfort in the relatively larger group of patients whose disease is beyond the hope of cure. In carcinoma of the esophagus for many years there was little or no hope for cure and a poor prospect for relief of suffering. The failure of roentgen treatment to measure up to the aforementioned ideal of treatment is well known. Few patients treated by this means have been made to live much longer than those who were not treated, although in a small percentage of patients temporary improvement in the ability to swallow has resulted. Bougienage in an attempt to keep a passageway open is disappointing because of the impossibility of applying the method in many cases and the transitory benefit obtained when it has been used.

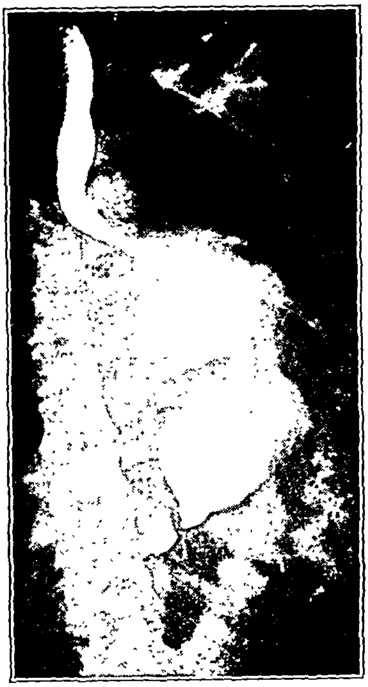

Fig. 5.—Postoperative roentgenogram in case shown in figure 4 after transthoracic partial esophagectomy and high intrathoracic esophagogastric anastomosis. The anastomosis lies just below the arch of the aorta.

The only hope of cure in the favorable cases and the best prospect of relief among patients who ult mately succumb to the disease is provided by the application of surgery. As a result of vast improvements in this field the operation has been developed to the point where a reasonable outlook for cure and a far better degree of palliation than was ever available before can now be offered to patients who are afflicted with the disease. In this connection mention should be made of the Torek operation, which was first described in 1913.[3] It provides for a limited excision of the tumor-bearing segment of the esophagus but not for the removal of a sufficient number of the regional lymph nodes. As a cancer operation, therefore, it cannot be expected to make possible a large percentage of long survivals among the patients treated (table 2). Furthermore, it is an ineffectual palliative procedure because of the discomforts of the cervical esophagostomy stoma and the annoyance of having to use a gastrostomy opening for feeding. In a few cases an external esophagoplasty can be performed, but only after a many stage plastic procedure which is often not completed before the patient dies of metastases or recurrent disease.[4]

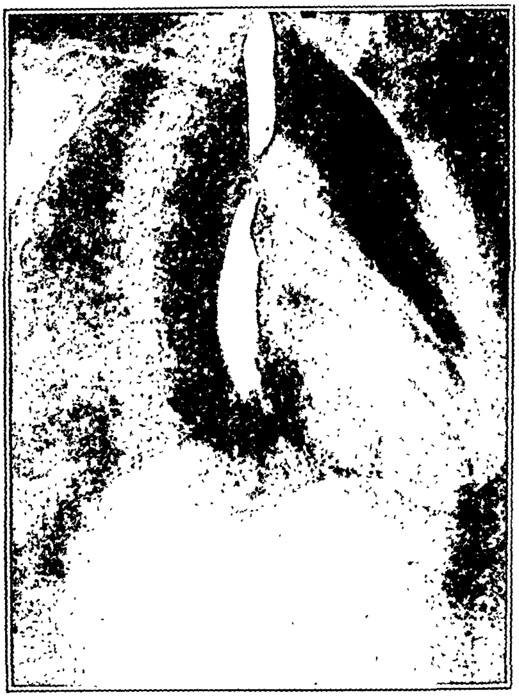

Fig. 6.—Roentgenogram of a carcinoma of the esophagus located behind the aortic arch (preoperative roentgenogram). Note the short distance between the upper margin of the growth and the level of the clavicle. This type of case requires the performance of an anastomosis at the highest possible level within the chest.

TABLE 2.—*Comparison of the Results of Treatment of Carcinoma of the Esophagus by Several Methods*

	Percentage of Survival 3 or More Years
No treatment	0
Roentgen treatment *	0
Torek operation	8.3
Resection and anastomosis	39.1

* Holmes, G. W., and Schulz, M. D.: Supervoltage Radiation: A Review of the Cases Treated During an Eight Year Period (1937-1944 inclusive), Am. J. Roentgenol. 55: 533-534, 1946.

Because of these inadequacies, the Torek operation has been discarded in favor of the operation of transthoracic resection of the growth with a primary intrathoracic esophagogastric anastomosis. By this means a tumor even as high in the esophagus as the level of the aortic arch can be successfully removed and an immediate restoration of the continuity of the alimentary canal can be established. It has been found that such a resection can be performed in approximately 65 per cent of the patients operated on.[1] The operative mortality of 9.5 per cent (lower end) to 24 per cent (level of aortic arch) is by no means prohibitive in consideration of the hopelessness of the disease. It has been shown likewise that of those who have survived the operation, 39.1 per cent of the patients whose operation was performed three or more years before the date of the follow-up study have lived for three or more years (table 2).

Furthermore, as a palliative procedure the operation of resection and intrathoracic esophagogastric anastomosis is the best method of treatment yet available, because the majority of those who ultimately succumb to the effects of the disease do not have recurrence at the site of anastomosis. The result is that they continue to eat in a normal fashion as long as they may live.

PROGNOSIS

As with carcinoma elsewhere, the ultimate prognosis in carcinoma of the esophagus depends on the duration and extent of the disease. It is obvious, therefore, that to obtain a favorable result surgical excision must be carried out at the earliest practicable moment. The attainment of this ideal depends on the prompt application of the patient to his physician for relief, the alertness of the physician to the possibility of the presence of such a growth, the ability of the roentgenologist to suggest the probable presence of a carcinoma and of the endoscopist to prove it by biopsy, and, finally, the willingness of the surgeon to perform the proper operation.

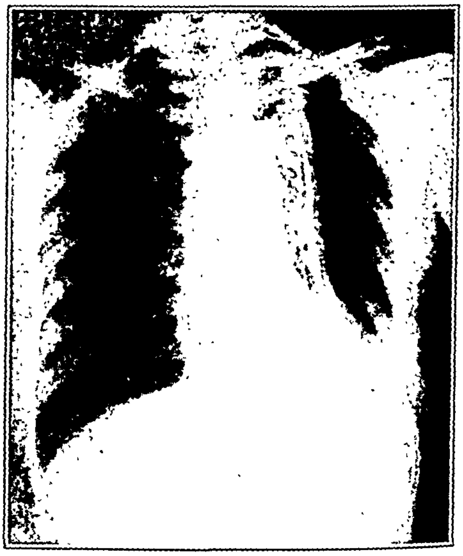

Fig. 7.—Postoperative roentgenogram of the case shown in figure 6 after transthoracic subtotal esophagectomy and high esophagogastric anastomosis. The anastomosis lies above the level of the aortic arch and behind the suprasternal notch.

II. CARCINOMA OF THE STOMACH

Unlike carcinoma of the esophagus, which has only recently been shown to be curable by the prompt application of surgery, carcinoma of the stomach has long been the practical concern of the surgeon. Although the early efforts of the pioneers in the field of abdominal surgery were discouraging because of the high operative mor-

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[3] Torek, F.: The First Successful Resection of the Thoracic Portion of the Esophagus for Carcinoma, J. A. M. A. 60: 1533 (May 17) 1913.

[4] Sweet, R. H.: *Surgical Management of Carcinoma of the Midthoracic Esophagus*, New England J. Med. 233: 1-7, 1945.

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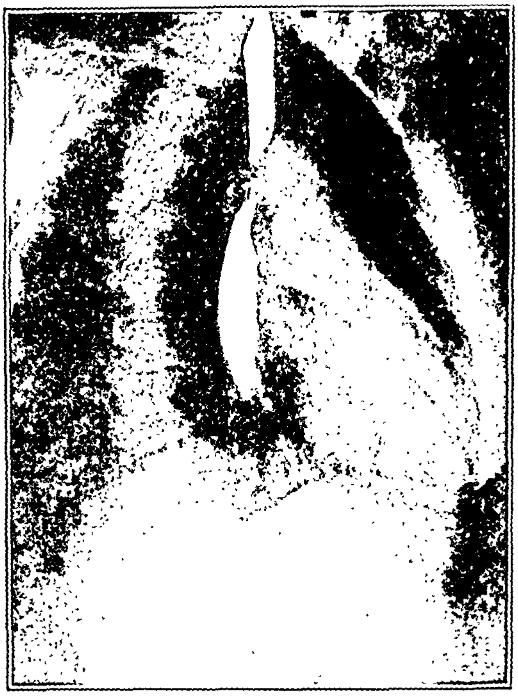

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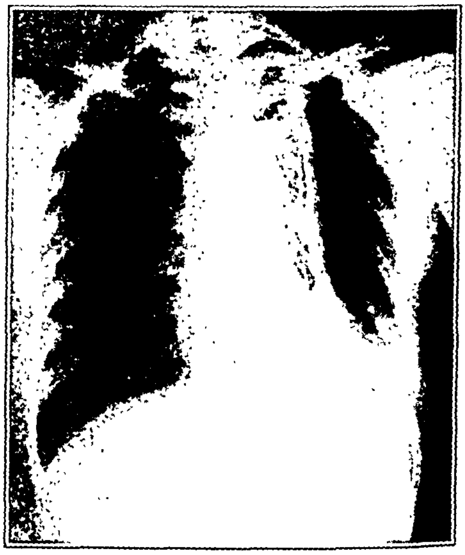

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[3] Torek, F.: The First Successful Resection of the Thoracic Portion of the Esophagus for Carcinoma, J. A. M. A. 60: 1533 (May 17) 1913.

[4] Sweet, R. H.: Surgical Management of Carcinoma of the Midthoracic Esophagus, New England J. Med. 233: 1-7, 1945.

In spite of this relatively encouraging outlook there is a widespread pessimism among physicians at large regarding the results of surgical treatment. This impression can hardly be avoided when one reflects on the over-all prospects of the disease as observed in the population as a whole. Statistical studies from various sources show that of all patients with proved carcinoma of the stomach, not over 5 per cent survive five years or more and then only as a result of the application of surgery. To be influenced by this apparently discouraging result, however, is to place emphasis on the wrong aspect of the problem. The fact that, of all cases of carcinoma of the stomach in which a diagnosis has been made, in only 5 per cent a cure is effected, indicates that a large percentage of the cases are unsuitable for surgery when the patient is first seen or too far advanced for cure even though surgical excision is attempted. There are innumerable statistics to prove this contention. The latest reports show that at least 25 per cent of the cases seen are unsuitable for operation because of the far advanced state of the disease. Furthermore, even in the hands of the most experienced surgeons only 50 per cent of the total number of cases seen are actually suitable for resection These data are a reflection of the well known fact that in a large percentage of the cases the diagnosis is made late in the course of the disease. The explanation of this unfortunate situation lies partly in the fact that the onset of the disease is often insidious and partly in the neglect of the patient to seek relief at an early date or the failure of the physician to suspect the presence of the disease and to take the necessary steps to establish a diagnosis.

DIAGNOSIS

In the advanced stages of the disease with emaciation, anemia, anorexia, asthenia and perhaps the presence of a palpable tumor in the upper part of the abdomen, the diagnosis of carcinoma of the stomach is usually suspected and readily proved To establish the diagnosis in such cases, however, is obviously of little importance because of the improbability of cure. Emphasis should be placed on the early detection of the disease The following discussion will therefore be confined to the problem of discovering such cases at a time when surgery may be expected to provide some prospect of cure.

1. *Clinical History and Physical Findings*.—The first obstacle in the way of establishing an early diagnosis in cases of carcinoma of the stomach lies in the fact that the onset is so often insidious and the early symptoms so vague and obscure. Anorexia and asthenia of slight degree in the absence of any other complaints comprise the first symptoms in approximately 20 per cent of the cases. This type of onset is particularly frequent in growths located in the middle segment of the stomach. Vague dyspeptic symptoms which are spoken of as "discomfort," "distress," "indigestion" or a "bloated or full feeling" after eating are mentioned by about 20 per cent of the patients. Another 25 per cent of the patients complain of definite pain occurring soon after the ingestion of food. In cases in which the tumor happens to lie close to the pylorus such pain may be a prominent early symptom and vomiting may follow after a relatively short lapse of time because of the small diameter of the lumen at that point. If the growth happens to start near the cardia, early involvement of that orifice leads to dysphagia and prompt regurgitation of ingested food.

Bleeding from gastric carcinoma is usually of a chronic nature and is rarely discovered except by the finding of a positive reaction to a test for occult blood in the vomitus or stools. Occasionally, however, massive hematemesis may occur (not over 1 per cent of cases), but it is not often an early sign of the disease.

Objective findings such as evidences of loss of weight, hypochromic anemia and the presence of occult blood in the stools or gastric contents have no specific diagnostic significance That the difficulty may lie in the stomach is strongly suggested, however, by the additional observation of achlorhydria of the gastric contents. This occurs in approximately 70 per cent of all patients with gastric carcinoma and, when associated with suggestive signs or symptoms, should lead to a strong suspicion of the presence of that disease. That gastric carcinoma can occur in the presence of a normal concentration of hydrochloric acid is also well known. The presence of acid in the gastric contents should therefore never be allowed to militate against the making of a diagnosis of carcinoma of the stomach if other aspects of the case suggest it.

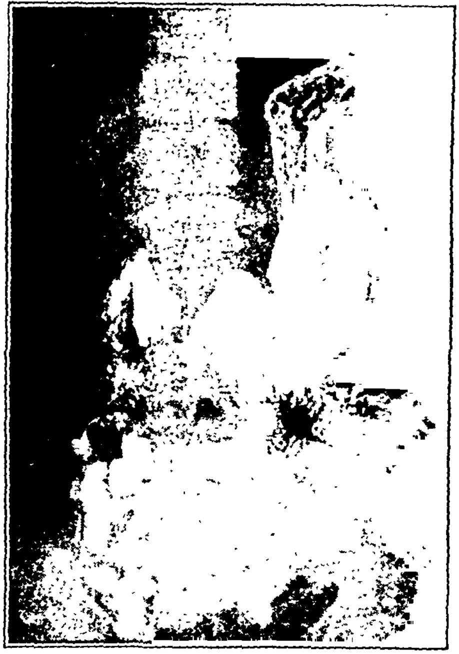

Fig. 8.—Roentgenogram of a large carcinoma involving the majority of the body and fundus of the stomach Total gastrectomy is required to remove all the growth.

2. *Roentgen Examination*.—Without question the most valuable method of investigation in cases of suspected carcinoma of the stomach is the fluoroscopic study of the behavior of the stomach after the ingestion

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[5] Wangensteen, O H. The Problem of Gastric Cancer, J. A. M A **134**: 1161-1169 (Aug. 2) 1947.

[6] Pack, G. T., and McNeer, G, in discussion on Wangensteen.[5]

of a barium meal and the demonstration by roentgenograms of the presence of a persistent filling defect in the gastric shadow. The characteristic findings have been described so frequently that they need not be set forth here. Figure 8 serves to illustrate a classical example of the roentgen appearance of a case of carcinoma of the body and fundus of the stomach. This patient was operated on successfully. A reproduction of the postoperative roentgen appearance is given in figure 9, showing the appearance of the anastomosis after the performance of a total gastrectomy.

In spite of the excellence of the method, however, it is not realized universally that the accuracy of roentgen studies in the establishment of a positive diagnosis of carcinoma of the stomach does not exceed 90 per cent in the best of hands.[7] In some cases, therefore, additional aid in making a diagnosis is necessary. This may be obtained by the use of the gastroscope or in some cases the esophagoscope.

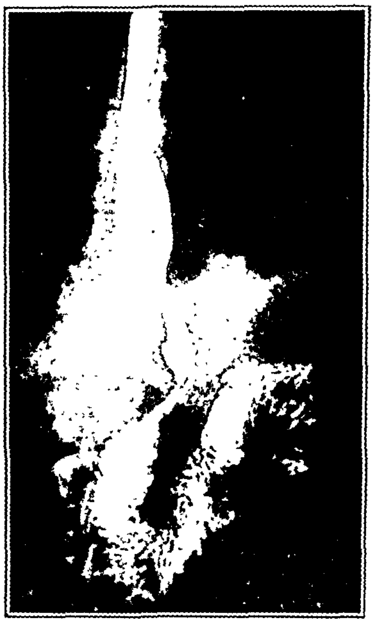

Fig. 9.—Postoperative roentgenogram of case shown in figure 8 following total gastrectomy with restoration of the continuity of the alimentary canal by esophagoduodenal anastomosis (restoration of continuity after total gastrectomy is usually by an esophagojejunal anastomosis; in certain favorable cases, however, it is possible to use the duodenum for an end to end anastomosis with the esophagus) The operation was performed by the transthoracic approach.

3. *Endoscopic Examination.*—Direct inspection of the interior of the stomach by means of a gastroscope is a useful adjunct to the roentgen investigation in a few cases in which carcinoma of the stomach is suspected. The interpretation of the observations depends on the experience of the observer and on the location of the lesion. Lesions of the stomach located in certain areas, notably the fundus, cannot be seen readily through a gastroscope. In the body and antrum, however, the method is most useful and in some cases has been the means of demonstrating the actual presence of a carcinoma which may not have been visualized by the use of roentgen methods even though it had been suspected on the basis of the history and physical examination. The limitations of the gastroscope are such, on the other hand, that, although the lesion may be seen, a specimen cannot be obtained for biopsy purposes.

In certain cases in which the growth lies at the cardia or in the fundus of the stomach, it can be seen best through the esophagoscope. In such cases, because of the construction of the instrument, a piece of tissue can usually be obtained for histologic confirmation of the diagnosis.

Occasionally peritoneoscopy is of value, not so much to prove the presence of a growth in the stomach as to detect the presence of metastases in the liver or elsewhere throughout the abdominal cavity. This procedure is therefore of relatively little importance as an aid to the establishment of an early diagnosis in gastric carcinoma. It serves rather as a method of predicting the operability or possible curability in the more advanced cases.

4. *Cytologic Examination.*—A new method in the field of diagnosis in carcinoma of the stomach is the cytologic examination of the gastric contents as set forth by Papanicolaou[8] and others. This involves the study of a stained specimen obtained from the sediment of the fluid aspirated out of the stomach. The success of its application depends on the knowledge and experience of the technician who may be called on to express an opinion on the basis of an examination of the smear. In the hands of an experienced person, however, characteristic tumor cells can be demonstrated, and in some cases a definite diagnosis of carcinoma can be made. As more experience is accumulated, this method gives promise of greater usefulness in the confirmation of a diagnosis of carcinoma of the stomach. It may also become a useful means of detecting early cases in which there is only a reasonable suspicion on the basis of the history, roentgen studies and endoscopic observation of the presence of the disease.

5. *Exploratory Operation.*—The importance of an early diagnosis and the prompt removal of the growth in gastric carcinoma is such that surgical exploration should be used in every suspected case when other diagnostic methods prove inconclusive. This is important not only in all suspected cases, but also in all cases of gastric ulcer which is presumed to be benign but which does not heal after a reasonable period of observation. The danger of treating an early ulcerating carcinoma of the stomach as though it were a benign ulcer because of the roentgen appearance, the possible absence of achlorhydria or even the opinion of the endoscopist is so great that the majority of experienced surgeons and internists agree that in every case of gastric ulcer which does not heal completely within a short period of time (one month at the utmost) resection should be done as though it were a proved case of gastric carcinoma. Only in this way will the outlook of the patient be safeguarded and the physician preserved from embarrassment in certain cases, many of which will inevitably turn out to be early enough to be cured.

TREATMENT

As in carcinoma of the esophagus, the only prospect of cure in carcinoma of the stomach results from a total extirpation of the growth by surgical means. This may involve the removal of the lower half or more of the stomach through an abdominal incision, the extirpation of the proximal half or more of the stomach through a transthoracic or abdominothoracic approach, or the performance of a total gastrectomy by either the abdominal or the transthoracic route. The exact details of the technic and the choice of procedure to be employed must depend on the location and extent of the growth in the stomach and on the judgment of the surgeon. As with carcinoma everywhere, the fundamental principle to be observed in all cases in which there is a reasonable hope of cure is to remove the tumor-bearing portion of the stomach with as large a margin of apparently normal stomach as seems practicable, along with the regional lymph nodes and the great omentum.

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[7] Harnet, W. L.: A Statistical Study of 1,405 Cases of Cancer of the Stomach. Brit. J. Surg. 34: 379-385, 1947.

[8] Papanicolaou, G. N.: Diagnostic Value of Exfoliated Cells from Cancerous Tissues, J. A. M. A. 131: 372-378 (June 1) 1946.

PROGNOSIS

All that was said regarding the factors which influence the prognosis in cases of carcinoma of the esophagus applies to the situation in gastric carcinoma. Early diagnosis and prompt radical surgery provide the only hope for the patient. But because of the much longer period of time during which extirpation has been practiced in the treatment of carcinoma of the stomach, it is possible to make useful predictions regarding the prospects of patients with the disease based on surgical experience and the correlation between end results and the pathologic characteristics of the growth. As pointed out by Welch [9] an excellent prognosis for cure can be made in cases of carcinoma in situ or in growths which are of a polypoid nature. A fair prospect can be assumed for patients with an adenocarcinoma or a colloid adenocarcinoma or in any patient who is found to have no metastases in the regional lymph nodes. A poor prognosis must be made in case the tumor is of a signet ring cell type or in cases of histologically undifferentiated tumors. The same is true in all cases in which lymph node metastases are found or when the growth in the stomach is adherent to other viscera, both evidences of a long duration or a high degree of malignancy of the tumor. It has been observed by Welch that if lymph nodes which are obviously invaded by tumor are left behind, the average duration of life is eight months. This observation provides further support for the insistence of all surgeons who may be called on to treat patients with carcinoma of the stomach that the earliest possible diagnosis must be made if the surgical removal of the growth is to prove effective.

On the other hand, even though the diagnosis may be made early in the course of the disease, the outlook for the patient afflicted with carcinoma of the stomach depends on the histologic type of growth which he may happen to have. Table 3, which is adapted from the report of Welch, serves to emphasize the importance of this fact. From this it will be seen that the prospect varies from almost 100 per cent cure in carcinoma in situ to no five year survivals in the case of the signet ring type or an undifferentiated growth. The most frequent histologic type is the adenocarcinoma.

TABLE 3.—*Five Year Survival Rate of Carcinoma of the Stomach According to the Histologic Type* *

	Percentage of Patients Operated On
Carcinoma in situ	90+
Polypoid carcinoma	75
Adenocarcinoma	40
Colloid adenocarcinoma	40
Signet ring (pure colloid) carcinoma	0
Undifferentiated carcinoma	0

* Massachusetts General Hospital statistics [9]

Although the results of treatment of carcinoma of the stomach may leave much to be desired, it is obvious that they are now much better than they were even ten years ago. It is time, therefore, to abandon the old attitude of hopelessness and to accept the present day realization of the fact that, given an early diagnosis and a reasonably favorable pathologic type of growth, carcinoma of the stomach can be cured in an appreciable number of cases.

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[9] Welch, C. E.: Carcinoma of the Stomach, S. Clin. North America 27:1100-1105, 1947

Clinical Notes, Suggestions and New Instruments

THROMBOPENIC PURPURA FOLLOWING QUINIDINE

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Thrombopenic purpura following the administration of quinine occurs occasionally,[1] but thrombocytopenic purpura following the use of its optical isomer quinidine is, apparently, extremely rare. The only case in the literature is one concerning a 27 year old woman who during a second course of quinidine sulfate therapy had hemorrhages in the skin and gingival bleeding after taking a total dose of approximately 8 Gm. of the drug.[2] When the patient had completely recovered, the clinical and hematologic picture was reproduced by the administration of one dose of 0.4 Gm of quinidine sulfate

We wish to report another instance of this idiosyncrasy to the drug.

REPORT OF CASE

An Italian-born seamstress aged 57 years with hypertensive and rheumatic heart disease was admitted to this hospital Aug. 1, 1947, complaining of dyspnea of two weeks' duration and frequent attacks of paroxysmal tachycardia over many years. There was no history of allergy, bleeding tendency or previous quinidine therapy. She had had widespread tuberculosis of bone in childhood and rheumatic fever at the age of 20.

On admission the patient was in moderate congestive heart failure. She was digitalized and discharged three weeks later on a maintenance dose of 0.1 Gm. daily. On September 1 she was readmitted complaining of frequent attacks of palpitation which were shown electrocardiographically to be bouts of supraventricular tachycardia. Digitalis was discontinued, and on September 20 quinidine sulfate was begun in a dosage of 0.2 Gm. three times daily. She suffered no further attacks and was discharged September 28 on a maintenance dose of 0.6 Gm. daily.

On October 1, after a total dose of 6.0 Gm. of the drug had been taken, spontaneous bleeding from the gums developed, and the patient was readmitted. On physical examination she displayed, in addition to the gingival bleeding, petechiae in both conjunctivas and widespread purpura of the trunk and limbs. The temperature was 99 F, pulse rate 88, and blood pressure 150 systolic and 60 diastolic. The spleen, not felt on previous admissions, was palpable 2 fingerbreadths below the costal margin. The result of the tourniquet test for capillary fragility was strongly positive. The bleeding time (finger prick) was over 30 minutes; coagulation time (Lee-White) 7 minutes; clot retraction, none in 3 hours, and the prothrombin time was normal. The platelet count (oxalated venous blood) was 4,000 per cubic millimeter. The blood count revealed 4,700,000 red blood cells, 13 Gm. of hemoglobin and 8,300 white blood cells with a normal differential count. A sternal marrow aspiration showed cellular marrow with a normal differential count and with megakaryocytes present and normal in number and appearance. A transfusion of 500 cc. of three day old citrated blood was begun. Five hours later, seventeen hours after its beginning, the mouth bleeding stopped. Subsequent

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[1] Siegenbeek van Heukelom, A., and Wahab: Thrombocytopenic Purpura Due to Idiosyncrasy to Quinine, Geneesk. tijdschr. v. Nederl.-Indie 81:906-916 (April 29) 1941; addendum, ibid. 81:1078 (May 13) 1941. Bais, W. J.: Another Case of Idiosyncrasy to Quinine, ibid. 81:2213-2. Ein Fall von thrombopenischer Purpura keit, Ztschr. f. klin. Med. 131:308-316, 1937. Fasal, P., and Wachner, G.: Symptomatische thrombopenische Purpura als Folge einer Chinin-Safran-Intoxikation, Wien. Klin. Wch. 46:747-750 (June 16) 1933. Maritschek, M., and Markowicz, H.: Ueber einen Fall von Chinenuberempfindlichkeit mit Purpura, vorwiegend der oberen Luft and Speiseweg, Monatschr. Ohrenh. 67:410-414 (April) 1933. Peshkin, M. M., and Miller, J. A.: 102:1737-1740 (May 26) 1934.

[2] Broch, O. J.: Thrombocytopenic Purpura After Administration of Quinidine. Nord. med. 10:1542-1544 (May 17) 1941.

platelet counts were: October 4, 14,000; October 6, 36,000; October 8, 152,000, and October 16, 187,000. On the third day the tourniquet test became negative in result and the bleeding time returned to normal. Two blood cultures were sterile.

Since quinidine might clearly be the drug of choice for future use it seemed wise to make certain that the clinical impression that the drug was responsible for the bleeding was correct. Therefore, after complete recovery from the bleeding episode, a test dose of 0.1 Gm. quinidine sulfate was given by mouth. The developments were striking. At the end of one hour the platelets dropped to 17,000 per cubic millimeter, in two hours to 3,000 and in three hours to 1,000. At this time bleeding from the gums began, followed by profuse bleeding from the nose, and the appearance of widespread purpura of the trunk and limbs as before. Six hours after the test dose the platelets fell to zero. The patient was given 500 cc. of three day old citrated blood. All bleeding ceased completely twenty-one hours after the test dose and within seven days the platelet count, tourniquet test, clot retraction and bleeding time returned to normal.

SUMMARY

A case of thrombopenic purpura secondary to quinidine sulfate is reported. The patient gave no history of previous quinidine therapy. The bleeding episode developed after 6 Gm. of the drug had been taken. An almost identical episode was induced by the administration of a test dose of 0.1 Gm. of the drug.

Council on Foods and Nutrition

This paper, prepared at the request of the Council on Foods and Nutrition, is one of a series which will appear in THE JOURNAL. The entire series will appear later in book form as the Council's Handbook of Nutrition.

JAMES R. WILSON, M.D., *Secretary.*

FAT IN NUTRITION

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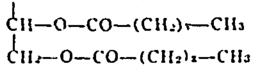
Man through his evolutionary changes has developed into an animal whose gastrointestinal tract has been modified to such a state that considerable portion of fat is desirable in his diet. Although a certain amount of bulk is recognized as being of value in a complete diet, there are limits to which this should be extended. When the bulk of the diet is increased by the incorporation of considerable amounts of carbohydrate, discomforts which are ascribed to abnormal fermentation in the gut are encountered. McClendon,[1] in his investigation of the dietary habits of the Japanese, was impressed by the prevalence of "dyspepsia" in that population and believed that the incapacitation which occurred for comparatively long periods was undoubtedly due to the high carbohydrate diet. The bulk of the diet can be significantly decreased by the incorporation of additional fat, because this foodstuff supplies more than twice the number of calories available from equivalent amounts of protein or carbohydrate. Unlike the other organic dietary substances, fats are almost water free, and this also leads to a decrease in the bulkiness. Starling[1] pointed out that the human alimentary tract is so constructed that it is desirable to include from 20 to 25 per cent of the calories in the form of fat. The desirability of fat in the diet was illustrated during the first great war by the experience of the German population, which regarded the low daily fat allotment as one of their most serious deprivations. It is common knowledge that a meal containing insufficient amounts of fat lacks in the so-called staying powers. Starling[1] illustrated this by the complaints, during the latter stages of the first world war, of laborers that their rations were inadequate to work their normal shifts because of the low fat content. Hunger was the universal reaction. From a biologic point of view, it is recognized that fats are absorbed at a slower rate than carbohydrate, and, in addition, reduce the rate of discharge of gastric contents. The latter effect is ascribed to the inhibitory action of the hormone enterogastrone, the formation of which, in the intestine, is accelerated by the presence of fat.

The animal organism is well adapted to assimilate comparatively large amounts of fat. Cowgill[2] has recently reviewed the subject. Langworthy[3] studied the digestion and utilization of a considerable number of plant and animal fats by healthy adults and observed no notable variations between the behavior of the different types. The daily consumption ranged from 50 to 100 Gm. These observations and others led Cowgill to the following summation: "Edible fats the melting points of which are not too high to prevent liquefaction in the alimentary tract are digested and absorbed to about the same degree. Such differences as have been found are of no practical nutritional significance."

The influence of physical properties on the utilization of fat is well illustrated in the coefficients of digestibility of natural fats hardened to various extents by hydrogenation. Holmes and Deuel[3] observed that the degree of utilization of such products decreased significantly with the rise in melting point. The melting point of fats is to a considerable extent dependent on the chemical nature of the constituent acid radicals in the fat (triglyceride) molecule. Such fats are readily hydrolyzed in the presence of excess hydroxyl ions or specific enzymatic catalysts with the liberation of one molecule of glycerol and three of fat acids. The term " fat acids has recently been introduced to designate the acids originating from natural fats.

In general, the acids in the fat molecule differ from one another and the term "mixed glyceride" is employed to characterize this type of lipid. This is illustrated in the following formula:



$$\begin{array}{l} CH_2-O-CO-(CH_2)_x-CH_3 \\ | \\ CH-O-CO-(CH_2)_y-CH_3 \\ | \\ CH_2-O-CO-(CH_2)_z-CH_3 \end{array}$$

The values for x, y, and z are even numbers ranging from 2 to more than 20. As a rule the chief acidic constituents of the fats in the depots and tissues of mammals contain from 16 to 18 carbon atoms. It does not seem necessary to detail a listing of the numerous fat acids that have been isolated from natural sources, since that information is readily available in standard texts of biochemistry. It should be sufficient to call attention to the fact that fat acids fall into two distinct groups, the saturated type, most representatives of which are solid at room temperature, and the unsaturated class, all members of which are liquid at this temperature. Both groups belong to the same homologous aliphatic series. Quantitatively, palmitic acid, a saturated acid with 16 carbon atoms, and oleic acid, with 18 carbon atoms and 1 unsaturated double bond, predominate in the depot fat of man. Stearic acid, the saturated acid which contains 18 carbon atoms, is occasionally present in considerable amounts in animal depot fat, and when this occurs the melting point of the mixture rises. When oleic acid is hydrogenated, a product identical with natural stearic acid is produced. Vaccenic acid, an isomer of oleic acid, also gives rise to stearic acid when hydrogenated. Two additional unsaturated acids, linoleic and linolenic, occur in abundance in certain culinary fats of plant origin. Both belong to the C-18 series, the former containing two, the latter three double bonds, and each in turn can be transformed into stearic acid on complete hydrogenation. Fish oils contain comparatively large amounts of acid of higher molecular weight with additional double bonds.

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[1] Cited by Anderson and Williams.[11]

[2] Cowgill, G. W.: Relative Nutritive Values of Animal and Vegetable Fats, Physiol. Rev. 25: 664 (Oct.) 1945.

[3] Cited by Cowgill.[2]

Culinary fats, while they are characterized by the presence of predominating amounts of the triglycerides (more than 95 per cent), also contain small amounts of the more complex lipids and usually some of the fat-soluble vitamins and pigments. These complex lipids fall into three divisions, the phospholipids, the glycolipids (also designated as cerebrosides), and the sterols. The majority of the phospholipids are closely related to the triglycerides in so far as glycerol is obtained on hydrolysis, but only two fat acids are liberated. The third hydroxyl group of the glycerol molecule is joined to a phosphoric acid linkage, which, in turn, is conjugated with a nitrogenous product. Three such phospholipids have been characterized: lecithin, in which the nitrogenous base, choline, is present, cephalin, containing aminoethyl alcohol, and phosphotidyl serine, in which the nitrogenous constituent is the amino acid serine of wide distribution in the proteins. It is to be noted that in these lipids the ratio of nitrogen to phosphorus is 1 : 1. In contrast, an entirely different type of phospholipid, sphingomyelin, occurs in nature. This contains no glycerol, 1 mole of phosphoric acid, and two nitrogenous fractions, choline and sphingosine. The latter, an unsaturated amino alcohol of high molecular weight, also occurs in the glycolipids, which, in addition, yield 1 mole of fat acid and one simple sugar (galactose or glucose) on hydrolysis. Even more complex glycolipids, the gangliosides, have been described. These contain 1 mole of fat acid, two or three of the simple sugars and an additional nitrogenous product which has not yet been structurally characterized.

The sterols, alcohols of high molecular weight, belong to a group of compounds, the steroids, which include the bile acids, sex and adrenal cortical hormones, toad poisons and the digitalis saponins. All contain the characteristic perhydrocyclopentanophenanthrene nucleus shown in the chart. The steroids differ from each other by variations in the composition of the side chain (R in the type formula), the degree of saturation of the nucleus, and the number and site of attachment of hydroxyl groups on the nucleus. Of the considerable number of sterols that have been isolated from natural sources, cholesterol is of paramount physiologic significance, since it is the only one which is utilized by higher animals. Due to the presence of an hydroxyl group, cholesterol can exist in the free or esterified form. It is the chief sterol in the animal kingdom, and one of its derivatives, 7-dehydrocholesterol, is recognized as the precursor of a naturally occurring antirachitic vitamin (D$_3$). Ergosterol, which occurs only to a small extent in animal tissues but in considerable amounts in such lower plants as yeasts and fungi, is the provitamin of vitamin D$_2$. A number of additional sterols are rather widely distributed in the plant kingdom, but, like ergosterol, none of these plant products are utilized to any appreciable extent by mammalia.

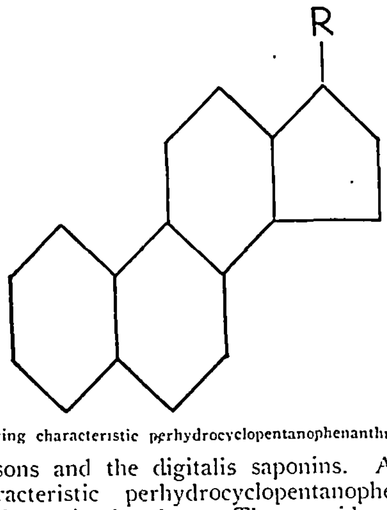

Chart showing characteristic perhydrocyclopentanophenanthrene nucleus.

While these complex lipids are present in only minute amounts in the culinary fats and fat depots, they do make up a major fraction of the lipids of the organs. This is illustrated in the accompanying table.

*Distribution of Lipids in Organ and Depot Fats**

Species	Site	Phospholipids	Cerebrosides	Cholesterol	Triglycerides
Beef	Brain	52	23	19	6
Beef	Liver	70	0	4	25
Beef	Kidney	63	4	1	28
Beef	Intestine	60	3	13	24
Beef	Muscle	27	8	2	62
Beef	Butter	Trace	Trace	Trace	98+
Chicken	Egg yolk	26	2	4	66
Man	Depot	Trace	Trace	Trace	98+
Hog	Depot	Trace	Trace	Trace	98+

* All values are expressed as percentage of total lipids. As will be emphasized later, the content of these complex lipids, particularly the phospholipids, is large in the tissues of greatest physiologic importance.

Consideration of the facilities for fat digestion and absorption shows that ample provision is made for the assimilation of considerable amounts of fat. So far as the stomach is concerned splitting of fat by enzymes (lipases) is at best only of minor importance. Nevertheless the organ assists materially in both digestion and absorption in that it serves as reservoir from which the chemically unaltered fat is discharged at such a rate that the small intestine is not overtaxed. The presence of fat in the meal considerably influences gastric function. Fatty meals leave the stomach much slower than those with large contents of the other organic foodstuffs, and when fat finds its way into the small intestine, it stimulates the production of enterogastrone, a hormone, which, in turn, slows down gastric motility. Of the enzymes having lipolytic action, steapsin, elaborated in the pancreas, is regarded to be the chief one concerned with fat digestion. Its activity is accelerated by soaps and the bile acids. The p_H of the small intestine (close to neutrality) also favors the catalytic action of the enzyme One of the chief properties of the bile is its ability to lower surface tension, which materially speeds up digestion of fat. The small intestine secretes its own particular lipase, and, under certain circumstances, this catalyst can take over the splitting of fat. Data from experiments in which a partial pancreatectomy had been performed indicate that the factor of safety is large, and even in the completely depancreatized dog, maintained with insulin and certain lipotropic products, interference with the digestion of fat is not a problem. Nevertheless, the reports of the extreme diarrheas encountered in some cases of pancreatic insufficiency illustrate the importance of this organ in the utilization of fat.

It is generally accepted that the bile is the most important single secretion concerned in the absorption of fat, and of the biliary constituents, the bile acids are of utmost significance. Data obtained from the steatorrhea associated with obstructive jaundice clearly demonstrate that the abnormality consists not in a failure in the splitting of fat but in the impaired absorption of the fat acids liberated in digestion. These bile acids are believed to combine with the water-insoluble acids liberated by the lipases, to form complexes which are soluble in the intestinal medium and, in this form, pass into the intestinal wall. The pathway for the absorption of fat differs from that of protein and carbohydrate in that the major fraction of the fat enters the body through the lymphatic system. Furthermore, unlike the situation which prevails for the other two major organic foodstuffs, the products liberated by the splitting of fat once having passed into the intestinal mucosa reunite to again form the triglyceride. Phosphorylation is believed to be a factor operating in this resynthesis. This conception was proposed by Sinclair,[4] who observed that, whereas the quantity of phospholipid in the intestinal mucosa was not increased after the ingestion of fat, nevertheless the type of the individual fat acids carried by the phospholipid molecule was primarily dependent on the chemical composition of the dietary fat. He hypothecated the formation of an intermediate phospholipid in the resynthesis. This concept gained strength from more recent work with radioactive phosphorus. Data obtained with this tool[5] indicate that phospholipids are being continuously reformed in the small intestine and that, while this activity continues during inanition, the rate of the reaction is considerably accelerated after the oral administration of fat.

While the concept that the splitting of fat is a requisite for absorption is substantially supported by reliable and clearcut chemical findings,[6] nevertheless evidence has been presented in support of an alternate view. According to Frazer, of England, unsplit fat passes directly into the lacteals, while fat acids, liberated by digestion, pass directly into the portal system and at once to the liver. It is beyond the scope of this article to present the data on which this view is based, and the reader is referred to Frazer's recent review[7] for such information.

In considering the fate of the absorbed fat acids, several pathways are open. They may be incorporated into the more complex lipids, deposited as such in the fat depots, converted into other fat acids, excreted through the gut, be involved in the production of milk fat, transformed into carbohydrate or oxidized to carbon dioxide and water with the liberation of energy.

As has already been mentioned the dietary acids become incorporated into the phospholipids within the intestinal mucosa. Studies with hepatectomized dogs have shown that whereas the phospholipids of the small intestine can originate in these organs themselves, those of the blood plasma owe their existence to the liver.[8] Some years ago Bloor[6] proposed that fat acids were transported in the body in the form of phospholipids, and that of these, lecithin was most important. The evidence for this singular role was not good, but more recent findings[9] indicate that the circulating phospholipids are of the choline-containing (lecithin and sphingomyelin) type.

Further evidence that such phospholipids play a predominating role in fat transport has been supplied by experiments with rats on diets high in fat and low in protein content. Under such circumstances, fat accumulates in large amounts (more than 30 per cent) in the liver. The incorporation of choline or of additional protein in the diet prevents this abnormal infiltration of fat. This so-called lipotropic effect[10] of protein is ascribed to its content of methionine, an amino acid containing a labile methyl group which can be utilized for the synthesis of choline. Both methionine and choline influence lipid metabolism by accelerating the phospholipid turnover in the liver. Investigations with depancreatized dogs, maintained with insulin, have contributed further to the problem. Such animals eventually have fatty livers and, in addition, exhibit a fall in the plasma phospholipids, which, as has been noted, are primarily of the choline-containing type. This can be prevented by the administration of choline or extracts of the pancreas. The effect of the latter cannot be accounted for entirely on the basis of the choline content and, according to Dragstedt,[11] this pancreatic factor, to which he has given the name "lipocaic," is a product of the internal secretion of the pancreas. This has been denied by several groups of investigators, particularly Chaikoff and collaborators, who maintain that the factor is present in the external secretion of that gland.

In addition to phospholipid, it is likely that some transport of fat acids is accomplished through the medium of the cholesterol esters of the blood plasma. As a rule the fat acids, thus combined in the plasma, are the most highly unsaturated ones in that circulating fluid, and it is generally agreed that the esterification occurs in the liver. In this connection it might be well to recall the striking observation that in the depancreatized dog maintained with insulin the decided rise in lipid content of the liver is often accompanied by the complete disappearance of cholesterol esters from the plasma. The administration of pancreatic extracts not only remedies the situation, but even results in a rise in values to somewhat above the normal level.

In considering the fate of fat acids transported in this manner it should be emphasized that the current conception differs extensively from those which were popular less than two decades ago. The discovery of deuterium and other isotopes and the development of methods for their preparation in suitable amounts led to biochemical investigations which practically revolutionized teachings on the fate of physiologic substances.[12] Formerly it was commonly believed that dietary fats were burned soon after absorption had occurred and that, when the caloric requirements of the organism had been met, any excess of fat was conveniently stored in the fat depots. There it remained until the demands for energy were not fulfilled by the diet, whereupon it was mobilized and burnt. Currently it is held that the fat depots are by no means inert materials, but are tissues in a considerable state of flux. Dietary fat acids merge with those of the fat depots, and this mixture is constantly transported to and from the organs. These newer conceptions are based essentially on data secured by Schoenheimer from experiments in which fat acids labeled with deuterium were fed to white mice and rats. In a typical experiment deuteropalmitic acid was fed and the fat acids of the organs and tissues fractionated. Of the labeled product fed a considerable fraction (more than 40 per cent) found its way to the tissues and organs as such, part was degraded to the lower homologues, myristic and lauric acids, another fraction was converted to stearic acid, a higher homologue, and an additional portion to the unsaturated acid, oleic acid. None of the more highly unsaturated ones, linoleic and linolenic, were formed. In this connection mention should be made of the demonstration [13] that fat acids of this type are essential constituents in the diet of the white rat. In their absence retardation of growth becomes evident, renal lesions appear and untimely death occurs. One of the early symptoms exhibited is scales on the feet. Only isolated experiments have been carried out with other species. In one experiment with man in which an adult was maintained for six months on an extremely low fat diet, a definite fall in the linoleic acid content of the circulating lipid was observed. A similar fall has been recorded for the serum lipids of infants with eczemas. Most of such cutaneous disorders were reported as "cured" or "greatly alleviated" when fats containing the more highly unsaturated acids were included in the diet.

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[9] Taurog, A.; Entenman, C., and Chaikoff, I. L.: The Choline-Containing and Non-Choline-Containing Phospholipids of Plasma, J. Biol. Chem. **156:** 385 (Dec.) 1944.

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[11] Dragstedt, L. R.: The Present Status of Lipocaic, J. A. M. A. **114:** 29 (Jan. 6) 1940.

[12] Schoenheimer, R.: *The Dynamic State of Body Constituents*, Cambridge, Mass., Harvard University Press, 1942.

The dynamic state of the tissues was demonstrated further by Schoenheimer's observation that fat acids labeled with deuterium eventually disappeared from the body even though the caloric requirements had been met. In mice, the half life cycle of such products ranged from five to eight days. This state of flux is believed to be the physiologic explanation for the formation in the tissues of the type of fat characteristic for a particular species ingesting a diet not particularly high in fat content. When, however, the diet includes considerable amounts of that foodstuff the situation is altered, and now the depot fat begins to closely resemble the dietary fat in chemical composition.[14] This is of considerable economic significance to the swine husbandry industry, which supplies such enormous amounts of culinary fat to the trade. When, for example, certain vegetable foodstuffs, high in a content of fat of low melting point, are incorporated in the diet of hogs the so-called "soft pork" grade, which is more liquid than the usual type of hog depot fat, is deposited. While this product is unquestionably a satisfactory nutrient, the market value is below that of the firmer grades. Owing, however, to the state of flux, it is possible to remedy the situation by merely changing to a diet containing small amounts of the liquid acids and comparatively large amounts of the saturated ones or by supplying a ration in which most of the fat has been replaced by carbohydrate. In the former instance the dietary fat eventually replaces the more liquid type, while in the latter case the excess of carbohydrate is transformed into the acids, and these in turn are deposited.

The physiologic transformation of carbohydrate into fat was first conclusively demonstrated by Lawes and Gilbert [15] in 1877. During the interim, repeated confirmations have been supplied, but the mechanism of the synthesis still remains somewhat obscure. In recent experiments in which the body fluids of mice were enriched with deuterium, the fat acids of the depots were found to contain the isotope. The diet was so low in fat that a synthesis from carbohydrate must undoubtedly have taken place, and the concentration of the isotope and its distribution along the chain was such as to suggest that in this biologic process a condensation of a considerable number of small units had taken place.[12] This hypothesis is further supported by the report [16] that isotopic acetic acid can be utilized for the synthesis of the higher fat acids. In these experiments both the carboxyl-carbon atom and the hydrogen of the methyl group were labeled. The analysis of the fat acids for deuterium resulted in data which could be best explained on the basis of the condensation of many 2 carbon units.

The 2 carbon fragment is also involved in the degradation of fat acids. In 1905 Knoop [17] proposed a mechanism for the oxidation of such acids whereby the long chain was oxidized at the beta carbon atom with the resulting loss of a 2 carbon unit. It was further suggested that the fission progressed successively in such an orderly manner that no matter which fat acid was being catabolized eventually 1 mole of butyric acid was formed. This was subsequently oxidized at the beta carbon atom with the production of the ketone bodies. Knoop's contention received support from the work of Dakin,[17a] who demonstrated that beta oxidation could occur in vitro and isolated some of the intermediates of the reaction. The idea was further substantiated by Embden's observation [18] that the perfusion of fat acids through the liver resulted in the liberation of acetone. In addition it is common knowledge that ketone bodies are formed during the catabolism of fat by man. In the healthy person the urinary excretion of such ketones is increased by the excessive oxidation of fat as it occurs on a high fat diet or as in fasting. For the same reason ketonemia and ketonuria are common occurrences in uncontrolled diabetes mellitus. While this classical theory, whereby oxidation occurs at the beta carbon atom, has stood the test of time, the corollary, that the oxidation of 1 mole of any particular fat acid gives rise to only 1 mole of the ketone body, is currently not accepted. Stadie [19] has recently reviewed the literature on this phase of the problem. Two alternate proposals have been made. One of these,

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13. Burr, G. O., and Barnes, R. H.: Non-Caloric Functions of Dietary Fats, Physiol. Rev. **23**: 256 (July) 1943.

14. Anderson, W. E., and Williams, H. H.: The Rôle of Fat in the Diet, Physiol. Rev. **17**: 335 (July) 1937.

15. Lawes, J. B., and Gilbert, J. H.: On the Formation of Fat in the Animal Body, J Anat. & Physiol **11**: 577, 1877

16. Rittenberg, D., and Bloch, K.: The Utilization of Acetic Acid for the Synthesis of Fatty Acids, J Biol Chem **160**: 417 (Oct) 1945

17. Knoop, F.: Der Abbau aromatischer Fettsauren im Tierkorper, Beitr. z. chem. Phys. u. Path **6**: 150, 1904.

17a. Dakin, H. D.: Oxidations and Reductions in the Animal Body London, Longmans, Green & Co., 1912.

18. Embden, G., and Wirth, J.: Beitrag zur Lehre vom Abbau der Fettsäuren im Tierkorper, Verhandl. d. Kong. f. inn. Med., 1909, p. 347.

19. Stadie, W. C.: The Intermediary Metabolism of Fatty Acids Physiol. Rev. **25**: 395 (July) 1945.

first suggested by Hurtley[20] in 1916 and revived by Jowett and Quastel[21] in 1935, postulates that the chain is oxidized simultaneously along its whole length at alternate carbon atoms beginning at the beta position. As a result the whole molecule is converted into ketones which break up to form 4-carbon chains. Accordingly, beta-oxybutyric acid is again formed, but under these circumstances butyric acid would yield 1 mole; octanoic, 2; lauric, 3, and palmitic, 4 moles of the ketone bodies. Previously it was assumed that only 1 mole would arise from all of the acids. While this newer suggestion is compatible with a considerable amount of data accumulated from experiments with liver slices as well as with healthy intact animals, divergent reports are also available. Thus the 5 carbon chain of valeric acid gives rise not only to glucose but also to acetone, suggesting the condensation of two 3 carbon chains to form the sugar, and of two 2 carbon fragments to give rise to the ketone. Other acids containing an odd number of carbon atoms have been shown to be both glucogenic and ketogenic. In addition Deuel and co-workers observed a greater increase in the ketone excretion following the oral administration of hexanoic acid to the intact white rat than when butyric acid was given. These and other observations led MacKay[22] to propose that oxidation of fat acids proceeded at the beta-carbon atom, as suggested by Knoop, but that the 2 carbon fragment, liberated in this manner, recombined to form the ketone bodies. The report that acetic acid, administered per os to rats, is converted to aceto-acetic acid is in good accord with this conception. Furthermore, when octanoic acid, containing the C^{14} isotope in the carboxyl group, was equilibrated with liver slices the distribution of the tag in the isolated aceto-acetic acid was in close agreement with values predicted on the basis of this beta-oxidation-condensation theory. Schoenheimer's[17] observation that deuteropalmitic acid gives rise to deuteromyristic acid is further proof for the removal of the 2 carbon fragment. On the other hand, Stadie[19] pointed out that some experiments with beta-hydroxybutyric acid led to data more in accordance with values to be expected on the basis of multiple alternate oxidation as proposed by Hurtley.[20] Evidently both mechanisms can operate, and, at present, it seems advisable to defer judgment concerning the predominance of either path.

According to Verkade[23] still another path is open for the catabolism of fat acids. In this scheme the terminal methyl group is first oxidized with the formation of a dicarboxylic acid, which is in turn successively oxidized at the two positions beta to the carboxyl groups. While there is some experimental justification for this proposal, it is generally believed that, even though this so-called *omega-oxidation may* operate, the amounts of acids thus catabolized are so minimal that in the end this route is of little physiologic importance.

It is generally agreed that the complete oxidation of fat acids to carbon dioxide and water takes place in two stages. The initial one, which occurs almost exclusively in the liver, results in the formation of the ketone bodies, already referred to. It has been reported[24] that the presence of adenosine-triphosphate, or a system giving rise to it, is necessary for this first phase. The second one, which takes place almost entirely in the extrahepatic tissues, particularly the kidneys and muscles, consists of the disposal of the 4 carbon chain with the production of water and carbon dioxide. It has been suggested that certain intermediates, which also have been found to operate in the final disposal of carbohydrate, are involved in the ultimate breakdown of fat. Direct evidence for this idea has been supplied by Buchanan and others,[25] who incubated tagged acetate and aceto-acetate with kidney homogenates and detected the isotope (C^{13}) in the alpha-keto-glutaric, fumaric and succinic acids isolated from the reactions mixture. All three had previously been shown to be members of the tricarboxylic acid cycle involved in carbohydrate catabolism.

While it is probable that the 2 and 4 carbon metabolites can be disposed in the manner described, sight should not be lost of other paths for the utilization of the acetate fragment. Thus the conversion of this short chain to the higher fat acids has been demonstrated, the synthesis of cholesterol from acetate accepted, and the utilization of the acetyl group for the detoxication of certain amines established. Acetate and aceto-acetate have also been assigned the role of intermediates by some investigators in their proposed scheme for the conversion of fat to carbohydrate. This issue continues to be exceedingly controversial, and, while some of the more recent findings favor the interconversion, an evaluation of the evidence available generally leads to the verdict that the case has not been proved.

Fat acids need not follow any of the pathways outlined. This is illustrated in studies on the origin of milk fat. Currently it is held that the major portion of such fat arises directly from the triglyceride fraction of the blood lipids and that the chemical composition of it is, in turn, governed to a considerable extent by the dietary habits of the host. Hilditch,[26] of England, has clearly established that the chemical nature of the milk fat of the dairy cow can be significantly altered by dietary management. However, this comparatively simple explanation does not account for all the facts observed in this phenomenon. Butter obtained from the dairy cow, for example, contains unusually large amounts (8 to 10 per cent) of fat acids containing 4 to 10 carbon atoms. Similar observations are recorded for the milk fat of other ruminants, but the distribution of the individual constituents within this fraction varies significantly with the species. In contrast, the milk of the pig, the dog and the human being contains almost negligible amounts of these acids of low molecular weight, resembling in this respect almost all other natural fats. These inconsistencies cannot be ascribed to differences in dietary habits. Man is notable for his continued ingestion of cow's milk even after maturity has been attained. This does not occur in the dairy cow. If these particular acids are dietary in origin, the milk fat of the lactating woman should of necessity contain more and not less of such acids of low molecular weight. It has been suggested that the source of these fatty acids in the milk of ruminants may be from the fermentation which takes place in the stomach. In this connection it should be recalled that such acids are not deposited in significant amounts in the tissues of the rat even though they may be supplied in abundant amounts in the diet. These observations and others have led to a belief that fat acids of low molecular weight are actually synthesized in the mammary gland and that the variations in the distribution of them in the milks of different species are to be ascribed to metabolic differences in their respective glands.

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[20] Hurtley, W. H.: The Four Carbon Atom Acids of Diabetic Urine, Quart. J. Med. **9:** 301, 1916.

[21] Jowett, M., and Quastel, J. H.: Studies in Fat Metabolism, Biochem. J. **29:** 2143, 2159 and 2181 (Sept.) 1935.

[22] MacKay, E. M.: Significance of Ketosis: Review Article, J. Clin. Endocrinol. **3:** 101 (Feb.) 1943.

[23] Verkade, P. E.: The Role of Dicarboxylic Acids in Metabolism, Chem. & Ind. 57:704, 1938.

[24] Lehninger, A. L.: The Relationship of the Adenosine Polyphosphates to Fatty Acid Oxidation in Homogenized Liver Preparations, J. Biol. Chem. **157:** 363 (Jan.) 1945.

[25] Buchanan, J. M.; Sakami, W.; Gurin, S., and Wilson, D. W.: A Study of the Intermediates of Acetate and Aceto-Acetate Oxidation with Isotopic Carbon, J. Biol. Chem. **159:** 695 (Aug.) 1945.

[26] Hilditch, T. P.: The Chemical Composition of Natural Fats, New York, John Wiley & Sons, Inc., 1940.

Cowgill[2] in his review devoted considerable space to the controversy on the relative nutritive value of butter fat and the margarines. He referred to the work by Schantz, Elvehjem, and Hart, of Wisconsin, who compared the nutritive value of mineralized milk rations, supplemented separately with a variety of vegetable fats and butter, and concluded that during their early life young rats receiving the ration containing the butter fat showed the best response in growth. In additional experiments these workers obtained data which led them to believe that butter fat is superior to the margarines so far as growth of young rats is concerned. The same group[27] recently determined the vaccenic acid (an isomer of oleic acid) content of a variety of fats and oils and reported that, whereas the acid is present in small amounts (less than 0.85 per cent) in butter fat, lard and beef fat, none was detected in the number of vegetable fats examined. This study followed a report[28] that the growth of rats on a ration containing rape seed oil as the source of fat was inferior to the rate observed when butter alone was employed as the dietary fat. The inclusion of 0.1 per cent of vaccenic acid in the rape seed oil diet resulted in a growth rate which practically duplicated the one recorded for the ration containing butter. It was suggested that superiority of butter fat over the margarines was due to the presence of vaccenic acid.

According to Cowgill, Deuel and collaborators were unable to demonstrate this superiority of butter. In a comprehensive investigation of the problem, this latter group observed satisfactory growth and reproduction of ten generations of rats during which time the butter fat of a ration, known to be satisfactory for growth and reproduction, was replaced by a margarine. Other investigators agreed with Deuel. In this connection the latter has remarked on the observation by Hilditch that human milk fat more closely resembles the margarines in chemical composition than does the fat obtained from the milk of the dairy cow. It should be pointed out that experiments have not been conducted with human subjects and that differences observed in the rat may not apply to man. In commenting on this problem Cowgill pointed to the differences in the rations employed, the strains fed and the conditions under which the investigations were carried out by the several groups, and suggested that the matter might be clarified by providing uniform conditions in future studies.

Turning now to the problem of the utilization of the complex lipids, it is evident that our knowledge of the digestion and absorption of these is scanty. With regard to the phospholipids, most of the data are limited to the lecithins. These are believed to be split by enzymes in the duodenum. At least this is the conclusion reached from data obtained on the composition of the thoracic lymph collected before and after the feeding of these particular phospholipids. To date it has not been established whether lecithins can enter the portal blood stream directly in the unsplit form. Studies on the utilization of cephalin and phosphotidyl serine have not been recorded, and those pertaining to sphingomyelin are fragmentary. With regard to the cerebrosides, the data available in the literature are few and conflicting. It is clear that this phase of lipid metabolism needs investigation. From some unpublished work obtained in this laboratory it is apparent that the lipid fraction of the brain, which contains considerable portions of all of these complex lipids, is reasonably well utilized, but not as well as the triglycerides. These studies have, however, not been carried beyond the preliminary stages.

In contrast to the lack of information referred to, the literature contains numerous investigations on the utilization of cholesterol and its esters. Much credit should be given to Gardner, of England, who initiated so many significant studies on the origin and fate of this sterol. As a consequence of the analysis of thoracic lymph, following the feeding of cholesterol and its esters, it has been established that regardless of whether fed in the free or esterified form, increases in both fractions occur in the lymph. This indicates that during absorption both esterification and hydrolysis occur in the small intestine. As a rule the absorption of cholesterol takes place best in the presence of dietary fat. This may be due to supplying fat acids for esterification. As in the case for fat, the absorption of cholesterol is accelerated by the presence of bile, and it is believed that this is accomplished by a combination of the alcohol with bile salts with the formation of soluble complexes.

It is agreed that all these complex lipids can be synthesized by higher animals from comparatively simple products. This is illustrated by experiments with rats on diets practically devoid of such lipids. In such circumstances, growth occurred with a corresponding rise in the content of these lipids in the tissues. Similarly it is evident that such lipids increase in amount in the suckling infant even though the milk contains insufficient amounts to account for the increment. According to Block and Rittenberg,[29] acetic acid, when fed to mice and rats, leads to the synthesis of cholesterol. The deuterium in the dietary acetate was present in both the nucleus and the side chain of the steroid.

Mention has already been made of the role of the phospholipids in fat absorption and transport. In addition they undoubtedly are intimately associated with other physiologic activity, inasmuch as the more active tissues contain the larger amounts of such lipids. Heart muscle, for example, contains practically twice as much as skeletal muscle. These lipids are intimately associated with protein, and it is believed that the lipids of blood plasma are combined with protein. The prosthetic group in the thromboplastic protein of plasma and tissues, so intimately associated with the clotting of blood, is considered to be a complex lipid of the phospholipid type. The role of cholesterol in the living organism is undoubtedly a manifold one. Its presence in practically all tissues indicates this. However, it is not possible to describe all of its various functions. Mention has

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27. Geyer, R. P.; Nath, H.; Barki, V. H.; Elvehjem, C. A., and Hart, E. B.: The Vaccenic Acid Content of Various Fats and Oils, J. Biol. Chem. **169:** 227 (June) 1947.

28. Boer, J.; Jansen, B. C. P., and Kentie, A.: On the Growth Promoting Factors for Rats Present in Summer Butter, J. Nutrition **33:** 339 (March) 1947.

29. Block, K., and Rittenberg, D.: On the Utilization of Acetic Acid for Cholesterol Formation, J. Biol. Chem. **145:** 625 (Oct.) 1942.

already been made of its relationship to the natural form of vitamin D. In addition it can give rise to the bile acids and some of the sex hormones. Analyses of normal tissues have proved the presence of a variety of degradation products of cholesterol which conceivably can be considered to be the precursors of additional hormones.

The distribution of these complex lipids in the blood, during the postabsorptive state, and in the organs does not vary materially over considerable lengths of time in the healthy subject. As a rule the lipid levels in the corpuscles remain unaltered during disease, but definite fluctuations from the normal values are encountered in the plasma. The fall in cholesterol esters, observed in diseases of the liver, is ascribed to a failure in formation in that organ. Falls in total cholesterol values have been observed in certain infections, while hypercholesterolemia often accompanies nephrosis. The levels of plasma cholesterol vary appreciably with thyroid activity, being subnormal in hyperthyroidism and elevated above normal in hypothyroidism. The reader is referred to Bloor's monograph[30] for references to and a more detailed discussion of the variations in the levels of the plasma lipids under pathologic conditions. The role of the lipids in atherosclerosis has recently been reviewed.[31]

Variations from the normal lipid content are encountered in the organs of a number of pathologic conditions grouped as the "lipidoses." One of these, the xanthomatoses, is characterized by a deposition of cholesterol in large quantities in the tissues. In the xanthomatosis of the bones and organs and in the Schuller-Christian syndrome the plasma cholesterol levels are not elevated, whereas a definite hypercholesterolemia is commonly observed in xanthoma tuberosum. In the latter condition the treatment of the disease by prescribing a cholesterol-low or plant diet has been reported as successful. On the other hand, some patients do not respond in this manner to the change in diet. In Niemann-Pick disease the disorder is in the accumulation of sphingomyelin, while in infantile amaurotic familial idiocy (Tay-Sachs disease) the gangliosides increase extensively. Gaucher's disease is characterized by the deposition of large amounts of the cerebrosides, particularly in the spleen. In contrast to galactose, as is the case for the cerebrosides of the healthy subject, glucose was found to be the carbohydrate constituent of the lipid. With the exception of some of the xanthomatoses the levels of the individual lipids in the plasma in these pathologic conditions fall within the normal range, and no satisfactory explanation has been made for these unusual situations. A detailed description of these anomalies and speculations concerning their origin are available in a recent review.[32]

SUMMARY

1. The incorporation of suitable amounts of fat (triglycerides) in the diet increases the "staying power" of the ration and the substitution of fat for carbohydrate decreases fermentation in the gut.

2. Triglycerides of plant and animal fats are equally well digested and absorbed provided that liquefaction of these occurs in the small intestine. Plant sterols are not absorbed to any significant extent by man, while cholesterol, the chief sterol of higher animals, is well utilized.

3. Depot fats consist primarily of triglycerides. In contrast, cholesterol, the phospholipids and the cerebrosides occur in predominating amounts in the actively functioning organs of animals.

4. Pancreatic lipase and the bile salts are the chief factors in the digestion and absorption of triglycerides from the intestine.

5. Cholin-containing phospholipids are intimately associated with the transport of fat acids in the body. These acids may be incorporated in the complex lipids, deposited in the fat depots, converted to other fat acids, excreted into the gut, utilized in the formation of milk fat or oxidized to carbon dioxide and water with the liberation of energy.

6. While the majority of the fat acids can be synthesized by the animal organism, linoleic and linolenic are apparently exogenous in origin. Either one of the latter two is an essential constituent in the diet of the white rat, and may be required by man.

7. Degradation of fat acids takes place in two stages. The first phase, occurring almost exclusively in the liver, consists in the production of the ketone bodies, which are disposed of in the final stage in the extrahepatic tissue (notably in the kidneys and muscles).

8. With the exception of those of low molecular weight (C_4 to C_{10} inclusive) the fat acids of milk fat originate from the triglycerides of the blood. The composition of milk fat can be altered by dietary management. The controversy on the comparative nutritive value of butter and the margarines still exists.

9. Cholesterol, the phospholipids and the cerebrosides can be synthesized by the animal organism. Increased deposition of these occurs in the actively functioning organs in the different types of lipidoses.

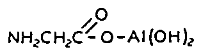
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

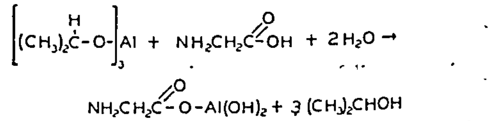
AUSTIN SMITH, M.D., *Secretary.*

DIHYDROXY ALUMINUM AMINOACETATE.—Alglyn-Brayten.—A basic aluminum salt of glycine containing small amounts of aluminum hydroxide and glycine.—$C_2H_6O_4NAl$.—M. W. 135.05.—The structural formula for basic aluminum aminoacetate may be represented as follows:



$$NH_2CH_2C(=O)-O-Al(OH)_2$$

Dihydroxy aluminum aminoacetate is prepared by the reaction of aluminum isopropoxide with glycine according to the following reaction:



$$\left[(CH_3)_2\overset{H}{C}-O-\right]_3Al + NH_2CH_2C(=O)OH + 2H_2O \rightarrow NH_2CH_2C(=O)-O-Al(OH)_2 + 3\,(CH_3)_2CHOH$$

The precipitated dihydroxy aluminum aminoacetate is filtered with suction, washed with isopropyl alcohol and dried at a temperature not exceeding 71 C. The aluminum isopropoxide is prepared by the reaction of aluminum in shreds or strips with anhydrous isopropyl alcohol, catalyzed by 0.03 per cent mercuric chloride, followed by distillation under vacuum.

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[30] Bloor, W. R.: Biochemistry of the Fatty Acids and Their Compounds, the Lipids, New York, Reinhold Publishing Corporation, 1943.

[31] Hirsh, E. F., and Weinhouse, S.: The Role of Lipids in Atherosclerosis, Physiol. Rev. **23**: 185 (July) 1943.

[32] Thannhauser, S. J., and Schmidt, G.: Lipids and Lipidoses, Physiol. Rev. **26**: 275 (April) 1946.

Actions and Uses.—Dihydroxy aluminum aminoacetate acts as a gastric antacid when taken orally and is thus useful for the control of hyperacidity in the management of peptic ulcer. It shares the properties of the aluminum hydroxide gel preparations, over which it has no important advantages. Its buffer action is not significantly more prompt, great or prolonged than that of the liquid preparations of aluminum hydroxide gel when compared on the basis of equivalent aluminum content. Compared with dried aluminum hydroxide gel (U.S.P.) it possesses only slightly more prompt buffering action and shares with that preparation the convenience of tablet form in which it is used. Because it contains from 50 to 60 per cent less aluminum than the aluminum hydroxide preparations, the formation of astringent aluminum chloride in the intestine is theoretically reduced, which is claimed to result in less constipating action. The clinical significance of its slightly more prompt buffering action than dried aluminum hydroxide gel or its tendency to produce less constipation than aluminum hydroxide preparations in general is open to question. Claims that dihydroxy aluminum aminoacetate is generally superior to aluminium hydroxide preparations are disallowed until more clinical evidence is available to demonstrate significant differences. The claimed prompt disintegration in the stomach of dihydroxy aluminum aminoacetate tablets when swallowed whole appears to offer only limited advantage for the ambulant treatment of persons unable to chew tablet preparations of dried aluminum hydroxide gel, since the latter may be readily broken up prior to administration when that becomes necessary.

Dosage.—Dihydroxy aluminum aminoacetate is administered orally in tablet form. One to two 0.5 Gm. tablets after meals and at bedtime or as otherwise required to control hyperacidity are recommended. As with other internally administered aluminum compounds, constipation may occur from prolonged administration.

Tests and Standards

Dihydroxy aluminum aminoacetate is a white, odorless powder with a faint sweet taste. It is insoluble in water and organic solvents, but soluble in dilute mineral acids and solutions of fixed alkalies to yield a cloudy solution which clarifies on heating.

Dry 2 Gm. of dihydroxy aluminum aminoacetate, accurately weighed, to constant weight at 130 C. This requires two to three day's drying. The loss in weight does not exceed 14.5 per cent.

Prepare a suspension of 1 Gm. of finely ground dihydroxy aluminum aminoacetate in a glass-stoppered flask containing 25 cc. of distilled water. Mix the contents for 5 minutes, and then let stand for 5 minutes. The pH should be 6.5 to 7.5.

Transfer 0.2 Gm. of finely ground dihydroxy aluminum aminoacetate, accurately weighed, to a glass-stoppered flask containing 25 cc. of tenth-normal hydrochloric acid. Agitate the mixture vigorously for 5 minutes, and then let it stand for 5 minutes. The pH must be above 3.0.

To 20 cc. of an aqueous suspension (1 in 25) of dihydroxy aluminum aminoacetate add hydrochloric acid dropwise until the compound just dissolves to form a clear solution. Divide the solution into two equal portions. To one portion add an excess of ammonia T.S.; a white flocculent precipitate of aluminum hydroxide is formed which is insoluble in an excess of ammonia but soluble in sodium hydroxide T.S. To the other portion add one drop of liquified phenol and 5 cc. of sodium hypochlorite T.S.; a blue color is produced, characteristic of aminoacetic acid.

Dihydroxy aluminum aminoacetate shows no heavy metals when subjected to the test outlined in U.S.P. XIII, page 657.. Dihydroxy aluminum aminoacetate shall be free of mercury when a solution containing 1 Gm. of the compound dissolved in 10 cc. diluted hydrochloric acid is shaken with 10 cc. of a solution of dithizone in carbon tetrachloride (concentration 2 mg. per 100 cc.): The CCl_4 layer does not turn orange (Feigl, F.: Qualitative Analysis by Spot Tests, ed. 3, New York, Elsevier Pub. Co., 1946, p. 49).

Suspend 5 Gm. of dihydroxy aluminum aminoacetate in 100 cc. of tenth-normal potassium permanganate acidified with 10 cc. of concentrated sulfuric acid. Reflux the mixture for 30 minutes and distil a 10 cc. sample. The distillate must be free from acetone as shown by the nitroprusside test (*N.F.* VIII, p. 20).

Add 0.25 Gm. finely ground dihydroxy aluminum aminoacetate to 50 cc. tenth-normal hydrochloric acid. Allow to stand 10 minutes with occasional agitation. At the end of 10 minutes back titrate the excess acid with tenth-normal sodium hydroxide to a pH of 3.8 using bromphenol blue T.S. as indicator. One gram of dihydroxy aluminum aminoacetate neutralizes at room temperature not less than 125 cc. and not more than 175 cc. of tenth-normal hydrochloric acid under these conditions.

Transfer about 1 Gm. of dried dihydroxy aluminum *aminoacetate, accurately weighed, to a platinum dish.* Add 5 cc. nitric acid and 2 cc. of sulfuric acid (1:1). Fume off the acids and ignite in a muffle furnace at 1,200 to 1,500 C. Dissolve the residue in 10 cc. of hydrochloric acid and 5 cc. of sulfuric acid (1:1) and transfer to a 600 cc. beaker. Dilute with water to 400 cc. and add strong ammonia solution until the solution is just basic to methyl red. Heat to boiling, filter and wash the precipitate with hot water until the washings are free from chloride. Dry the precipitate, ignite it at 1,200 - 1,500 C. to constant weight, cool and weigh the Al_2O_3 so obtained. The calculated aluminum oxide content of dry dihydroxy aluminum aminoacetate is not less than 34.9 per cent and not greater than 38.7 per cent.

Determine the nitrogen content by the semi-micro Kjeldahl method (U.S.P. XIII, p. 673), using 0.1 Gm. of dried dihydroxy aluminum aminoacetate, accurately weighed. The per cent of nitrogen present in dry dihydroxy aluminum aminoacetate is not less than 9.8 or greater than 10.8 per cent.

BRAYTEN PHARMACEUTICAL CO., CHATTANOOGA, TENN.

Alglyn *(Powder)*: bulk

Tablets Alglyn: 0.5 Gm.

U. S. Trademark 420,509.

DIETHYLSTILBESTROL—U.S.P. (See New and Nonofficial Remedies 1947, p. 347)

The *following dosage form has been accepted:*

KREMERS-URBAN CO., MILWAUKEE

Tablets Diethystilbestrol: 1 mg. and 5 mg.

DIPHENYLHYDANTOIN SODIUM—U.S.P. (See New and Nonofficial Remedies 1947, p. 400).

The following dosage form has been accepted: :

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Capsules Diphenylhydantoin Sodium: 0.1 Gm.

PENICILLIN (See New and Nonofficial Remedies 1947, p. 144).

The following dosage forms have been accepted:

BIO-RAMO DRUG CO., BALTIMORE

Penicillin Sodium: 200,000 and 500,000 unit vials.

COMMERCIAL SOLVENTS CORPORATION, NEW YORK

Soluble Tablets Crystalline Penicillin G Potassium: 50,000 units.

SODIUM ASCORBATE INJECTION—U.S.P. (See New and Nonofficial Remedies 1947, p. 520).

The following dosage forms have been accepted:

LINCOLN LABORATORIES, INC., DECATUR, ILL.

Solution Sodium Ascorbate: 100 mg. per cc., 2 cc. and 5 cc. ampuls.

THE WILLIAM S. MERRELL CO., CINCINNATI

Solution Sodium Ascorbate: 100 mg. and 500 mg. per cc., 2 cc. ampuls.

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SATURDAY, JULY 31, 1948

EDITORIAL ANNOUNCEMENT

The compositors returned to work on Monday, June 28. This issue of The Journal has been prepared in part by the use of Vari-Typer machines.

EXPERIMENTAL NECROTIZING ARTERITIS

Summarizing several years of experimental work, Holman[1] and his associates of the Department of Pathology, University of North Carolina, concluded that degenerative lesions affecting principally the aorta, pulmonary artery, auricular endocardium and coronary arteries may be produced with regularity in young dogs by controlling two factors: (*a*) diet and (*b*) renal efficiency. Both factors are necessary, either one in itself being ineffective.

Two diets were used in these experiments. The first or "standard diet" consisted of 32 parts of calves' liver, 25 parts of cane sugar, 25 parts of corn starch, 12 parts of butter and 6 parts of commercial cod liver oil plus enough tomato juice to make a paste. Each gram of this diet contained 3 calories. The diet was fed in amounts to furnish 75 calories per kilogram per dog daily. Five grams of kaolin and 1 mg. of salt mixture were added to each daily feeding. The second or "kennel diet" consisted of selected table scraps reinforced by the addition of 6 per cent commercial cod liver oil.

After feeding of one of these diets for eight to twelve weeks renal injury was produced by one of several methods,. usually by a minimum lethal dose of uranyl nitrate injected subcutaneously or by mercury chloride injected intravenously. Bilateral nephrectomy was used in a few cases. The animals died of uremia or were killed seven to thirty-five days after the renal injury.

In 87 per cent of the 55 dogs thus far tested arterial lesions were found. These varied from (±) equivocal lesions discovered only in microscopic sections to (+++) gross necrotizing lesions 1 cm. in maximum diameter. The first detectable anatomic change is edema, swelling, fragmentation and necrosis of collagen. The subsequent fibrin and leukocytic reactions were presumably secondary responses.

Evidently there are one or more anticollagens in the selected diets which are neutralized or eliminated by normal renal function. Substitution of corn oil for cod liver oil in either diet renders the diet nontoxic. That the toxic factor is not unique to cod liver oil, however, is deduced from the fact that similar necrotizing arteritis is occasionally noted in nephrectomized dogs in which beef fat is substituted for cod liver oil. The evidence thus suggests that the toxic factor responsible for the necrotizing arterial lesion is a lipid.

If so, the question naturally arise as to the possible effect of vitamin E, a "fat antioxidant" on the production of the arterial lesions.[2] To test this, a capsule containing 20 mg. of mixed natural tocopherols was given daily by mouth, from two days before to two days after the renal injury The dogs thus treated survived for eight to thirty days after the renal injury. At necropsy arterial lesions were not noted. The conclusion is drawn that oral administration of adequate doses of vitamin E is a preventive of experimental necrotizing arteritis in dogs, due to a combination of toxic lipids and reduced renal function.

Acute necrotizing arteritis in dogs has a close human counterpart in periarteritis nodosa and rheumatic arteritis in man

RADIOACTIVE LOCALIZATION OF BRAIN TUMORS

In 1947 Moore of the Department of Surgery, University of Minnesota, found that fluorescein injected intravenously into patients has the property of elective localization in malignant tissues.

Five cubic centimeters of a 20 per cent sodium fluorescein solution was injected intravenously from three to eight hours before a planned laparotomy for gastric carcinoma At the operation the suspected lesions were inspected with an ultraviolet lamp. Differences between normal and malignant tissues were then noted, the malignant tissues fluorescing with a vivid yellow color. The main exceptions were in cases in which the malignant tissues were situated more than a few millimeters below the surface. In these cases, little or no fluorescence was noted, presumably because ultraviolet light can penetrate only a few millimeters through surrounding tissues. In 11 of 17 cases of of malignant tumors of the gastrointestinal tract a high grade fluorescence was associated with verified diagnoses of malignancy by microscopic methods. Three cases showed only slight fluorescence. In an additional 3 cases malignant tumors or tumor fragments failed to fluoresce, the majority of the partial or complete failures occurring in bulky tumors. Necrotic tissues did not fluoresce. Edema and cyst formation at times accounted for erroneous tests.

More reliable results were obtained with brain tumors. Twelve patients suspected of having intracranial neoplasms were examined. Tissues were obtained from suspected areas by aspiration needle. Exaggerated fluorescence was observed under ultraviolet light. There was a perfect correlation between results by this technic and subsequent diagnosis by standard pathologic methods.

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[1] Holman, R. L., and Swanton, M. C.: Proc. Soc. Exper. Biol. and Med. 63:87 (Oct.) 1946.

[2] Holman, R. L.: Proc. Soc. Exper. Biol. and Med. 66:307 (Nov.) 1947.

[1] Moore, G. E.: Science, **106**:130, 1947.

In an attempt to extend the clinical usefulness of this technic,[2] a radioactive derivative of fluorescein (sodium diiodofluorescein) was synthesized with I^{131}. The amount of I^{131} added was adjusted to give 1 millicurie of radioactivity per 10 cc. of a 2 per cent solution of the fluorescent dye. An amount of dye calculated to give 500-600 microcuries of radioactivity was injected intravenously into 12 patients with suspected brain tumors. From two to four hours later radioactive tests were made with a specially screened Geiger-Müller tube. Background radiation was eliminated by a 2 cm.-thick lead shield provided with a lead cone to reduce the area exposed. Thin lead foil was placed over the counter window to filter out beta radiation. Counts were taken for three to five minute intervals at each of several positions on the skull with the cone of the detection unit directly on the skin. A majority of the tests were carried out without knowledge of the neurologic findings, roentgen examination or staff opinion. A definite area was outlined on the skull over the apparent site of the radioactive tissues.

In all cases this outline coincided closely with the extent of the superficially situated meningeoma subsequently found at operation. Correct positive and negative findings were noted. In 3 cases the preoperative clinical diagnosis was proved wrong. In one negative radioactive test no tumor but an aneurysm of the right internal carotid was found on operation. In a second case the preoperative diagnosis of subdura hematoma was changed to that of tumor by the radioactive test. The radioactive diagnosis was in all cases confirmed by the subsequent operation.

Preliminary experiments utilizing induced brain tumors in mice have revealed a concentration of the radioactive dye in tumor tissues as high as eighty times that found in the adjacent normal tissues. A possible therapeutic use of the radioactive dye has not yet been considered.

Current Comment

METABOLIC FATE OF THYROXIN

The development of highly sensitive technics for the estimation of radioactive isotopes has made possible the study of the metabolic fate of active drugs such as thyroxin. When this hormone, labeled with radioactive iodine, is injected into rats, more than 50 per cent of the administered dose may be recovered after two hours in the gastrointestinal tract, liver and pancreas, mainly in unaltered form.[1] Two days after the injection, about 80 per cent may be recovered from the feces, largely unchanged, while some 11 per cent is present as inorganic iodide in the urine. The liver, kidneys, adrenals, ovaries and lymphatic organs tend to maintain their radioactivity at this time. The thyroxin appears to enter the intestinal tract by way of the liver, the organ active in the excretion of certain other halogenated compounds. The results are interesting especially because they form a possible experimental basis for any relationships which may exist between thyroid and hepatic function. They were obtained with relatively large doses of thyroxin (about a milligram); preliminary work with physiologic amounts indicates a similar trend with respect to distribution.

REFLECTIONS ON GENIUS

W. R. Brain,[1] in a review of current thinking on the mental factors which tend toward genius, considers intelligence the most important and the one distinguishing feature in families in which great ability is transmitted through successive generations. The definition of genius as proposed by Kretschmer is quoted:

> We shall give the name genius to those men who are able to arouse permanently, and in the highest degree, that positive, scientifically grounded feeling of worth and value in a wide group of human beings. But we shall only do so in those cases where the value arises with psychological necessity, out of the special mental structure of the bringer of value, not where a stroke of luck or some coincidence of factors has thrown it in his lap.

Another factor of importance is the physiologic organization of nerve cells into functional patterns called "schemas." The genius presumably excels the ordinary person in that he is richer in the numbers and patterns of his physiologic "schemes." The relationship between intelligence and the use of words is important, as high levels of conceptual thought are possible only with a highly developed capacity for verbal symbolization. Dr. Johnson, Coleridge and Shelley are examples of association of prodigious memory with genius. Most remarkable feature of the creations of genius is considered to be the extent to which thought arises apparently independently of the conscious mind, usually accompanied by a high degree of emotional excitement. The person so affected is often endowed with a continuous unrelenting energy for work until the task is fulfilled. Poincaré illustrates inspiration in discussing a mathematical discovery:

> One is at once struck by these appearances of sudden illumination, obvious indications of a long course of previous unconscious work.... This unconscious work...is not possible, or in any case not fruitful, unless it is first preceded and then followed by a period of conscious work. These sudden inspirations are never produced...except after some days of voluntary efforts which appeared absolutely fruitless, in which one thought one had accomplished nothing, and seemed to be on a totally

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[2] Moore, G. E.: Science, 107: 569, 1948.

[1] Gross, J., and LeBlond, C.P.: J. Biol. Chem. 171: 309, 1947.

[1] Brain, W.R.: *Some Reflections on Genius*, Lancet 1: 661-665 (May 1) 1948.

wrong track. These efforts, however, were not as barren as one thought; they set the unconscious machine in motion, and without them it would not have worked at all, and would not have produced anything. The necessity for the second period of conscious work can be even more readily understood. It is necessary to work out the result of inspiration, to deduce the immediate consequences and put them in order, and to set out the demonstrations, but, above all, it is necessary to verify them.

Goethe states that "No productiveness of the highest kind, no remarkable discovery, no great thought that bears fruit and has results is in the power of any one; such things are above earthly control." Poetic genius, administrative genius, musical genius and genius in its relation to mental disorder are discussed. The creative genius, whether he be artist, scientist or abstract thinker, is in all cases considered to be inspired in the same way, differing only in that his unconscious and conscious application is directed to other subject matter. Discussing mental disorder and neuroticism as compared to the quality of genius, the author concludes that the nervous traits in the genius are genetically and psychogenetically identical with those which we term neurotic in the ordinary man.

ICTERUS OF THE NEWBORN

Apparently the largest potential source of iron for new blood formation in the infant[1] is the destruction of erythrocytes in the early days after birth. The concentration of serum bilirubin, which is approximately 1 mg. per hundred cubic centimeters at birth, commonly rises by the fifth day to about 5 mg., a level at which jaundice is usually apparent in most infants. This rise has been attributed[2] to the hemolytic action of an increased level of blood lipid brought about by a sudden increase in dietary fat after birth (the placenta is impermeable to fat). High fat diets induce accelerated destruction of red blood cells and production of biliary pigment, demonstrated in experimental animals.[3] When the child's formula is limited to 0.03 per cent fat in place of the usual 3.6 per cent, the rise in serum bilirubin is much less. Thus a considerable part of the hyperbilirubinemia in the newborn can be controlled by a reduction in the proportion of calories obtained from the dietary fat.

STATISTICAL STUDIES OF HEART DISEASES

Moriyama and Gover[1] note that the most important infectious diseases have given way to the chronic degenerative diseases as the chief causes of mortality. Thus the death rate for tuberculosis in 1945 was only 21 per cent of the rate in 1900, and the average pneumonia rate of 49 per 100,000 population in the five year period 1941 to 1945 contrasts markedly with the average of 161 per 100,000 population in the years 1900 to 1904. During this period of extraordinary advances in the public health the death rate for heart diseases climbed steadily. In the forty-five years since 1900, the death rate for heart disease increased from 137 to 322 per 100,000 population, while the death rate for all causes dropped from 1,719 to 1,062 per 100,000 population in the United States death registration states. These trends of mortality have been described in terms of crude and annual death rates. The aging of the population in the United States is an important factor in the upward trend of the death rate for heart disease. This tendency has been reinforced by the decline in the birth rate and the curtailment of immigration. During the period from 1900 to 1940, the median age of the population of the United States increased from 22.9 to 29.0 years. The age distribution of total deaths has changed in a pronounced manner, reflecting in part the change that has taken place in the age distribution of the living population. In 1880, 40 per cent of the recorded deaths were of persons under 5 years of age, while 14 per cent were 65 years of age and over; in 1940 only 10 per cent of deaths were of persons under 5 years of age, while 46 per cent were 65 years of age or older. Practically half the deaths occurring at the present time are among persons in the definitely older age brackets. The effect of these changes in the age composition of the population on the death rates can be eliminated by computing age-adjusted death rates. The tendency for the chronic and degenerative diseases of middle and old age to replace the infectious diseases as leading causes of death is not essentially altered when the changing age distribution is taken into account. Heart disease has progressed in the forty year interval from third to first place, nephritis from seventh to fourth, cancer from eighth to second and diabetes from eighteenth to eighth place, while tuberculosis, pneumonia, diarrhea and enteritis, diphtheria and other communicable diseases have declined from higher to lower ranks. Since the upward trend is evident even in age-adjusted rates for some of the diseases characteristic of middle and old age, the aging of the population could not be wholly responsible. The decline in the mortality rates for infectious diseases including tuberculosis and pneumonia has been so rapid that, despite the increase in mortality for the old age diseases taken as a group, there has been a downward trend in the crude death rate for all causes involved. The authors estimate, on the basis of a crude general death rate of about 14 per 1,000 population in 1980, that deaths from heart disease will constitute roughly 32 per cent of all deaths occurring in that year. Trends of mortality from syphilis, from acute rheumatic fever, and other infections which may lead to specific heart conditions, are definitely downward. With respect to the larger group of degenerative heart diseases, much can be done at present to postpone the onset of cases and to slow their progress. Heart disease, the authors believe, will probably continue to play the principal role in the upward trend of mortality unless some revolutionary advance is made bearing on the prevention and treatment of cardiac diseases.

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[1] Stearns, G., and McKinley, J.B.: J. Nutrition 13: 143, 1937.

[2] Loewy, A., and Freeman, L.W.: Am. J. Physiol. 157: 205, 1948.

[3] Loewy, A.; Freeman, L.W.; Marchello, A., and Johnson, V.; Am. J. Physiol. 138: 230, 1943.

[1] Moriyama, I. M., and Gover, M.: Statistical Studies of Heart Diseases. Pub. Health Rep. 63: 537-545.

ORGANIZATION SECTION

Association News

RED CROSS BLOOD PROGRAM

The American Red Cross has sent to the American Medical Association its interpretation of its action of the House of Delegates June 23, 1948 regarding American Red Cross Blood Program. The statement which follows has been referred to the special committee established to confer with the American Red Cross on this subject:

The House of Delegates approved the recommendation of its reference committee that there be no change in the "approval in principle" of the National Blood Program of the American Red Cross. The referencce committee expressed its opinion as to how "approval in principle" be construed. The American Red Cross is in substantial agreement with that opinion and with reference thereto makes the following specific observations.

It was the opinion of the reference committee that "local control must be by the county medical society." This is in accordance with existing Red Cross policy. In fact, the Red Cross has gone beyond this and has laid special emphasis on the methods whereby the local medical society may secure complete control of the technical program.

The reference committee also thought that "the local medical society should be the contact in the initial contemplation of inauguration of a new blood bank." This is likewise in accordance with Red Cross policy which clearly states that the local medical societies, hospital organizations and public health authorities must be in complete accord with the establishment of a blood center before any action is taken. The Red Cross has, in fact, gone beyond this by making certain that the medical societies in surrounding counties are consulted and are in complete accord before any attempt is made to establish a regional center.

The House of Delegates approved the recommendation of its referencce committee that the American Medical Association committee which has been considering blood banks "be enlarged to nine members with definite instructions to meet at stated intervals at the call of either the chairman of its committee or that of the Red Cross." The Red Cross has worked with this American Medical Association committee with results satisfactory to both organizations. It stands ready to join with the American Medical Association in even greater effort and cooperation to attain objectives satisfactory to each.

The reference committee objected to the use of the term "free blood" in the publicity of the American Red Cross. It has not been the practice of American Red Cross to use the words "free blood" in publicity regarding the National Blood Program. However, it must be generally and clearly understood that blood and blood derivatives are made available by the Red Cross to physicians and hospitals without cost to them. While it is expected that they will collect from the recipient expenses incident to the administration of that blood, they will not collect from him payment for material for which they have paid nothing to the Red Cross.

It is unthinkable that the Red Cross should sell to physicians and hospitals the blood and blood derivatives that are the result of donations freely given it for the alleviation of distress and suffering of persons who need that blood or the substances which come from it. It is equally unthinkable that physicians and hospitals should sell to recipients that which they have received from the Red Cross without cost to them. There would be no Red Cross blood donors and no Red Cross blood program if those who were asked to give their blood were informed that the blood which they had given or the substances which came from it were to be sold to physicians and hospitals who in turn would sell these products to the persons whose lives would be in jeopardy without them.

Washington Letter

(From Our Regular Correspondent)

July 28, 1948.

Critique of Brookings Health Report Published

The Senate Committee on Labor and Public Welfare has begun distribution of a seventeen page critique of the Brookings Institution report, published earlier this year and entitled "The Issue of Compulsory Health Insurance." Prepared by Michael M. Davis, chairman of the Committee on Research in Medical Economics, and Dewey Anderson, executive director of Public Affairs Institute, the analysis was printed and is being distributed by the Senate committee at the behest of two of its members who are proponents of national health insurance, Senators James E. Murray and Claude Pepper. Main points of the Davis-Anderson review are summarized as follows: (1) The Brookings report does not present evidence justifying its condemnation of compulsory health insurance, nor does it recognize "that most of the difficulties alleged against compulsory health insurance are faced and must be solved by voluntary plans also"; (2) it does not face squarely the problem of unpredictable sickness costs; (3) the Brookings conclusion that the public should depend on voluntary health insurance does not explain how obstructions to enrollment of great masses of population in such plans are to be eliminated; (4) advocacy of the "means test," by which persons unable to pay dues in voluntary plans would receive charity, tax-supported medical care, is denounced as "neither politically valid nor decently human"; (5) finally, according to Davis and Anderson, "The Issue of Compulsory Health Insurance" (written by George W. Bachman and Lewis Meriam) begs the question by devoting considerable space to mortality and morbidity statistics which have little or no bearing on the issue of health insurance. It is understood that only three hundred copies of the Davis-Anderson review have been printed by the Senate committee, but the authors' respective organizations will issue their own printings. The Senate's limited edition bears on its cover a notice: "opinions expressed herein should in no way be construed as representing the official views of either the Subcommittee on Health or the Senate Committee on Labor and Public Welfare."

First Inter-American Conference for Rehabilitation of Cripples

Michael J. Shortley, director of the Office of Vocational Rehabilitation, Federal Security Agency, served as chairman of the United States delegation to the First Inter-American Conference for Rehabilitation of Cripples, held in Mexico City July 18-24. Other members of the official group, appointed by the State Department, included Dr. Henry H. Kessler, representing the National Council on Rehabilitation; Col. Harold B. Luscombe, chief of physical medicine at William Beaumont General Hospital; Comdr. Thomas J. Canty, Mare Island (Calif.) Naval Hospital, and Lieut. Col. Benjamin A. Strickland Jr., chief of the physical medicine consultants' division in the Army Surgeon General's Office.

Shellfish Bacteriology Laboratory Established

U. S. Public Health Service has announced establishment at the Woods Hole (Mass.) Oceanographic Institution of a laboratory for investigations of shellfish bacteriology. One of its first projects will be a comparative study of organisms, such ascoliform bacteria, which have been used to ascertain pollution of shellfish-growing waters. Reevaluation of technical information on which sanitary standards are based will be one of the laboratory's duties. Studies will be undertaken, under controlled conditions, on the common varieties of edible shellfish: oysters, hard and soft clams and mussels.

GOVERNMENT SERVICES

ARMY

PHARMACY RESERVE UNIT

A Pharmacy Reserve Officers Training Corps unit will be in operation this fall at the University of Minnesota under the direction of Major Leonard P. Zagelow of the U. S. Army. Any man between 18 and 27 years of age who can meet college requirements is eligible to enter the new program. Each student is required to spend one hour per week in military instruction, in addition to the regular pharmacy credits for the four years and to attend an army camp for six weeks between his junior and senior years. At the completion of the program he is awarded a commission in the Reserve Officers Corps, and during his junior and senior years receives compensation amounting to about $24 a month.

LECTURES AT INSTITUTE OF PATHOLOGY

Dr. Hartwig Kuhlinbeck, Woman's Medical College, Philadelphia, lectured on "Nephrogenic Adenoma of the Urinary Bladder" on June 23. On June 24, Dr. Henry Pinkerton, St. Louis University School of Medicine, lectured on "Experimental Work on Cancer with Particular Reference to Chemotherapy." On June 25, Dr. Herman Becks, the Hooper Foundation, University of California, lectured on "Nutritional Studies in Development of the Mandible and Maxilla."

PERSONALS

Lieut. Col. Helen C. Burns, the first woman to receive an Army commission as a dietitian, has retired from the Army after twenty years of service. Colonel Burns was Director of Dietitians in the Surgeon General's Office during the recent war.

Mr. Joseph A. Groesbeck, chief of the library's acquisition division, left on a two month mission to Japan on July 6, to acquire Japanese medical literature lacking in the library's collections and to reopen exchange relationships with Japanese institutions.

BODY WEIGHT AND MAXIMUM STATURE

The Quartermaster Corps has completed an anthropometric survey of Army men and women to determine the average weight and measurements for different groups. The purpose was to obtain data with which to revise the range of clothing sizes issued and to prepare for the induction of young men under the new draft law. Studies were made of more than 17,000 men between 17 and 26 years of age, some of whom were being inducted into the service and others being discharged from the service. The average mean stature of the 17-year-olds was 67.71 inches (172 cm.) and the average weight 139.5 pounds (63.3 Kg.). After one or two years of service in the Army, these averages increased. The mean maximum stature of 68.51 inches (174 cm.) was attained at the age of 21; however, after the age of 19 years the average increase was only 0.1 inch (0.25 cm.). The chest circumference for the 17-year-olds averaged 34.5 inches (87.6 cm.) and for the 26-year-olds 36.76 inches (93.4 cm.). The neck, judging from these measurements, appears to stabilize in the twenty-fourth year. Of the extremities, the only one which showed any increase after 17 years of age was in the breadth of the hands, which showed an average increase of 2 per cent between 19 and 22 years of age.

The Quartermaster data for the 17-year-olds were compared with similar data obtained by the Brush Foundation over a ten year period at Western Reserve University, Cleveland. The first period of the Brush Foundation studies covered less than a thousand persons representing the economic group for which the average stature at age 17 was 69.48 inches (176.5 cm.) and the mean average weight 147.5 pounds (66.9 Kg.). Since the Army series at age 19, after one or two years of service, show a mean weight averaging about that of the Brush series, the Quartermaster Corps concludes that military diet and environment are beneficial to the group. The study indicates also that the general population is capable of attaining at least as much weight as the "well born" persons, providing it is given the opportunity.

NAVY

RESERVE OFFICERS NEEDED FOR TRAINING DUTY

Naval Reserve medical officers are needed for fourteen day training duty at stations of the Naval Air Reserve Training Command of the Fourth Naval District Headquarters in Philadelphia. Interested reserve officers on inactive duty may obtain information from the office of the Commandant, Fourth Naval District, Naval Base, Philadelphia 12, Pa.

OFFICERS APPROVED FOR POSTGRADUATE TRAINING

The Advisory Board of the Bureau of Medicine and Surgery recently approved the following officers for postgradaute training:

Comdr. Harold L. Baxter (MC), U.S.N., Fellowship in Neurology, Jefferson Medical School, Philadelphia.

Comdr. George L. Calvy (MC), U.S.N., Teaching Fellowship in Preventive Medicine Division, Western Reserve University School of Medicine.

Comdr. Karl V. Kaess (MC), U.S.N., Residency in Dermatology and Syphilology, Naval Hospital, Philadelphia.

Comdr. Edward W. Pinkham (MC), U.S.N., Residency in Surgery, Naval Hospital, Philadelphia.

Comdr. Robert S. Poos (MC), U.S.N., course of instruction in preventive medicine, University of California.

Lieut. Comdr. Wilbur S. Lummis Jr., (MC), U.S.N., Residency in Internal Medicine, Northwestern University and Passavent Hospital, Chicago.

Lieut. Comdr. Leo S. Madlen (MCR), U.S.N.R., Residency in Internal Medicine, Naval Hospital, San Diego, Calif.

Lieut. Comdr. George S. Watkins (MC), U.S.N., course in preventive medicine, Johns Hopkins University.

Lieut. George C. Beattie (MC), U.S.N., Fellowship in Adult Orthopedics, Lahey Clinic, Boston.

Lieut. Boyd K. Black (MC), U.S.N., Fellowship in Pathology, Washington University, St. Louis.

Lieut. John H. Cheffey (MC), U.S.N., to continue course in children's orthopedics at the Alfred I. DuPont Institute, Wilmington, Del.

Lieut. Charles B. Newton (MC), U.S.N., Residency in Internal Medicine, Naval Hospital, Chelsea, Mass.

Lieut. (jg) Thomas C. Deas (MC), U.S.N., Residency in Anesthesiology, University Hospital, Augusta, Ga.

Lieut. (jg) Robert J. Fleischaker (MC), U.S.N., Residency in Surgery at a Naval hospital.

Lieut. (jg) Dean W. Hales (MCR), U.S.N.R., course in otolaryngology, Graduate School of Medicine, College of Medical Evangelists, Los Angeles.

Lieut. (jg) Alan D. Watson (MC), U.S.N., Residency in Dermatology and Syphilology, Naval Hospital, St. Albans, L. I., N. Y.

THE END OF AN OLD NAVY HOSPITAL

The one hundred and ten year old Brooklyn Naval Hospital with its thirty-seven buildings ceased to be a hospital June 30. The old plant will be known henceforth as the "United States Naval Receiving Station Annex, Brooklyn." The patients were transferred to the Navy's more modern hospitals. During the recent war, the hospital cared for 65,197 Navy men and women and their dependents. At the opening of the Civil War, this hospital had only two medical officers on its staff, while during World War II there were 107 medical officers, 170 nurses and 400 Medical Corps men on its staff.

REQUEST OFFICER BE ALLOWED TO REMAIN AT GUAM HOSPITAL

The Secretary of the Navy has received a petition from the people of Guam requesting that Capt. H. C. Oard (MC) be allowed to remain "with us" as medical officer in command at the Guam Memorial Hospital for at least one year. The petition unanimously adopted at a joint session of the Guam Congress June 5 and signed by E. T. Calve, Speaker of the House of Assembly and B. J. Bordallo, President of the House of Council, read in part as follows: "Captain Oard has the unqualified confidence, support and friendship of the Guamanian people and it is earnestly requested that he be allowed to remain with us so that the completion of his work may result in great benefit to all."

NEW REGULAR OFFICERS

The following graduates of the Navy's V-12 program have accepted appointments in the medical corps of the regular Navy: Lieutenants (jg) Samuel A. Heaton, Augusta, Ga.; Walter G. Leonard, Norton, Mass.; Harold T. Meryman, Dublin, N. H.; William M. Strunk, Mifflinsburg, Pa.; John S. Walker, Brevard, N. C., and Ernest F. Wallner Jr., Wauwatosa, Wis.

FLIGHT SURGEONS

The Naval School of Aviation Medicine at Pensacola, Fla., on June 18 graduated and designated as flight surgeons the following officers. The principal speaker at the ceremony was Capt. William Sinton, Commanding Officer of the Naval Air Station.

Raymond J. Adams, Lewiston, Idaho
Jack W. Barrett, Miami, Fla.
Robert L. Bauer, Chester, Pa.
Robert L. Burdick, Maple Springs, N. Y.
C. Walter Coolidge, Savannah, Ga.
Henry D. Crane Jr., Belmont, Mass.
Carroll M. Elmore, Rupert, Idaho
Beverly O. Evans, Helena, Ark.
George M. Ewing, Brookfield, Mo
Edward C. Gresham, Hampton, Ark.
Robert D. Hunt, Endicott, N. Y.
Alvin C. Jensen, Mt. Pleasant, Utah
Edward V. Johnston, Wilmette, Ill.
Frank F. Kalchuk, Hempstead Gardens, L. I., N. Y.
Leon M. Kruger, Norfolk, Va.
Richard E. Luehrs, Merrill, Ore.
Dennis P. McCarty, Delaplane, Va.
Charles C. Muehe, Chicago
Charles Pierson, Nutley, N. J.
Lockland V. Tyler Jr., Jacksonville, Fla.

PUBLIC HEALTH SERVICE

SURVEY OF SANITATION

A survey of the sanitation needs of the United States recently made by the United States Public Health Service is now available in printed form. This survey, the Federal Security Agency reports, is the first attempt on a national scale to evaluate the needs of this country for sanitation facilities on the basis of actual field investigation. According to the report, more than 6,000,000 persons in towns and cities need new sewerage systems, while 79,000,000 others need improvements to sewerage systems. More than 2,000,000 persons, it is stated, living in communities of 200 or more persons, have no community water supply systems, and 79,000,000 persons have systems that need improvements. The total cost of needed water supply and waste disposal facilities was estimated at $7,834,581,000. More than 27,000,000 persons in rural areas need new or improved water supply, and more than 33,000,000 in such areas have unsatisfactory sewage disposal systems. To remedy this condition, the report states, the nation needs an additional 2.2 billion dollars' worth of water works; 3.7 billion dollars of sewerage facilities; 166 million dollars of garbage facilities, and 1.6 billion dollars of all types of sanitation facilities for rural homes.

Copies of the survey report may be purchased at 15 cents each from the Superintendent of Documents, Washington, D. C.

EMERGENCY PLANNING UNIT

The Federal Security Administrator announces the establishment of a Health Emergency Planning unit in the U. S. Public Service under the direction of Dr. Norvin C. Kiefer. The new unit will draw plans for more comprehensive public health catastrophe services to be offered in response to peacetime emergency requests from states. The unit will co-operate with the National Security Resources Board, the Office of Civil Defense Planning of the National Military Establishment, the Military Services, and State Health Department, as well as professional and voluntary organizations, to plan a coordinated program for safeguarding public health during a national emergency.

DR. MEADER APPOINTED DEPUTY CHIEF

The Director of the National Cancer Institute announces the appointment of Dr. R. G. Meader as Deputy Chief of the Cancer Research Grants Branch of the Institute. He will be responsible for scientific reviews of applications for cancer grants, for maintaining contact with investigators in the field and for analyzing the grant-in-aid program of the Institute in relation to programs of other agencies supporting research in cancer. Dr. Meader received a Ph.D. degree at Yale University. He was formerly assistant professor in biology and in anatomy and a lecturer in anatomy at Yale.

MISCELLANEOUS

ROTATING INTERN AND PSYCHIATRIC RESIDENCE

The U. S. Civil Service Commission will conduct an examination for filling medical officer positions in St. Elizabeth's Hospital, Washington, D. C. Medical officers (rotating intern) are paid $2,200 for the first year and $2,400 for the second year. Medical officers (psychiatric resident) are paid from $2,400 to $4,100 a year, depending on the amount of approved graduate training that the applicant has completed. Appointments are open for July 1, 1949. To qualify for internship, applicants must be third or fourth year students in an approved medical school; however, they may not enter on duty until they have completed their full course of study. Applicants for psychiatric residency must be graduates of an approved medical school and in addition must have completed an approved internship or now be serving such an internship. No written test is required for these positions. Application forms may be obtained from the U. S. Civil Service Commission, Washington, D. C., from post offices and from Civil Service regional offices.

AWARDS AND COMMENDATIONS

Dr. George G. Deaver

The President of the United States has awarded the Medal for Merit to Dr. George G. Deaver, Professor of Clinical Rehabilitation and Physical Medicine at New York University College of Medicine. The citation read in part as follows: Dr. Deaver, a pioneer and researcher in the field of rehabilitation undertook a training program for the Army Air Forces in October, 1943, giving unstintingly of his time in teaching his techniques of restoration and rehabilitation. He served as Consultant to The Air Surgeon, as well as consulting with the Army, Navy, and Veterans Administration in the field of rehabilitation, and aid them not only with individual patients, but also in setting policy for their over-all programs. As a result of these contributions, many lives were saved, suffering was diminished and countless men were returned to duty or productive places in civilian life.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama

Carmichael, Herbert N.........Fairfield
Colley, Jesse H...................Troy
Latham, John T...........New Market
Reid, Joel W..............Montgomery

Arkansas

Ashley, Milton M..............Swifton
Christeson, William W.........Harrison
Henley, Paul G..............Prescott

California

Black, James E. Jr.......San Francisco
Bowen, Gordon T............Los Angeles
Brockman, Norman W.....Los Angeles
Dimick, Max L...........San Francisco
Doherty, Edward W.......San Francisco
Fleming, William J........San Francisco
Freytag, Knox R...............Oakland
Gould, Russell L.........San Francisco
Hamilton, Charles I. Jr.......Placerville
Jackson, Lionel L.........San Francisco
Neerken, Adrian J.....West Los Angeles
Newbold, Milton W.......Los Angeles
Noyes, Robert W...............Oakland
Parsons, Harry G. Jr...........Oakland
Ringer, Norman E................Lone
Stevenson, Thomas C.......Menlo Park
Tyrer, Austin R. Jr.........Los Angeles
Von Amerongen, F. K. North Hollywood

Colorado

McCallum, Marion J.............Denver
Maxwell, Ned G.................Denver
Millett, William D..............Denver

Connecticut

Bennett, Ivan F..............Hartford
Berman, Sidney............New Haven
May, Samuel C..................Hamden
Zucker, Reuben.............Waterbury

Illinois

Auten, Donald S..............Oak Park
Clarke, James S..............La Grange
Eisele, Mathew B.........East St. Louis
Farrell, Leonard F.............Chicago
Fleming, Joseph L.............Chicago
Garland, Donald J. ....Chicago
Gluckman, Robert M...........Chicago
Long, Burt E...................Chicago
Maryland, Thomas J...........Chicago
Morton, Douglas R.................Zion
Moy, Grant G...................Chicago
Neilson, William G...........Roseville
Plunkett, John P...............Chicago
Tarun, Donald W...............Chicago
Tenenbaum, Maurice............Chicago

Kansas

Blaylock, Hoyt C...............Newton
Hartford, John J.................Lenox
Marchbanks, Howard E.....Kansas City

Maine

Osher, William J.............Biddeford
Rheinlander, Harold F........Washburn
Robertson, Robert B.......Presque Isle

Massachusetts

Boyle, Jeremiah J. Jr.........Cambridge
Fontneau, Nelson C. Jr.......Somerville
Harris, Edmund J.............Waltham
Kurland, George S...........Dorchester
Maddix, Forrest N. Jr.........Brookline
Miller, Paul R.................Brookline
Pfeffer, William Jr...........Brookline
Porter, Huntington..........Cambridge
Simmons, Harold L. Jr..........Boston
Steinsieck, Robert T.....Newton Centre

Minnesota

Henderson, Edward D......Minneapolis
Howard, Robert B..........Minneapolis
Koza, Donald W...........Minneapolis
Kraft, Joseph R.................Winona
Miners, George W....South Minneapolis
Schleper, Albin J..........Cold Springs
Shaffer, John O............Minneapolis
Spicer, Frank W. Jr.............Duluth
Tillotson, Irving G.............St. Paul

New Jersey

Blodgett, William A.........Watertown
Coombs, Harrison S..........Ridgewood
Cox, John J. Jr..................Camden
Gherardi, Gherardo J...........Trenton
Goodman, Harry P.............Margate
Jacobson, Avrohm............Lakewood
Ruby, Victor M............Atlantic City
Schultz, Sidney.............Jersey City
Sheldon, Murray B. Jr.......Keansburg
Stockman, John C..............Andover

New York

Anderson, Frederick W..........Oxford
Barbaccia, Anthony J.............Bronx
Barstow, Robert O..............Albany
Bauman, Kenneth L...........Rochester
Carl, Gary H...............Williamsville
Casolaro, Joseph D............Brooklyn
Clark, Frederick B.............Pittsford
Cohn, Jay B...... ....New York
Colombo, Thomas M...........Brooklyn
Finkelstein, Paul ....Brooklyn
French, Leo H. Jr.................Olean
Freundlich, Eugene..........New York
Lane, Nathan Jr.............New York
Lautz, Herbert A..............Lockport
Levine, Ervan L................Suffern
Love, Vincent L...............Syracuse
Papper, Solomon.............New York
Pellegrino, Edmund D..........Brooklyn
Pierce, Jack R. ....Buffalo
Potekhen, George P..........New York
Prisco, Armand J............New York
Romeo, Anthony L...........Perrysburg
Ruggieri, Bartholomew A.....New York
Sachs, Bernard A. ....Glendale
Salomone, Michael A.........New York
Santare, Vincent J.............Brooklyn
Santeramo, John E..............Jamaica
St. John, Herbert A......Clifton Springs
Swartout, Roy III..............Buffalo
Swingle, Roy C..................Troy
Weiss, Bernard W............New York
White, Thomas T......... ...New York
Wiles, Charles E.. ....Buffalo
Wilimarth, Charles K ...Richmond Hill
Winkler, Major B.............Brooklyn
Wolf, Howard I..........New York

North Carolina

Bennett, Truett V.............Asheville
Gordon, Lawrence E. Jr.........Durham
McElwee, Rose S. Jr.........Statesville
Pittman, Hal W...............Fairmont
Pittman, Dorn C...............Fairmont
Robertson, Merritt E.........Burnsville
Vann, Robert L.........Winston-Salem
Welborn, Samuel G..........Lexington

Ohio

Adair, Donald R................Lorian
Ball, Alton J....................Caldwell
Breck, Richard W..............Toledo
Harvey, Joseph P. Jr.......Youngstown
Hayhurst, James D...........Columbus
Jones, Paul E.....................Lima
Lane, Joseph A..............Cincinnati
Tiffany, Willim J. Jr.........Lakewood
Wichern, Homer E................Euclid

Oklahoma

Barker, Nym L. Jr.........Broken Bow
McGraw, Willard L.....Oklahoma City
Morgan, Robert J.......Oklahoma City
Shinn, Carrol C.................Alfalfa
Vammen, Adolph N..............Oaks

Oregon

Leinassar, Jorma M..............Astoria
Steffanoff, Dan N...............Portland
Wood, Gerald DeM..........Portland

Pennsylvania

Adelman, Bernard P.......Philadelphia
Balin, Robert W............Philadelphia
Barol, Daniel H.............Philadelphia
Beittel, Charles R. Jr........Harrisburg
Birch, William B..........Point Marion
Donner, William T..........Sharpsville
Dowdell, William F.......Wilkes Barre
Duncan, William S...........Tarentum
Fontana, Armand L..........Pittsburgh
Frantz, Robert C...............St. Clair
Fulton, Albert E................Hershey
Gallager, Harry S...............Chester
Gambone, Victor E.........Philadelphia
Gates, Robert P...............Coalport
Gold, Paul A................Philadelphia
Greenberg, Harold A.......Philadelphia
McConnell, Edward L. Jr...Philadelphia
Murphy, Francis J.............Pottsville
Parker, Charles R...................Sayre
Rafes, Earl H...............Philadelphia
Robertson, Hugh S. Jr.......Coraopolis
Rohrmayer, Francis P. Jr. West Chester
Roop, John W....................Blawnox
Sciubba, Rocco P. Jr........Philadelphia
Sensening, David M.......Bala-Cynwyd
Shoemaker, Robert J.........Pittsburgh
Sillars, Charles H.............Oakmont
Terzian, Aram S...........Philadelphia
Townsend, James E. Jr.........Delmont
Wasley, Malcolm T.........Shenandoah

South Carolina

Burnette, Harvey L. Jr..........Cheraw
Lyles, Clarence C...............Chester
Mace, Luther M.................Waylyn
McRae, James T.........Winston-Salem
Nimmons, Rufus K... Jr.........Seneca

Texas

Childress, William B. B.......Stamford
Evans, Allan C....................Dallas
Kuehne, Benjamin A.............Austin
Luckett, Alfred E............San Angelo
McCulloh, Albert M. Jr.......Penelope
Opper, Marshall...................Dallas
Penn, Rhesa L. Jr................Austin

Utah

Mullikin, Walter T.......Salt Lake City
Ross, Aaron B....................Ogden
Thomas, William H..............Logan

West Virginia

Kamons, Edwin J...........Parkersburg
Knapp, Thomas S............Charleston
Morgan, Jack C...............Fairmont
Raper, George T..............Glendale

Wisconsin

Bringe, James W..............Milwaukee
Davies, John A...............Milwaukee
McCrory, Wallace W.........Pewaukee
Paulson, Eric R.......Black River Falls
Pfeifer, William M...........Milwaukee
Roessler, Robert L...........Neillsville
Roisum, Bryant H...............Madison
Roth, James L. d'A.........Milwaukee
Taylor, Stewart F.................Portage
Theiler, Alvin C..............Tomahawk

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Personal.—The Alumni Association of the College of Medical Evangelists, Loma Linda, dedicated the March issue of its journal to the late Dr. Percy T. Magan, president of the college from 1928 to 1942 and president emeritus from then until the time of his death, Dec. 16, 1947.—Robert B. Witham, administrator of the Scripps Memorial Hospital, La Jolla, died July 4 of myocardial infarction.

Fellowship in Ophthalmology.—Alumnae of the Upsilon chapter of the Delta Gamma Sorority of Stanford University have presented the university $41,000 for a fellowship in ophthalmology. The gift represents proceeds of the sale of the sorority house following dissolution of Stanford sororities in 1944. Presentation of the gift, which fits into a national Delta Gamma alumnae project for the care and prevention of blindness, followed approval by the Superior Court of Santa Clara County of the dissolution of the Stanford Delta Gamma Association as a corporation. Sorority gifts also included a contribution to the building fund of the Palo Alto Society for Blind.

CONNECTICUT

Rural Health Conference.—A Rural Health Conference on August 11 is being arranged by the state medical society's committee as a feature of the annual Farm and Home Week at the University of Connecticut, Storrs. Mrs. Charles Sewell, Chicago, director of the Associated Women of the American Farm Bureau Federation, and Dr. Joseph H. Howard, Bridgeport, chairman of Connecticut's Commission on the Care and Treatment of the Chronically Ill, Aged and Infirm, will be the principal speakers.

Training Program in Cancer Control.—Yale University School of Medicine will establish in September a long range training program for cancer control officers. The Department of Public Health will work with the section on oncology of the department of surgery to provide a one year course for personnel who will specialize in the administration of programs caring for those with cancer. To head the new section on cancer control the university has appointed Dr. Edward M. Cohart, formerly cancer consultant, U. S. Public Health Service, as associate professor of public health. Establishment of the section was made possible by a grant of $24,000 from the U. S. Public Health Service National Cancer Institute. Three classes of students will be eligible for the instruction at Yale beginning in September: (1) physicians who have had at least two years in medical practice; (2) graduate nurses or persons who hold a bachelor's degree and possess at least three years of experience in medical or dental care or public health work; (3) special students who are not candidates for a degree, but who possess an appropriate background of training and experience. There will be cooperation with many agencies engaged in diagnosis, treatment, education and research in cancer. Information may be obtained from Dr. Edward M. Cohart, Cancer Control Section, Department of Public Health, Yale University School of Medicine, 310 Cedar Street, New Haven 11.

ILLINOIS

Deaths from Leprosy.—Among the unusual causes of death occurring in Chicago in 1947 was leprosy (2 deaths), according to the Illinois Department of Public Health. Since 1921, the first year for which accurate vital records for the state are available, there have been 6 deaths from the disease in Illinois. One death was reported in each of the years 1945, 1928, 1924 and 1922; all occurred in Chicago.

State Society Resumes Postgraduate Conferences.—The council of the Illinois State Medical Society, for the second time, has authorized twelve postgraduate conferences. The Seventh Councilor District has requested the first conference, September 16, in Centralia, with the Marion County Medical Society as host. The session will open with a luncheon at the Pittenger Hotel. The following program will be presented: Israel Davidsohn, Chicago, Clinical Applications of the Rh Factor; Hugo R. Rony, Chicago, Hormone Preparations and Their Uses; Warren H. Cole, Chicago, Surgical Lesions of the Stomach; Lester D. Odell, Chicago, Cesarean Section; Noel G. Shaw, Evanston, Feeding Problems in Infants; Allergic Conditions in Children, and Treatment of Congenital Syphilis with Penicillin. In the evening, Dr. Robert E. Britt, St. Louis, will discuss "Psychosomatic Medicine."

Chicago

Another Gift to Allergy Unit.—The Asthmatic Children's Aid has presented $10,000 to the University of Illinois Colleges of Medicine and Pharmacy for investigative work in allergy. This group has contributed almost $40,000 to the University of Illinois' Allergy Unit since it was established in November 1944.

Graduate Course in Otolaryngology.—The department of otolaryngology at Northwestern University Medical School will give a course of graduate training in the basic sciences of the ear, nose and throat, beginning in October. Each course lasts about nine months and will be divided info about equal portions of didactic, laboratory and clinical study.

Library to Abstract Atomic Energy Articles.—The Atomic Energy Commission and the John Crerar Library of Chicago have signed a contract by which the library will abstract scientific books and periodicals necesary to the research on atomic energy being done under the sponsorship of the commission. The commision will reimburse the library for all costs. The program calls for a special staff of experts to be established by the library to review the 3,500 periodicals received for material pertinent to research on atomic energy, translate it when necessary, abstract it and make it immediately available to the commission for distribution to its affiliated research laboratories. The interests of the research staff will cover largely the peacetime uses of atomic energy in medicine, metallurgy, agriculture and the like. The staff will also use the 700,000 books in the library in making searches on special subjects submitted by the commission. The library was established in 1895 under the will of John Crerar, who directed the establishment of a free public library. In the half century intervening, the library has built up its own collection of books and periodicals in science, technology and business and has acquired by purchase and gift many complete specialty collections. The Board of Directors of the library is headed by Britton I. Budd, president of the Public Service Company of Northern Illinois.

MAINE

State Medical Election.—At the annual meeting of the Maine Medical Association in Poland Springs, June 20-22, Dr. Forrest B. Ames, Bangor, was installed as president; Dr. Ralph A. Goodwin, Auburn, was chosen president-elect; Dr. C. Harold Jameson, Rockland, chairman of the council, and Dr. Frederick R. Carter, Portland, secretary-treasurer.

MASSACHUSETTS

Dr. Williams Goes to University of Washington.—Dr. Robert H. Williams, assitant professor of medicine at Harvard Medical School, Boston, became professor and executive officer in the Department of Medicine, University of Washington School of Medicine, Seattle, July 1. After receiving his M.D. degree from Johns Hopkins University School of Medicine, Baltimore, in 1934, he was a research fellow at Massachusetts General Hospital and served on the staffs of the Thorndike Laboratory and Boston and City hospitals. He joined the Harvard Medical faculty in 1940 as an instructor in medicine, and became an associate professor in 1944.

MICHIGAN

Pollen Survey.—The eighth annual ragweed pollen survey of the Michigan Department of Health began in fifty-three cities of the state on July 15. A new plan of operation is expected to make pollen counts for each area available on a day to day basis from the local health officers. Copies of the new 1947 survey report and pollen map, showing areas of greatest and least pollen concentration, are available without charge from the Michigan Department of Health, Lansing 4, Michigan.

Detroit Cancer Center.—All cancer activities in the metropolitan Detroit area are to be housed in the Detroit Cancer Center on John R and Hancock streets, which will also provide laboratory space for the Detroit Institute for Cancer Research. The Southeastern Michigan Division of the American Cancer Society, representing Macomb, Oakland and Wayne Counties, will have headquarters in the building. This organization has eight cancer detection centers operating in various Detroit hospitals and plans to open an additional center in the new headquarters. The center also furnishes facilities for an enlarged educational program. The building is owned by the Michigan Cancer Foundation. The Detroit Cancer Center is the result of a greatly expanded cooperative program that has been developed in the last few years between scientific and lay groups. It is planned to coordinate its research program of nearly two hundred projects with that now supervised by the National Research Council and subsidized by the American Cancer Society.

MISSOURI

Regional Blood Program.—The Greene County Community Blood Donor Service, sponsored by the local chapter of the American Red Cross and the Greene County Medical Society, became a regional service covering twenty-eight counties July 15. Dr. James R. Amos, former Greene County Health Officer, is medical director. A "bloodmobile" will make regular visits to all communities in a one hundred mile radius of Springfield, which is said to be the second community in the Midwest and the first in Missouri to establish a regional blood service program. The Greene County Medical Society Blood Donor Service Committee will remain active and act in an advisory capacity on medical problems.

MONTANA

Personal.—Dr. Richard C. Monahan, Butte, was elected president of the Montana State Board of Health at its meeting in March, and Dr. Burton K. Kilbourne, Helena, who has been secretary of the board and executive officer, was reelected for a term of two years.——Dr. Edmund A. Welden, Lewistown, a member of the State Board of Medical Examiners for many years, was recently elected president of the board, succeeding Dr. Patrick E. Kane, Butte.

Lectures on Cancer.—Dr. John I. Brewer, associate professor of gynecology at Northwestern University Medical School, Chicago, has completed a series of five lectures to physicians in Montana, speaking at Miles City, Billings, Lewistown, Bozeman and Helena on differential diagnosis and early cancer detection. These lectures were made available to physicians by the Montana State Board of Health, Montana Medical Association and the Montana Division of the American Cancer Society. Additional specialists on cancer will be brought to Montana to speak from time to time throughout the year.

NEW JERSEY

Emergency Medical Service.—The Monmouth County Medical Society on July 8 began a twenty-four hour a day emergency service that will be linked by telephone with all police, fire and first-aid stations in the county. The service is said to be the first in the country instituted on an areawide basis.

Service for the Chronically Ill.—The Essex County Chronic Ill Service, established in Newark, will maintain a registry for families, doctors and organizations caring for the chronic ill and will develop additional visiting nurse facilities. The organization also will assemble statistics, further legislation for aid to the chronically ill and serve as an advisory center. The service is patterned after those in Philadelphia and Chicago.

NEW YORK

Postgraduate Instruction.—The Medical Society of the State of New York, with the cooperation of the New York State Department of Health, has arranged postgraduate instruction for the Tompkins County Medical Society, September 20, 8:30 p. m., at the Tompkins County Memorial Hospital, Ithaca. Dr. Kristian G. Hansson, Cornell University Medical College, New York, will speak on "Prescription in Physical Medicine."

County Society Appoints Executive Secretary.—The Medical Society of the County of Monroe has appointed Miss Helen R. Guntert, executive secretary of the Rochester Academy of Medicine, as its executive secretary. She will head the new executive department created by the society and serve as managing editor of its county bulletin. The society has opened enlarged quarters on the second floor of the academy building.

New York City

Personal.—Dr. Henry M. Scheer has been elected president of the New York University College of Medicine Alumni Association.—Dr. Golden Selin has been appointed assistant pathologist at the Hospital for Joint Disease, replacing Dr. Louis Lichtenstein. Dr. Selin was formerly an instructor in pathology at the New York Medical College.—Dr. Elaine P. Ralli, associate professor of medicine, New York University College of Medicine, on April 29 was reelected president of the Women's Medical Association of New York City.—Dr. Claude W. Munger, director of St. Luke's Hospital for eleven years, has resigned and will be succeeded by Dr. Lloyd H. Gaston, who has been assistant director.—The board of trustees of the New York Polyclinic Medical School and Hospital has named one of the operating rooms "The Brennan Operating Room" in honor of Dr. Robert E. Brennan, director of surgery, who has been associated with the institution for many years.

Forum on Venereal Disease Control.—Lectures and demonstrations on the diagnosis, treatment and management of venereal diseases will start at the New York City Department of Health, September 18. There will be fourteen weekly meetings, on the following Saturdays, presided over by experts in various fields of venereal disease control. Sessions will start at 10:30 a. m. and will be held in the second floor auditorium at 125 Worth Street, Manhattan. The lecture topics have been selected for physicians, social workers, nurses, laboratory workers, industrial medicine personnel and teachers. No registration or fee is required.

Health Education Institute.—The New York University School of Education will begin a series of annual health education institutes August 16-September 3. The first institute will be on problems in alcohol education. The Alcohol Education Institute lecturers will include: Dr. Ralph S. Banay, research associate, Columbia University; Dr. I. Jay Brightman, Brooklyn, division of medical services, New York State Department of Health; Brigadier General Chester R. Brown of the Salvation Army; Anton J. Carlson, Ph.D., professor of physiology, University of Chicago; Dr. Harvey B. Haag, dean, Medical College of Virginia, Richmond; Mr. Joseph Hirsh, Research Council on Problems of Alcohol, New York; Edward J. McGoldrich Jr., City of New York Bureau of Alcohol Therapy; Dr. Mary Jane Sherfey, Cornell University Medical College, New York, and Rev. Alson J. Smith, Roxbury Methodist Church, Stamford, Conn.

OHIO

Dr. Ernstene Appointed Head of Department.—Dr. A. Carlton Ernstene, Cleveland, has been appointed head of the division of medicine at the Cleveland Clinic. Dr. Ernstene joined the clinic staff in 1932 and for many years has been head of the section on cardiovascular disease. He received his medical training at the State University of Iowa College of Medicine, Iowa City, and was a member of the faculty of Harvard Medical School, Boston, from 1927 to 1932. He was recently elected president of the Cleveland Cardiovascular Society and is a director of the Academy of Medicine of Cleveland. During World War II he was on active duty with the Navy in the South Pacific area.

PENNSYLVANIA

Cancer Control Appointment.—Dr. Leverett D. Bristol, Augusta, Maine, has been appointed chief of the cancer control division of the state department of health. He is a graduate of Johns Hopkins University, Baltimore, has a public health degree from Harvard University, Boston, and organized the state cancer committees in North Dakota and Maine.

Philadelphia

Professor of Ophthalmology at Jefferson.—Dr. Arno Emerson Town, clinical professor of ophthalmology, New York University College of Medicine, was appointed professor of ophthalmology at the Jefferson Medical College on July 1, succeeding Dr. Charles E. G. Shannon, whose retirement becomes effective on that date. Dr. Town graduated from Jefferson in 1926. He also received a Master of Medical Science degree in ophthalmology from the University of Pennsylvania School of Medicine in 1931. During the last war he served as a commander in the United States Naval Reserve as ophthalmologist at the United States Naval Medical Center, Bethesda, Md., and aboard the hospital ship *U. S. S. Benevolence*.

Medical Center Plans Announced.—Plans for a $10,000,000 medical center at the University of Pennsylvania Medical School and Hospital have been announced. The medical center will include a nine story outpatient building, an eleven story inpatient building and a nine story nurses' home to be built at an estimated cost of $8,500,000. An additional $1,500,000 will be required by the department of medicine to support teaching and research. A conditional contribution of $1,000,000 from the Donner Foundation, Inc., will go toward the construction of a group diagnostic outpatient clinic, provided the university starts construction on the building by May 1949. The campaign for the medical center is part of a $22,000,000 development program for the university, covering eleven of its schools and departments.

GENERAL

Board Appoints Assistant Secretary.—The American Board of Obstetrics and Gynecology announces that it has established the position of assistant secretary and that Dr. Robert L. Faulkner, Cleveland, has been appointed to this new post. All communications should be addressed as heretofore to Paul Titus, M.D., Secretary, 1015 Highland Building, Pittsburgh 6.

National Medical Association Meeting.—The annual meeting of the National Medical Association will be held in New York August 16-20 with headquarters at Wadleigh High School and under the presidency of Dr. J. A. C. Lattimore, Louisville, Ky. After the opening meeting the scientific assembly will hold section meetings at hospitals of the city. The Women's Auxiliary will meet in conjunction with the association.

Atomic Energy Fellowships.—For consideration at the next meeting of the Atomic Energy Commission Postdoctoral Fellowship Board in the Medical Sciences in late September, applications must be sent to the office of the board in the National Research Council before Sept. 1, 1948. Inquiries should be addressed to the Division of Medical Sciences, National Research Council, 2101 Constitution Avenue, N.W., Washington 25, D. C.

Appointed Secretary of Pharmacopoeil Convention.—The board of trustees of the United States Pharmacopoeial Convention have reelected Robert L. Swain, New York, and Adley B. Nichols, Philadelphia, as chairman and secretary. Mr. Nichols fills a vacancy caused by the resignation of Lewis E. Warren, Ph.C., who has served the convention as secretary since 1930. Dr. Warren has retired from government service where he had been a chemist for many years. The convention will meet at the Statler Hotel, Washington, D. C., May 8-10, 1950.

Dr. Page Goes to Arabia.—Dr. Robert C. Page, formerly assistant medical director of the Texas Company, has been appointed medical director of the Arabian American Oil Company and has left for Arabia, where the Arabian American Oil Company has new base hospital. Dr. Page is a graduate of Syracuse University College of Medicine, Syracuse, 1933, and was formerly associated with the Mayo Clinic, Rochester, Minn. During World War II he served as a major in the U. S. Army Medical Corps and engaged in malaria control in the South Pacific.

Red Cross Board of Governors.—The American Red Cross, at its meeting in San Francisco in June, elected Mrs. Arthur H. Vandenberg to fill the unexpired term of the late Judge Stanley L. Orr, Cleveland. Those elected to three year terms on the board were: Mrs. J. K. B. Hare, Pittsburgh, and Harold A. Young, Little Rock, Ark. Those reelected to the board were Clarence Bamberger, Salt Lake City; Sheldon Coleman, Wichita, Kan.; John B. Hollister, Cincinnati; Charles H. Kellstadt, Chicago; Howard S. Wilson, Lincoln, Nebraska; Edward Dana, Boston; Junius P. Fishburn, Roanoke, Va., and Robert N. Haskell, Bangor, Maine.

Meeting of Occupational Therapists.—The American Occupational Therapy Association will hold its thirty-first annual convention at the Hotel Pennsylvania, New York City, September 7-11. Among the speakers are: Dr. Howard A. Rusk, New York; Mr. Holland Hudson, director of rehabilitation service, National Tuberculosis Association; Luther Woodward, field consultant to the National Committee for Mental Hygiene; Dr. Leland E. Hinsie, New York, assistant director, New York State Psychiatric Institute and Hospital. On Septmeber 10 and 11, a teaching institute will present recent developments and technics in the treatment of neuropsychiatric conditions. Trips to hospitals and other institutions in New York City and surrounding areas on September 9 and 10 have been arranged.

Appointments at The Rockefeller Institute.—The board of scientific directors of the Rockefeller Institute for Medical Research announces the promotion of Alfred E. Mirsky, Ph.D., and D. Wayne Woolley, Ph.D., from associate member to member, and the appointment of Dr. Reginald M. Archibald as member. Dr. Maclyn McCarty has been promoted from associate to associate member. New appointments include: associate—Dominic Dziewiatkowski; assistants—Margaret Oakley Dayhoff, Jacques Genest, Herbert Jaffe, Edwin D. Kilbourne, George E. Palade, Stanfield Rogers, Chandler A. Stetson Jr., Harrison F. Wood, and Mr. R. Barclay McGhee. The board also announces that Donald D. Van Slyke, who has reached the age of retirement, has been made member emeritus of the institute.

Dysentery Registry.—The Pan-American and International Dysentery Registry has a two-fold objective for 1948: (1) the prevention of acute intestinal infections; (2) the accumulation of data on chronic ulcerative colitis. It is again urging control of the cleanliness of food and foodhandlers in cities, summer resorts and on vehicles of transportation; proper disposal of sewage and supervision of water supplies; fly control; prompt reporting and epidemiologic investigation of all infectious diarrheas. A motion picture, "From Hand to Mouth," may be borrowed from the Registry without cost by any teaching institution. Consultative facilities on clinical, epidemiologic, bacteriologic or pathologic problems are also available at the Registry without cost. The Registry is appealing for accurate follow-up data for one year on all cases of acute bacillary dysentery.

Study of Physical Effects of Swimming.—A tri-state survey of Lake Michigan waters with special reference to bathing is being made by the Illinois, Indiana and Wisconsin state health departments and local governmental health agencies. coordinated by the U. S. Public Health Service. The study will extend from Milwaukee, Wis., to Michigan City, Ind. The survey aims:

1. To determine the physical, chemical and bacteriologic conditions of the waters tributary to and at bathing areas.
2. To investigate the physical factors which influence the changes in water quality.
3. To study the effects of bathing loads on water quality.
4. To secure epidemiologic data on diseases attributable to bathing.

In each area 1,000 families will be asked to record unusual reactions to bathing or any symptoms of illness such as eye, ear, nose, throat, skin infections or gastrointestinal upsets. Medical students and public health nurses began a house to house canvas June 28.

National Employ the Physically Handicapped Week.—The President of the United States has appointed a committee on National Employ the Physically Handicapped Week composed of outstanding Americans who are helping to spearhead the drive for employment of the handicapped. The efforts of the committee are expected to increase public education and information on the subject. The chairman of the committee is Vice Admiral Ross T. McIntire, U.S.N. (retired), and the vice chairman is Merle E. Frampton, LL.D., New York, who also is head of the executive committee. Many of the subcommittees have already held meetings, and among the matters under consideration were awards of merit to employers who cooperate in the employment of impaired workers and formation of labor and management employment institutes at a number of colleges throughout the country. The chairman of the medical committee is Dr. Carl M. Peterson, Secretary of the Council on Industrial Health of the American Medical Association, Chicago; the vice chairman is Dr. George Morris Piersol, Secretary General, The American College of Physicians, Philadelphia.

Poliomyelitis in the United States.—According to the U. S. Public Health Service for the week ended July 10, a total of 513 cases of poliomyelitis was reported, as compared with 362 the previous week. The largest number of cases continue to be reported in North Carolina, with 131, California, 92, and Texas, 89, reported 37 per cent of the total, as compared with 64 per cent week of July 3. In North Carolina the counties from north to south in the central and west central parts of the state were apparently bearing the brunt of the epidemic; the extreme western counties and the coastal areas have reported only a few scattering cases. In Texas the disease was first prevalent in counties in the southern and south coastal areas, but more recently a shift was apparent from South Texas and the coast to the central and northern parts of the state. Although no epidemic incidence has been reported in other states, an increased proportion of the total cases is being reported from other than the three states mentioned. In addition to these three states, only seven other states reported more than 10 cases during the week, as follows (figures for week of July 3 in parentheses): Oklahoma 21 (3), Iowa 19 (0), Virginia 17 (2), Ohio 15 (14), Illinois 12 (6), New York 11 (7) and Nebraska 11 (8). To date only 14 cases have been reported in the six New England states—8 in Massachusetts, 4 in Connecticut and 2 in Vermont. The total to date for the country as a whole is 2,881, as compared with 1,294 in 1947, 2,165 in 1946 and a five year median of 1,329 for the corresponding period.

CORRECTION

Postgraduate Courses.—On page 722 of THE JOURNAL for June 19, 1948, the courses offered by the Graduate School of Medicine of the College of Medical Evangelists were incorrectly stated. The graduate courses offered are basic science courses in internal medicine, general surgery, gynecology and obstetrics, urology and otolaryngology. The fee for each of these courses is $700.

Deaths

George Tully Vaughan ⊕ professor of surgery emeritus, Georgetown University School of Medicine, Washington, D. C., died, April 26, aged 88, of cerebral hemorrhage. Dr. Vaughan was born in Arrington, Va., June 27, 1859. He graduated in medicine from the University of Virginia Department of Medicine, Charlottesville, in 1879 and from the Bellevue Hospital Medical College in New York in 1880, then did graduate work at the New York Polyclinic, University of Berlin and Jefferson Medical College in Philadelphia. After a period of private practice, he entered the U. S. Marine Hospital Service in 1888, serving in this country and abroad until he resigned in 1906, after having reached the grade of assistant surgeon general. During the Spanish-American War he was loaned to the U. S. Army and served as major and brigade surgeon of the Seventh Army Corps at Jacksonville, Fla.; he was a navy surgeon at Vera Cruz in 1914, and again during World War I, serving aboard the *U.S.S. Leviathan.* Dr. Vaughan was appointed to the chair of principles and practice of surgery at Georgetown in 1897 and was active in teaching for thirty-six years. Since 1933, when he became professor of surgery emeritus, he had been a member of the executive faculty and council and administrative advisor to the school. He was past president of the Washington Surgical Society and in 1907-1908 was president of the Association of Military Surgeons of the United States. He was a member of the International Surgical Association, American Surgical Association and the Southern Surgical Association. He was also a founder of the American College of Surgeons and a member of the founders' group of the American Board of Surgery. In 1897 when the Georgetown University Hospital was established, he was appointed chief surgeon. For many years he was surgeon for the Tuberculosis Hospital and consulting surgeon at St. Elizabeth's and Washington Asylum hospitals and the Veterans Bureau, now the Veterans Administration. In October 1944, an oil portrait of Dr. Vaughan was presented to the medical school by members of the medical alumni association; in 1919 he received the degree of Doctor of Laws from Georgetown. Dr. Vaughan was the author of a textbook on "Principles and Practice of Surgery" in 1903 and a volume of "Papers on Surgery and Other Subjects" in 1932.

Guy Hinsdale ⊕ Charlottesville, Va.; born in Brooklyn, Oct. 26, 1858; University of Pennsylvania Department of Medicine, Philadelphia, 1881; member of the West Virginia State Medical Association, American Association for the History of Medicine and the American Neurological Association; served as vice president of the American Academy of Medicine and secretary from 1894-1918, president in 1919 of the American Clinical and Climatological Association, and past president of the Pennsylvania Society for the Prevention of Tuberculosis; member of the English-Speaking Union, American representative of the International Society of Medical Hydrology and fellow of the Royal Society of Medicine, London; in 1937 member of the Congrès International du Tourisme du Thermalisme et du Climatisme; for many years assistant physician at the Orthopedic Hospital and Infirmary for Nervous Diseases and Presbyterian Hospital in Philadelphia; medical director of the Homestead at Hot Springs, Va., from 1904 to 1929, when he was appointed medical director at the Greenbrier at White Sulphur Springs, serving in this capacity until, in 1942, it became the U. S. Army Ashford General Hospital; during World War I was a member of the medical staff named by the Navy to give instructions to newly commissioned officers of that branch of the service; at one time on the faculties of the University of Pennsylvania School of Medicine and the Medico-Chirurgical College of Philadelphia; received the Alvarenga prize from the College of Physicians of Philadelphia in 1895, Boylston prize from Harvard in 1898 and the Hodgkins prize from the Smithsonian Institution in 1914 for his essays on "Syringomyelia," "Acromegaly" and "Atmospheric Air in Relation to Tuberculosis," respectively; author of a book on hydrotherapy; died April 27, aged 89, of paralysis and pneumonia.

Gardner Ellis Robertson ⊕ Captain, U. S. Navy, retired, Yonkers, N. Y.; born Ransomville, N. Y., Feb. 17, 1883; University of Buffalo School of Medicine, 1906; appointed to the medical corps of the U. S. Navy in 1909; was a medical officer on board the *U. S. S. Memphis* when that vessel was beached by a tidal wave near Santo Domingo prior to World War I; commanded the Naval Medical Supply Depot in Brooklyn from 1936 to 1939 and was the senior medical officer of the *U. S. S. Relief* just prior to the outbreak of World War II; in 1941 assigned as medical officer in command of the Naval Hospital at Brooklyn; retired for physical disability on Jan. 1, 1943; following his retirement was retained on active duty in command of the Naval Hospital at Brooklyn until Feb. 1, 1947, when he was placed on inactive status; awarded a letter of commendation, with ribbon, by the Secretary of the Navy for his services in command of the Naval Hospital at Brooklyn during World War II; fellow of the American College of Surgeons; died in St. Petersburg, Fla., March 27, aged 65.

John Auer, St. Louis; born in Rochester, N. Y., March 30, 1875; Johns Hopkins University School of Medicine, Baltimore, 1902; professor and head of the department of pharmacology at St. Louis University School of Medicine; appointed pharmacologist at the Rockefeller Institute for Medical Research in New York, serving until 1921 with the exception of a year as an instructor in physiology, Harvard Medical School, Boston; member of the American Association for the Advancement of Science, the American Physiological Society, Association of American Physicians, Harvey Society and St. Louis Academy of Science; secretary from 1912 to 1916 and president from 1924 to 1927 of the American Society for Pharmacology and Experimental Therapeutics; vice president from 1917 to 1919 of the Society for Experimental Biology and Medicine; major, Medical Officers' Reserve Corps from 1917 to 1922; for many years pharmacologist for St. Mary's group of hospitals; research studies which he conducted included investigations on digestion, respiration, heart, the physiologic action of various drugs, functional disturbances caused by anaphylaxis, war gases, tetanus, reflexes, connective tissues, liver and gallbladder; died in St. Mary's Hospital April 30, aged 73, of rupture of aortic aneurysm.

Richard Sisson Austin ⊕ Cincinnati; born in Providence, R. I., on April 18, 1885; Harvard Medical School, Boston, 1911; Mary M. Emery professor of pathology at the University of Cincinnati College of Medicine; instructor in bacteriology at his alma mater from 1913 to 1915; served as president of the Public Health Federation of Cincinnati, Cincinnati Academy of Medicine and the Ohio Society of Pathologists; vice president of the board of health of Cincinnati; member of the American Association of Pathologists and Bacteriologists and the American Society for Experimental Pathology; director of the pathologic service at Cincinnati General Hospital; consultant at the Children's, Dunham and Hamilton County Home and Chronic Disease hospitals; died in Christian R. Holmes Hospital April 30, aged 63, of carcinoma of the pancreas.

Frederick William Adams ⊕ Carmel, Calif.; born in London, Ontario, Nov. 20, 1880; Western University Faculty of Medicine, London, Ont., Canada, 1906; member of the Washington State Medical Association, American Academy of Ophthalmology and Otolaryngology and the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; past president of the Puget Sound Academy of Ophthalmology; at one time practiced in Seattle, where he was a member of the staffs of the Swedish and King County hospitals and consulting laryngologist at Children's Orthopedic Hospital; oculist, Northern Pacific Railway; died April 1, aged 67, of coronary occlusion.

William Elliott Gamble ⊕ Santa Monica, Calif.; born in Palermo, Ohio, April 9, 1860; Rush Medical College, Chicago, 1886; an Affiliate Fellow of the American Medical Association; member of the Illinois State Medical Society; fellow of the American College of Surgeons; specialist certified by the American Board of Ophthalmology; in 1931 retired from practice in Chicago, where he was professor of ophthalmology emeritus at the University of Illinois College of Medicine, attending ophthalmologist at the University Hospital and a member and past president of the Chicago Ophthalmological Society; died April 23, aged 88, of cerebral hemorrhage.

Bryant Robert Simpson, San Diego, Calif.; born in Venango, Neb., June 24, 1887; University of Nebraska College of Medicine, Omaha, 1910; fellow of the American College of Chest Physicians; member of the American Medical Association, American Trudeau Society and the medical section of the National Tuberculosis Association; past president of the San Diego County Medical Society; served during World War I; formerly attached to the U. S. Public Health Service; during World War II procurement and assignment officer; served on the staff of Mercy Hospital, where he died recently, aged 60, of bronchogenic carcinoma.

Grover Asa Silliman ⊕ Sayville, N. Y.; Baltimore Medical College, 1913; treasurer of the Suffolk County Medical Society; served during World War I; for many years coroner of Suffolk County; from 1919 to 1924 superintendent of the Delaware County Tuberculosis Sanitarium at Delhi, where he was county coroner; medical inspector for the Sayville, Oakdale, Bohemia and Holbrook public schools; affiliated with Southside Hospital, Bay Shore, Central Islip (N. Y.) State Hospital and Mather Memorial hospital, Port Jefferson; died April 27, aged 57, of coronary occlusion.

William Burton Newton, Alpena, Mich.; born in Decatur, Texas, in 1881; Chicago College of Medicine and Surgery, 1911; specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; for one term president and for three terms secretary of the Alpena County Medical Society; served during World War I; on the staff of Alpena General Hospital; died April 19, aged 67, of coronary disease.

John Clark Arnout, Los Angeles; John A. Creighton Medical College, Omaha, 1907; member of the American Medical Association; on the staff of the Culver City (Calif.) Hospital, where he died March 13, aged 69, of coronary disease.

Morgan Willcox Ayres, Wallingford, Conn.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1875; died in the New York Hospital March 27, aged 96.

David Edwin Baird, Port Orford, Ore.; Baltimore Medical College, 1906; died in McAuley Hospital, Coos Bay, March 30, aged 71, of coronary thrombosis, diabetes mellitus and acute lymphatic leukemia.

Manuel Jay Brown, Salina, Kan.; the Hahnemann Medical College and Hospital, Chicago, 1882; member of the American Medical Association; died March 6, aged 89, of arteriosclerotic heart disease.

Stewart M. Brown, Keechi, Texas (licensed in Texas, under the Act of 1907); died March 2, of cerebral hemorrhage.

Boleslaw Michael Bukowski, Buffalo; University of Buffalo School of Medicine, 1916; member of the American Medical Association; died March 24, aged 54, of coronary thrombosis.

Abner Theodore Clopton, Milan, Tenn.; Vanderbilt University School of Medicine, Nashville, 1902; formerly on the staffs of various Veterans Administration hospitals; served during World War I; died March 18, aged 71.

William Harrison Coffey, Kansas City, Mo.; Missouri Medical College, St. Louis, 1886; member of the American Medical Association; formerly county coroner; served on the staff of Kansas City General and St. Joseph hospitals; died March 25, aged 86, of coronary disease.

R. P. Dickey, Caddo, Okla. (licensed in Oklahoma under the Act of 1908); associated with Wilson N. Jones Hospital in Sherman, Texas, where he died March 20, aged 74, of coronary thrombosis.

John Euclid Fish ⊕ Canton, Mass.; Dartmouth Medical School, Hanover, N. H., 1896; past president of Norfolk District Medical Society; for many years superintendent of the Massachusetts Hospital School; died in Auburndale March 30, aged 75, of myocardial infarction.

Leon Ferdinand Garrigues, New York; University of the City of New York Medical Department, 1891; member of the American Medical Association; died April 4, aged 78, of coronary thrombosis.

Charles Ellis Guthrie ⊕ Seattle; University of Minnesota College of Medicine and Surgery, Minneapolis, 1902; died April 3, aged 79, of carcinoma of the prostate.

William H. Harris, Samoset, Fla.; University of Tennessee Medical Department, Nashville, Tenn., 1888; died March 12, aged 81.

Albert B. Headley ⊕ Cambridge, Ohio; College of Physicians and Surgeons, Baltimore, 1902; past president and secretary of the Guernsey County Medical Society; county health commissioner; surgeon for the Baltimore and Ohio Railroad; died March 5, aged 73, of coronary occlusion.

Judge James, Ackerman, Miss.; Memphis (Tenn.) Hospital Medical College, 1904; member of the American Medical Association; for many years county health officer; died in Grenada, March 22, aged 67, of Adams-Stokes disease.

Ivar Janson, Oceano, Calif.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1892; at one time practiced in Seattle, where he served as president of the board of health; died March 21, aged 79.

I. Warner Jenkins ⊕ Waco, Texas; Chattanooga (Tenn.) Medical College, 1901; specialist certified by the American Board of Radiology, Inc.; member of the American Academy of Dermatology and Syphilology, Radiological Society of North America, Inc., and the American College of Radiology; fellow of the American College of Physicians; member and past president of the McLennan County Medical Society and of the Texas Radiological Society; died March 1, aged 67, of carcinoma of the prostate.

Clay Johnson, Fort Worth, Texas; College of Physicians and Surgeons, Baltimore, 1891; served as president of the city board of education and as a member of the county welfare board; during World War II a member of the county war price and rationing board; a director of the First National Bank; died March 7, aged 81, of hemiplegia.

Frank Goldsmith Lockwood ⊕ Penn's Grove, N. J.; University of Buffalo School of Medicine, 1942; member of the Medical Society of the State of New York; certified by the National Board of Medical Examiners; served with the medical division of the E. I. du Pont de Nemours and Company; died March 9, aged 31, of brain tumor.

John W. Marcy, Merchantville, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1885; died March 8, aged 85, of cerebral thrombosis and arteriosclerosis.

Donald McElderry, Princeton, Iowa; State University of Iowa College of Medicine, Iowa City, 1908; member of the American Medical Association; served during World War I; at one time practiced in Ottumwa, where he was county physician; died in Veterans Administration Hospital, Des Moines, March 15, aged 74.

Horace Victor Pike, Danville, Pa.; University and Bellevue Hospital Medical College, New York, 1899; member of the American Psychiatric Association; for many years clinical director of the Danville State Hospital; from 1938 to 1944 consulting psychiatrist at the Geisinger Memorial Hospital, where he died March 31, aged 71, of acute cholecystitis and congestive heart failure.

William Surber Porter, Oakland, Calif.; University of Pennsylvania Department of Medicine, Philadelphia, 1896; fellow of the American College of Surgeons; served on the staffs of the Samuel Merritt, East Bay, Peralta and Fabiola hospitals; died March 24, aged 80, of heart disease.

Raymond Dustin Potts ⊕ Dayton, Ohio; University of Cincinnati College of Medicine, 1918; on the staffs of the Miami Valley Hospital, St. Elizabeth's Hospital and the Good Samaritan Hospital, where he died March 24, aged 58, of rheumatic heart disease.

Frank Joseph Ronayne ⊕ River Forest, Ill.; Yale University School of Medicine, New Haven, 1904; member of the Radiological Society of North America, Inc.; at one time affiliated with the Veterans Administration Hospital in Maywood; on the staff of the West Suburban Hospital in Oak Park; served during World War I; died in St. Petersburg, Fla., March 24, aged 71, of pneumonia.

Fred Seymour Saruk, Chicago; Chicago Medical School, 1936; member of the American Medical Association; died in the Winfield Hospital March 14, aged 40, of pulmonary tuberculosis.

Benjamin Franklin Scaiefe, Vida, Ore.; St. Louis Medical College, 1887; served during World War I; died March 10, aged 82, of angina pectoris.

Frank Sheehy ⊕ San Francisco; College of Physicians and Surgeons of San Francisco, 1920; fellow of the American College of Surgeons; served on the faculty of his alma mater; on the staffs of St. Francis and St. Joseph's hospitals; died March 13, aged 55, of injuries received in an automobile accident.

William Albert Simpson, Indiana, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; member of the American Medical Association; past president of the Indiana County Medical Society; on the staff of Indiana Hospital; member of the board of trustees of the Indiana State Teachers College; served as a member of the board of education; died March 30, aged 76, of coronary embolism.

Amedeo Trappolini, Ashland, Miss.; Middlesex College of Medicine and Surgery, Cambridge, 1922; also a minister; died April 17, aged 59, of injuries received when run over by a truck.

John Henry Von Dreele ⊕ Baltimore; University of Maryland School of Medicine, Baltimore, 1910; affiliated with Maryland General Hospital, where he died March 2, aged 63, of ruptured abdominal aorta.

William Young Ward ⊕ Dodd City, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1901; died March 25, aged 77, of heart disease.

John Knox Webster, Athens, Texas; Kentucky School of Medicine, Louisville, 1891; member of the American Medical Association; one of the founders and past president of the Henderson County Medical Society; past president of the Eleventh District Medical Society; for four years county health officer; served during World War I; died March 18, aged 81, of pulmonary embolism.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 24, 1948.

Pulmonary Valvotomy for Congenital Pulmonary Stenosis

Mr. R. C. Brock, Surgeon to Guy's Hospital, has described (*British Medical Journal*, June 12, p. 1121) an advance in cardiac surgery. In 3 cases he performed a direct operation on the pulmonary valves for the relief of pulmonary stenosis. The patients are all alive and their cardiac condition has been improved. A few previous attempts to relieve pulmonary stenosis by operation on the valves have been recorded, but success has been claimed in only 1, recorded by Cutler and Beck in 1929, in which the patient survived four and one-half years and was thought to have been improved. These earlier cases have left the impression that direct surgical attack on the diseased valves is too dangerous to be practicable. Mr. Brock used a special valvulotome for division of the stenosed valve, which enabled the stenosis to be located and divided almost instantaneously. The valvulotome has a gentle curved shaft ending in a blade like a spearhead and carrying a short probe end. A pair of gently curved dilating forceps with fine blades were used after the valvulotome.

In the first case the patient was a girl aged 18, who had been cyanosed from birth. She had great difficulty in getting about and could rarely walk more than 50 yards (45.7 meters). There was a rough systolic murmur, loudest in the pulmonary area, and a faint systolic thrill. After the operation, which was performed on Feb. 16, 1948, she steadily improved. In spite of symptoms on February 24 suggesting arterial occlusion, probably embolic, in the legs, she further improved. On April 10 cyanosis was absent, the finger nails were pink and she walked about the room without dyspnea. It is too early to assess the final result.

The Labeling of Ampules of Anesthetic Drugs

To avoid mistakes the Associations of Anesthetists, British Chemical Manufacturers and the Wholesale Drug Trade have, under the aegis of the Ministry of Health, recommended indelible marking, rather than paper labels, for all ampules containing solids, solutions and solvents which are used for the production of muscular relaxation, spinal, regional or local analgesia and general anesthesia by intratracheal, epidural, intravenous or intramuscular injection or by tissue infiltration. The marking on ampules should be such as will remain legible throughout sterilization of the outside surface and during storage in disinfectant solutions.

The Government and Radioactivity Dangers

A bill to protect workers and the public against the dangers of radioactivity has been introduced by the Government. In moving the second reading in the House of Commons the Minister of Health, Mr. A. Bevan, said that we were now on the verge of vastly extended use of radioactivity. Artificial radioactive substances—radioactive cobalt and radioactive iodine—were becoming available for therapeutic use. They had tremendous dangers and possibilities. In the hands of competent persons there was no danger, but it had been established that the effect of exposure to radioactive substances of high emission was insidious, the consequences over a number of years being possibly fatal. He had been strongly advised by experts that it was necessary to make provision for protection against the possibilities opened up. It was important that Ministers should be given unusual powers, many of which were novel, because of the great difficulty of defining what they were talking about. The gradation from smaller to greater radioactivity was a difference of degree—the difference between a luminous watch and an atomic bomb. Regulations had to be flexible, and to avoid abuse the Government would adopt a new procedure. An advisory committee would be set up, for which the following had been asked to nominate members—the Medical Research Council, the Royal Society, the three Royal Medical Colleges and the Medical Corporations for Scotland, the Faculty of Radiologists, the Department of Scientific and Industrial Research, the British X-Ray and Radium Protection Society, the British Employers Federation and the Trade Union Council. No regulations would be made without this committee's seeing the draft first.

In the discussion it was declared that no other course was open to the Minister than the adoption of such sweeping powers. It was also suggested that there might be a danger at some time of distribution of radioactive material by enemies of the country. Measures should be taken to prevent our reservoirs from being subjected to such attacks. The bill was read a second time.

BUENOS AIRES

(From Our Regular Correspondent)

July 12, 1948.

New Cardiologic Experiments

Dr. Alfredo Lanari, working in the Institute of Professor Raúl F. Vaccarezza of the Medical Faculty in Buenos Aires, resected circular segments of 1 to 2 cm. of the thoracic aorta of dogs and stitched the ends without interrupting the circulation for more than five minutes (method used by Carrel). For this purpose he employed a glass tube through which the blood circulates while the suture is made. After suturing, one withdraws the tube, removing with special caution the clots which have been formed between the walls of the aorta and the tube. The test animals showed that the interruption of the circulation of the thoracic aorta, with two intercostals tied, originates lesions which are reversible within seventeen to eighteen minutes, but almost never after twenty-two minutes, causing extensive paraplegia.

Furthermore, Lanari and Molins could extirpate fragments of the mitral valve; many of these animals, however, died of embolism. The hemorrhage, on the other hand, could be easily controlled. Three of the surviving animals showed bacterial endocarditis. If dogs operated on in this way are operated on again a year later, great dilatation of the left auricle and hypertension of the pulmonary circuit are found. The maximum murmur of mitral insufficiency, when auscultation was done directly over the heart, was found in the auriculoventricular groove and the left auricle and spread through the pulmonary veins. Intense murmurs were not heard at the apex of the heart; therefore the valvular origin of the systolic murmur heard in the region of the apex of certain persons seems to be problematic.

Lanari and Sampietro made in dogs a venovenostomy between a pulmonary vein and the vena azygos major, in order to alleviate the congested pulmonary circulation in mitral stenosis and insufficiency. Through the procedure a venovenous fistula is made. The operation is simple, but thrombosis is frequent.

International Congress on Echinococcosis

This congress was held in Azul (Province of Buenos Aires) with the assistance of representatives of Brazil, Chile, Panama, Paraguay, Uruguay, Venezuela and specially invited guests of other Latin-American countries, as well as from Italy, Netherlands and Spain. The minister of public health of the province stated that Argentina has a high degree of Echinococcus infections which has considerably increased since 1935; 10 to 15 per cent of the persons operated on for cysts died. A similar situation exists in Uruguay, and the infection is commencing in Brazil and Chile.

In his lecture on "Pathology of the Hydatid Cysts of the Lung" Dr. Velarde Pérez Fontana (Uruguay) referred to the new concept of the pathology of the cyst on which a new surgical procedure has been developed: the extirpation of the adventitious membrane which forms around the cyst. The surgical technic was discussed by Professor Iván Goñi Moreno (Buenos Aires). Only exceptionally should other methods be employed. According to further discussions the method employed in the Institute of Thoracic Surgery in Montevideo (Prof. Ugón) for enucleation of hydatid cyst of the lung consists in making an incision of the adventitia and then using the finger for opening a space so as to draw out the cyst without breaking it. According to the method of Posadas, the cyst is evacuated entirely or with the aspirator of Finochietto, and the bronchi which end in the cavity are closed.

The biologic method of Calcagno (Buenos Aires) consists in injecting hydatid antigen (made from the hydatid liquid and the triturated membranes), which alleviates the symptoms and frequently cures the disease. If the operation is indicated, the previous biologic treatment is all the more desirable. Dr. Pérez Fontana, however, insisted that this biologic method is indicated and satisfactory only when the cyst is broken, while in other cases the surgical method is superior.

GERMANY

(From Our Regular Correspondent)

June 24, 1948.

News from Mainz University

Among the German universities, the University of Mainz has assumed a special role. It is the only university founded by the Occupation Authority (French), and it has been assigned the task of fostering cooperation and fellowship among students from Germany and all other countries. It has introduced the American type of campus life, boarding and housing, a novel feature in German university life.

The university has been largely assisted by the relief program of the Mennonite communities of the United States and Canada, which have organized a student feeding program. About 2,000 students have been receiving two weekly meals of 600 calories, and the program will be enlarged to take in more students.

The university has received a Y.M.C.A. student library consisting mostly of Anglo-American literature. The administration of the library is in the hands of a displaced persons' student union which has been organized at that university.

Dr. Podach, co-worker of the Institute for Medical History of Mainz University, has published a timely article: "The Mortality from Childbed Fever and the Revolution of 1848." He points out: 1848 is known as the year of the German liberal revolution. In medicine, it is also known as the year of the first successes in the fight against childbed fever, after the discovery by Semmelweis that students who carried germs directly from necropsies to the delivery room were mainly responsible for the terrifying Vienna statistics of that time. Chemical and mechanical prophylaxis was introduced and statistics showed a striking improvement immediately thereafter, in 1848. Dr. Podach undertakes to attack the interpretation by Semmelweis of these two facts as cause and consequence, by pointing out that the real reason for this apparent success was more political than medical. Semmelweis himself participated too actively in the revolution to be able to devote much time to clinical work (he gave no obstetrical courses at that time). The students were too busy attending political meetings and fighting on the barricades to work either in pathologic or obstetric departments. Dr. Podach is of the opinion that these facts were more responsible for the excellent statistics of 1848 than the immediate effects of Semmelweis' discovery.

Synthetic Fats for Human Consumption

The production of fats from German-fed animal sources amounted to only 50 per cent of the total requirements of fats for Germany in 1938. To cover the deficit, fat and/or fodder had to be imported. This accounts for the lack of fats in present day Germany. Lately, the daily press has frequently discussed the use of synthetic fats for human consumption. Professional journals too have taken up the issue, the authors drawing different conclusions from their findings.

Prof. Dr. Karl Thomas and Dr. Guenther Weitzel, Leipzig, report in the *Deutsche Medizinische Wochenschrift* about the fitness for human consumption of synthetic fats produced from coal. In the American-licensed *Sueddeutsche Apothekerzeitung* there is a report on the same problem by Dr. Gustav Geist. Dr. A. Krautwald, acting director of the 2nd Medical University Clinic of Berlin, gives a thorough account on the problem in the June 15, 1948 issue of *Das Deutsche Gesundheitswesen*, the official organ of the Health Administration in the Soviet Zone—incidentally the last number which has come through to the American Zone from Berlin since the beginning of the Soviet blockade. Thomas and Weizel report that tests with respect to the tolerability of synthetic fats have shown that an amount of 100 Gm. per day, given for a week, was consumed without any harmful effects, while the consumption of 150 Gm. daily was followed by different disturbances. While natural fats are almost completely metabolized into carbon dioxide and water, synthetic fats leave large amounts of acid waste products, as was proved by urinalyses. Geist, arriving at almost identical chemical results, stresses that consumption over a longer period of time may lead to disturbances, particularly in the kidneys, and also to decalcification of the bones. He concludes that thorough biologic tests will be necessary before synthetic fats are to be released for human consumption. In contrast to this, Krautwald's conclusions read as follows: "The fat examined proved to be highly fit for any dishes requiring fats, and for a paste. Persons in good health could very well digest doses of 100 Gm. per day. The tasty fat causing no detrimental effects or disturbances of health was digested without any trouble even by persons with liver or stomach complaints in quantities up to 50 Gm. per day." In his opinion, it is "urgently necessary to resume the production of synthetic fat and to continue research in that field."

Miscellaneous

A survey about the nutritional situation in the American Sector of Berlin, published in February, showed that a considerable part of the Berlin population is suffering from undernourishment. Qualitatively, the lack of proteins constitutes the most serious problem, while lack of vitamins as such has not led to serious consequences. This is probably due to the fact that, with a low metabolism, the need for vitamins is also lowered.

The *Deutsche Medizinische Rundschau* publishes a report on the tragic situation in Luebeck. There are 90,000 evacuees in that city, and infant mortality has risen to 25 per cent. There are no diapers available, and even the formerly used substitutes, like old maps, pasted on linen, or British food bags, have been used up. Now, old newspapers are used for diapers. The correspondent stresses that such conditions lead not only to an increased infant mortality rate, but also to many maternal deaths owing to increased abortions.

Giessen, the only university in Germany which lacks a medical faculty, will now open an Academy for Medical Research and Training. Part of it will be the former Kaiser Wilhelm Institute for Brain Research, which is now located in Dillenburg, Hesse, and which will be moved to Giessen this year.

At Cologne University, a student group of conscientious objectors was founded. It appeals not only to students opposed to war for moral and religious reasons, but also to those who are "against this scourge of humanity from a purely practical standpoint." Similar students' groups exist in twenty-four different countries, and they are organized in the "International of Objectors to Military Service."

Bureau of Investigation

HOXSEY IN MEXICO

From a Mexican newspaper dated April 12, 1948, comes an item which is translated as follows:

"Like soldiers in their trenches, a veritable army of scientists have begun from their laboratories and experimental clinics a bloody and brave battle against cancer That fight for humanity under the flag of health has been struggling for liberation for many decades.

"Three soldiers of that army which is combating one of the most tremendous scourges of the human race are in Monterrey living at the Hotel Bermuda they are Dr Harry M Hoxsey, Director of the Hoxsey Cancer Clinic in Dallas, Texas, Dr C. E Von Hoover of San Antonio, Texas, chemist in the same institution, and the opulent landowner Mr J Thomas Hopkins of Longview, Texas, who has been contributing to the work of the great anti-cancer crusade.

Three Generations of Doctors Hoxsey

"During the last decades of the past century, Drs John Hoxsey Sr and John Hoxsey Jr., father and grandfather respectfully of Dr. H. M Hoxsey, have been applying a natural system in treating cancer, which, according to comments of the third of that dynasty of physicians, has nothing to do with surgery or use of radium . . ."

The Hoxsey family genealogy was noted first in THE JOURNAL of Jan. 2, 1926 The ebullient son was considered in an editorial in the March 15, 1947, issue of THE JOURNAL.

Accompanying this Mexican newspaper article were copies of two letters sent by Hoxsey in support of his treatment They are signed by "C. E Von Hoover, Ph D, Consulting Chemist-Pharmacologist." One, dated Dec 11, 1947, to the Hoxsey Cancer Clinic, Dallas, Texas, is entitled "Tests Hoxsey Cancer (Internal) Treatment." The chemist has found, as the essentials of such treatment, the following

"This preparation contains and is found in the analysis—a most vf special type of scientifically and specially prepared Iodine, as well as in the same perfected manner is found Osmunda regalis facto (alkaloid free), which creates by mixing the above two ingredients, V. Conservatrix and Conium lx, the first and later are indicated for the treatment of carcinoma and cancerous tumors by the Homeopathic Materia Medica (Ref Luyties M M Page 150 Carcinoma). This is created and formed because the preparation contains no metals, therefore, it is—in my opinion a valuable chemotherapeutic

"Among other elements noticed in this preparation are traces of colloidal gold The preparation is COLLOIDAL, a-gold mixture creating another element therapeutic agent"

The next sentence is rather staggering It constitutes a broad indictment of the medical profession and its abilities when it comes to the matter of the mixing of drugs

"The outstanding results obtained in the treatment of carcinoma by physicians who prescribe same are no doubt due to the great therapeutic value produced by the mixture of the special ingredients and the secret process of mixture; since this preparation is mixed by a physician, therefore, we are not in position as to find by study and analysis the method used"

The copy of the second letter is dated Dec 14, 1947, and says:

"Research reveals that the outstanding therapeutic values you receive in the treatment of all types of carcinoma, in addition to other reports submitted you by the writer, is due to the fact that the 'crossing' of the drug ingredients contained in Hoxsey treatment, produces because of same, by reason of: a reaction chain which the fluorescent substances serve as a group of reactants, producing the carrier and producing by-product values. The by-products are 'end' products, are produced by the ingredient mixtures contained in the preparation, thereby creating a virus destroying agent, in this way Calcaria Fluorica of homeopathy proved useful in cancer

"Physicians using this preparation should bear in mind that sometimes we of the scientific 'galleys' can not explain in a professional or any other language why simple mixture of simple drugs produce startling therapeutic values; when they do and are safe in administration, results are all that is necessary.

"You, Dr. Durkee, are the best reference that the preparation has, for the reasons that under your direction you have witnessed the results, in my opinion, the results are due to my above and other explanation in my reports to you.

"I have spent much time in analysis, research and works of almost every nature with this product. It becomes interesting at all times, the more you look into same, the more interesting matters come to light"

The second letter was addressed to Dr. J. B. Durkee, the medical director of the Hoxsey Cancer Clinic, an osteopath An article of his appeared in a recent issue of the *Journal of the National Medical Society.* The article is prefaced by an editor's note which says of the use of the Hoxsey treatment that the American Medical Association "had their chance and they arrogantly and stupidly rejected it."

Well! An editor is known by the articles he publishes!

Medical Motion Pictures

FILM REVIEWS

The Role of Gastroscopy in the Diagnosis and Treatment of Gastric Pathology. 16 mm., color, sound, 1,200 feet (one reel), showing time thirty-three minutes. Prepared by Leo L. Hardt, M.D., Department of Medicine, Loyola University School of Medicine, Chicago. Produced in 1947 by Jam Handy Organization, Chicago. Procurable on loan from Harrower Laboratory, 5 South Wabash Avenue, Chicago.

This film presents gastroscopy and its place in the diagnosis of gastric disease in an informative manner Following a brief historical introduction, it shows the development of the modern flexible gastroscope The indications and contraindications for gastroscopy are clearly defined and evaluated. By appropriate models, roentgenograms and other illustrative material the film clearly depicts the lesions which may be differentiated by gastroscopy. Notable is the emphasis given to close cooperation between the gastroscopist and roentgenologist in diagnosis of gastric lesions Clearly shown are the advantages and disadvantages of each diagnostic procedure, and emphasis is made on the proper integration of these diagnostic aids.

The last part of the film deals with the evaluation of various gastric antacids by gastroscopy. This is perhaps the least educational portion of the film, since there appears to be some bias in favor of a particular mixture However, the technic of evaluation is interesting and instructive. The film appears suitable for teaching medical students and for presentation to a general medical audience. The photography is excellent, but the narration is poor

Substitution Transfusion In The Treatment Of Erythroblastosis Fetalis. 16 mm., color, silent, 800 feet (one real), showing time thirty minutes. Prepared in 1947 by and procurable on loan from Harry Wallerstein, M.D., Director, Erythroblastosis Fetalis Clinic, Jewish Memorial Hospital, and the Department of Hematology, Morrisania City Hospital and Queens General Hospital, New York.

The film presents substitution transfusion in the treatment of erythroblastosis fetalis. The three technics used for the removal of the infant's blood are shown, namely, the longitudinal sinus, the umbilical vein and the radial artery. Each procedure is depicted in detail; this will aid the surgeon greatly in learning the methods. The criteria for selection of cases are given. The author seems rather confident that the operation will prevent development of kernicterus. Calcium gluconate is administered to counteract the large amounts of sodium citrate. Would it not be advisable to give it in divided doses instead of only at the completion of the procedure? Obstetricians and pediatricians may object to too much exposure of the baby during the fairly long procedure. The surgeon will wonder why a local anesthetic was not used for the venesection. Many would like to know how long each operation takes in an average case.

The author used excellent judgment in the choice of material in his emphasis on particulars and in selection and formulation of descriptive matter. This film can be recommended to all those interested in the treatment of erythroblastosis fetalis. The mortality rate as given in the final statistical summary understates the true mortality among the treated infants; the rate of 2 per cent was computed from the total of 62 treated and untreated infants, yet the rate is referred to as being based on infants treated according to plan.

MEDICAL MOTION PICTURE REVIEW

First Steps. 16 mm., black and white, sound, 375 feet, showing time ten minutes Prepared under the supervision of the Department of Public Information of the United Nations with medical supervision by N. Purshotton, M.D., India Produced in 1947 by Frederic House, New York. Procurable on rental from. Film Program Services, 1173 Avenue of the Americas, New York 19.

This is a documentary film on the rehabilitation of children afflicted with poliomyelitis and cerebral palsy. Taken in a rehabilitation camp for the orthopedically handicapped child, an excellent series of sequences shows the methods of training disabled children to walk again and to become useful citizens. The film stresses the concept that "since the child himself is developed, as well as his legs, walking is a beginning and not an end."

This film was originally planned to be used primarily for child welfare work in India; thus the term "social worker" is used throughout, whereas the Western World would more correctly use the words "physical therapist."

The film has dramatic appeal, and the filming and sound track are superlative; it will interest physicians, physical therapists, occupational therapists, social workers, lay groups who are concerned with the welfare of the crippled child and parents of handicapped children.

PUBLIC HEALTH SERVICE FILMS

The following 35 mm., sound, black and white film strips with records have recently been released by the United States Public Health Service, Communicable Disease Center, Atlanta 3.

Laboratory Diagnosis of Rabies emphasizes that laboratory diagnosis of rabies depends on the ability of the laboratory technicians to determine the presence or absence of Negri bodies. Photographs of the Negri bodies will accompany the film strip. (Running time eight minutes.)

The Fight Against Rabies is intended to eliminate rabies through close cooperation of citizens with local, state and federal authorities engaged in a national eradication program. (Running time fourteen minutes.)

Spread and Prevention of Trichinosis discusses symptoms, life cycle of Trichinella Spiralis, statistical analysis in relation to incidence of the disease and means of prevention. Suitable for showing to subtechnical audiences and is related to the film strip entitled "Worms in Your Muscles." (Running time twelve minutes.)

Worms in Your Muscles depicts the life cycle of the Trichinae, the symptoms and prevention of the disease. Suitable for showing to technical audiences and is related to the film strip entitled "Spread and Prevention of Trichinosis." (Running time ten minutes.)

These film strips are procurable on a short term loan (thirty days) through the following address: Medical Director in Charge, Communicable Disease Center, 605 Volunteer Building, Atlanta 3, Ga., Attn: Film Library.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in The Journal, July 17, page 1081.

BOARDS OF MEDICAL EXAMINERS

Alabama: *Examination.* Montgomery, June 28-30, 1949. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

Alaska: * *Examination.* Juneau, Sept. 7. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

California: *Oral.* Los Angeles, Aug. 7-8. *Written.* Los Angeles, Aug. 9-12; Sacramento, Oct. 18-21. Sec., Dr. Frederick N. Scatena, 1020 N. Street, Sacramento 14.

Connecticut: * *Examination.* Hartford, Nov. 9-10 Sec., Dr. Creighton Barker, 258 Church St., New Haven.

District of Columbia: * *Reciprocity.* Washington, Sept. 13. Sec., Commission on Licensure, Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.

Georgia. *Examination.* Atlanta, Oct. 12-13. *Endorsement.* Atlanta, Oct. 14. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

Illinois: Chicago, Oct. 5-7. Supt., Dept. of Registration and Education, Mr. Fred W. Ruegg, Capitol Bldg., Springfield.

Iowa: * *Examination.* Des Moines, Dec. 6-8. *Endorsement.* Des Moines, Aug. 2. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

Maine: Portland, Nov. 9-10. Sec., Board of Registration of Medicine, Dr. Adam P Leighton, 192 State St., Portland.

Maryland: *Examination.* Baltimore, Dec. 14-17. *Endorsement.* At the discretion of the Board. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore.

Minnesota: Minneapolis, Oct. 19-21. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

Missouri: Jefferson City, Aug. 8. Exec. Sec., Mr. J. A. Hailey, Room 135 Capitol Bldg., Jefferson City.

Montana: Helena, Oct. 4-6. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

Nevada: Carson City, Nov. 1. Sec., Dr. G. H. Ross, Industrial Bldg., Carson City.

New Hampshire: Concord, Sept. 9. Sec., Board of Registration in Medicine, Dr. J. S. Wheeler, Room 107, State House, Concord.

New Mexico: * Santa Fe, Oct. 11-12. Sec., Dr. V. E. Berchtold, 141 Palace Ave., Santa Fe.

New York: *Examination.* Various Centers, Sept. 27-30. Sec., Dr. J. I. Lochner, Jr., 23 South Pearl St., Albany 7.

Ohio. *Examination.* Columbus, Dec. *Endorsement.* Columbus, Aug. 9, Oct. 5. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

Pennsylvania: *Examination.* Philadelphia, Jan., 1949. Act. Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

Rhode Island. * *Examination.* Providence, Oct. 7-8. Chief, Div. of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence

South Carolina. *Endorsement* Aug. 2, Sept. 6. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

West Virginia Charleston, Oct. 4-6. Sec. Public Health Council, Dr. N. H. Dyer, State Dept. of Health, Charleston

Wisconsin * Madison, Jan. 11-13, 1949 Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls, Wis.

Wyoming: *Examination.* Cheyenne, Oct. 4. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

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* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: Juneau. Last week in Aug. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau

Arizona: *Examination.* Tucson, Sept. 21. Sec., Mr. Francis A. Roy, Univ. of Arizona, Tucson.

Colorado *Examination.* Denver, Sept. 15-16. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 3.

District of Columbia. *Examination.* Washington, Oct. 18-19. Sec., Dr. G C. Ruhland, 4130 Municipal Bldg., Washington, D. C.

Florida: *Examination.* Gainesville, Nov. 6. Final date for filing application is Oct. 25. Mr. M. W. Emmel, University of Florida, Gainesville.

Iowa. Des Moines, July 13, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

Michigan: *Examination.* Ann Arbor and Detroit, Oct. 8-9. Sec., Miss Eloise LeBeau, 1510 West Allegan St., Lansing.

Minnesota: *Examination.* Oct. 5-6. Sec.-Treas., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

Nebraska: *Examination.* Omaha, Oct. 5-6. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009 State Capitol Bldg., Lincoln.

New Mexico: *Examination* Santa Fe, Aug. 1. Sec., Miss Marguerite Kilkenny, P. O. Box 307, Santa Fe.

Oklahoma: Spring of 1949. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Oregon: *Examination.* Portland, Sept. 4. Sec., Basic Science Examining Committee, Dr. C. D. Byrne, Univ. of Oregon, Eugene.

Rhode Island: *Examination.* Providence, Aug. 11. Chief, Div. of Professional Regulation, Mr. Thomas B Casey, 366 State Office Bldg., Providence.

South Dakota. *Examination.* Vermillion, Dec. 3-4. Sec., Dr. G. M. Evans, Yankton.

Tennessee. *Examination.* Memphis & Nashville, Sept. 20-21. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

Wisconsin: *Examination.* Madison, Sept. 25. Final date for filing application is Sept. 15. Sec., Prof. W. H. Barber, Scott & Watson Sts., Ripon.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Nurses: Right of Physician to Procure Dismissal from Case.—The plaintiff filed a suit for damages against the defendant physician for having "procured" the hospital authorities to dismiss her from a case and to prohibit her from being called as a special nurse at the hospital. The jury found for the plaintiff, but the trial court entered a verdict for the defendant. The plaintiff, therefore, appealed to the Supreme Judicial Court of Massachusetts.

The plaintiff testified that in 1936, while doing special nursing in the hospital, her patient was annoyed by a patient of the defendant continuously ringing the bell. The plaintiff asked the defendant's patient to give short rings instead. The next day the defendant demanded that the plaintiff apologize to his patient, which the plaintiff did. On that occasion the defendant said, "I will get you off . . . registry if it is the last thing I do." He was "very very mad." He told the plaintiff to have "nothing to say or do" to him or his patients, so from that time on the plaintiff and the defendant never spoke to each other. On Oct. 21, 1941, the plaintiff was caring for a patient at the hospital and a patient of the defendant was in the same room. One evening, after visiting hours were over, the plaintiff, desiring to give some needed attention to her patient, requested another nurse to remind some persons then visiting the defendant's patient that it was after visiting hours. The defendant's patient became excited about this. Two days later the superintendent of the hospital (who had direct charge of the care of patients and of nurses and had jurisdiction over the plaintiff) called the plaintiff on the telephone and said, "I am omitting you from your case . . . . Dr. Williams wants to talk with you." The defendant, then taking the telephone, "yelled" at the plaintiff, "Why did you tell my patient I was only worth two cents?" The plaintiff denied having told that to the patient. The defendant said, "And why did you tell my patient's visitors to leave?" After more words, the defendant said, "I have told . . . [the superintendent] that you are never to work in this hospital again and that if you come back here to work I will never send another patient here. I have told her it is either you or me. There is not room enough here for both of us." The plaintiff said, "Dr. Williams, you have no right to talk to me like that, or have me taken off the registry." He replied, "It isn't a matter of what I have a right to do, it is what I have done." Later the superintendent said to the plaintiff that the defendant was a very important man in the hospital, that he had said that if the plaintiff were put back on the list he would never send another patient to the hospital, that the superintendent was not a free agent in the matter and that the plaintiff could not go back on the list until she had seen the defendant and fixed it up with him and placated him. The plaintiff said she could not do that. No witness testified that the plaintiff in fact did make the derogatory remarks mentioned, and she testified in effect that she did not.

The defendant's position, supported by his testimony, was, in substance, that he was conscious of no ill will against the plaintiff until she brought this action, that he simply reported to the superintendent what his patient had told him as to the conduct and language of the plaintiff, which in his opinion were a breach of ethics, that he did not request the superintendent to omit the plaintiff or to take her name off the list and that the superintendent acted on her own initiative. He denied having made most of the statements attributed to him by the plaintiff.

The only question, said the court, was whether or not the evidence warranted a verdict for the plaintiff. If the jury believed the evidence most favorable to the plaintiff, they could find that having her name on the hospital's list of nurses and the privilege of nursing at the hospital were business relationships valuable to the plaintiff in that they afforded her a fairly reasonable means of access to employment in her profession. They could find that these valuable relationships would have continued, if it had not been for the persuasion and influence of the defendant. They could find that in 1936 the defendant threatened to get the plaintiff off the registry of the hospital and that in 1941 he practically commanded the superintendent to dismiss the plaintiff on the threat to bring no more patients to the hospital if she did not do so and that the superintendent acted as she did in consequence of that threat. They could find that the defendant's conduct was purposely directed toward securing the dismissal of the plaintiff from the hospital, with full knowledge of the consequences to her, and that it was successful in bringing about that result.

The governing principle of law, said the Supreme Court, is set forth in Restatement, Torts, Section 766, in these words, ". . . one who, without a privilege to do so, induces or otherwise purposely causes a third person not to . . . enter into or continue a business relation with another is liable to the other for the harm caused thereby." Our own decisions, the court continued, appear to be in accord with this statement, and in order to maintain the action it is not necessary that the plaintiff prove that she had a binding contract with the hospital. It is well settled that an existing or even a probable future business relationship from which there is a reasonable expectancy of financial benefit is enough. The next inquiry is therefore whether a privileged occasion existed on which the defendant could rely as justification for knowingly and intentionally causing damage to the plaintiff. We assume, said the court, that if the plaintiff did disparage the defendant to his own patient a privileged occasion would arise which would justify the defendant in doing something in relation to the matter for the purpose of maintaining necessary discipline in the hospital and efficient working relations between nurses and physicians. A privileged occasion of some sort might perhaps arise if the defendant had been credibly informed and believed that the plaintiff had made the statements attributed to her, even if in fact she had not made them. We do not decide these questions. The difficulty with the defense is that the plaintiff did not admit either having made the statements or that the defendant had been informed that she had made them. Although no witness testified to the actual making of the statements, there was much evidence that the defendant had been informed that they were made. But none of this evidence bound the plaintiff. The jury could have disbelieved *in toto* the evidence tending to show a privileged occasion. Since the jury were not obliged to believe that any privileged occasion existed, they could have found for the plaintiff on the ground that the defendant's injury to the plaintiff remained wholly unjustified. The conclusion is unescapable, said the Supreme Court, that this was a jury case. Accordingly the verdict of the trial court, which was contrary to the jury's finding, was set aside and the verdict of the jury reinstated. *Owen v. Williams, 77 N.E. (2d) 318 (Mass., 1948).*

Charitable Hospitals: Liability for Injuries to Patient Falling Out of Bed.—The plaintiff sued for damages for injuries sustained while a patient in the defendant hospital. From a judgment for the plaintiff the defendant appealed to the supreme court, appellate division, third department.

The plaintiff, an infant slightly over 2 years of age, had a generalized eczema over his head and body, with swollen glands in his neck and behind his ears. He was running a temperature of more than 103 F. when taken to the defendant hospital, as a paying patient, and placed in a crib, the top of which was 57¼ inches from the floor and 25 inches from the upper side of the mattress. Three days later the child climbed over the side of the crib and fell to the floor, receiving the injuries forming the basis for this suit.

Pointing up the question of the liability of a charitable hospital, the court quoted a prior New York case as follows: "Certain principles of law governing the rights and duties of hospitals, when maintained as charitable institutions, have, after much discussion, become no longer doubtful. It is the settled rule that such a hospital is not liable for the negligence of its physicians and nurses in the treatment of patients. . . . This exemption has been placed upon two grounds. . . . The second ground of the exemption is the relation subsisting between a hospital and the physicians who serve it. It is said that this relation is not one of master and servant, but that the physician occupies the position, so to speak, of an independent contractor, following a separate calling, liable, of course, for his own wrongs to the patient whom he undertakes to serve, but involving the hospital in no liability, if due care has been taken in his selection. . . . It is true, I think, of nurses, as of physicians, that, in treating a patient, they are not acting as the servants of the hospital. The superintendent is a servant of the hospital; the assistant superintendent, the orderlies, and the other members of the administrative staff are servants of the hospital. But nurses are employed to carry out the orders of the physicians, to whose authority they are subject. The hospital undertakes to procure for the patient the services of a nurse. It does not undertake, through the agency of nurses, to render those services itself."

Applying these principles to the facts of the present case, the court was of the opinion that the evidence did not warrant the finding that a professional determination had been made by the receiving nurse or any other nurse or physician that additional restraint was necessary, thus making the failure to apply such paraphernalia an administrative act for which the defendant was chargeable. Accordingly the judgment in favor of the plaintiff was reversed. *Pierson v. Charles M. Wilson Memorial Hospital, 78 N. Y. S. (2d) 146 (N. Y., 1948).*

Naturopathy as Practice of Medicne.—The defendant was convicted of unlawfully practicing medicine and surgery without a license so he appealed to the Court of Appeals of Ohio, Franklin County.

A witness for the prosecution testified that she went to the defendant's office suffering from a pain in her leg and was first examined by a Mr. Good in the defendant's office, after which she was in consultation with both the defendant and Mr. Good. The defendant told her that her glands did not function properly, prescribed thyroid tablets, a box of capsules and several other different kinds of medicine and injected oxygen into her leg by means of a hypodermic needle. She said that the defendant prescribed the medicine for her and that she paid him $10 for the examination and that the medicine was $16. The defendant admitted giving her the oxygen treatment and also admitted that all of the office equipment belonged to him and that all money received from patients was turned over to him. It was also admitted that the defendant was not licensed by the State of Ohio.

The statutes of Ohio provide: "A person shall be regarded as practicing medicine, surgery or midwifery, within the meaning of this chapter . . . who examines or diagnoses for a fee or compensation of any kind or prescribes, advises, recommends, administers or dispenses for a fee or compensation of any kind, direct or indirect, a drug or medicine, appliance, application, operation or treatment of whatever nature for the cure or relief of a wound, fracture or bodily injury, infirmity or disease. . . ."

The defendant contended that he was practicing naturopathy and that naturopathy is not medicine or any of its branches within the purview of the above quoted statute. We are not interested in what name or title the defendant gives to his profession, said the court of appeals, but we are only interested in whether or not what he did constituted the practicing of medicine as defined by the statute. There is testimony in the record to the effect that he examined, prescribed and dispensed for a fee certain medicines and that he gave a treatment by means of the oxygen needle. The defendant contended that what he gave to Mrs. Linn was neither a drug nor a medicine. Winston's Universal Reference Library, said the court, defines medicine as being "any drug or remedy for the treatment and cure of disease." Medicine, therefore, is not only a drug but is also a remedy. The statute may be violated by the dispensing of a remedy as well as a drug. On one of the state's exhibits received by the witness at the defendant's office, we find the warning: "To be used only by or on the advice of a doctor." On another we find: "Active ingredient thyroid. To be used only by or on the prescription of a physician. It is not safe to take thyroid except under the supervision of a physician." We are therefore of the opinion, the court concluded, that there was ample evidence in the record to support the verdict of the jury and it is not against the manifest weight of the evidence. Accordingly, the judgment of conviction was affirmed.—*State v. Henning, 78 N. E. (2d) 588 (Ohio, 1948).*

Employers Duty to Notify Employee of Results of Physical Examination by Company Doctor.—The plaintiff sued his employer and a fellow employee for damages sustained, as a result of an injury during the course of his employment, by reason of the negligence of the fellow employee. From a judgment for the plaintiff, the defendants appealed to the Supreme Court of Oklahoma.

The evidence showed that, in April 1942, one of the toes of the plaintiff's left foot became infected. Subsequent hospitalization at the railroad hospital revealed that the plaintiff was afflicted with Buerger's disease (thromboangiitis obliterans), a disease which causes the blood vessels in the extremities to be obstructed. When blood cannot reach the toes or other afflicted parts, gangrene sets in and amputations become necessary to prevent further spread of the disease. The plaintiff received treatment for his left foot until July, when his left great toe was amputated. He returned to work in January 1943, as a section hand, and continued in such employment until April. At some time during that period he was lifting a tie with a fellow employee. His co-worker jerked or dropped the tie, causing the plaintiff to fall into a trench and strike his right ankle on a big cinder. He was given treatment for the resulting infection in his right ankle from April to August, when he went to the company hospital again and, in December, underwent amputation of his right leg. The infection and subsequent amputation of the right leg was due to the fact that he was afflicted with Buerger's disease. The plaintiff's evidence indicated that he at no time knew or was told that he had Buerger's disease and at no time was warned of any dangers or unusual perils which might befall him because of this affliction. He contended, however, that the employer knew that he was so afflicted and that it was therefore negligent in permitting him to return to work as a section hand when it knew that it was hazardous to employ him at work in which he might receive a blow or bruise which might, or probably would, cause an aggravation of the disease, resulting in a gangrenous condition and possible amputation of the afflicted portion of the plaintiff's body. The plaintiff also contended that the employer was negligent in failing to inform him of his condition.

The employer's principal contention was that the duty rests on the servant to determine for himself whether or not he has sufficient health and strength to perform the duties of a position and not on the master. This rule, said the Supreme Court, is based on knowledge or presumed knowledge on the part of the servant and is inapplicable to the case at bar. The right to recovery in this case is based on positive lack of knowledge by the servant of his affliction and therefore lack of knowledge of exposure to greater dangers than the work necessarily entailed.

The employer also contended that the instructions were erroneous, in that they failed to place on the plaintiff the burden of proving that the defendant employer knew that the plaintiff was ignorant of having the disease and the probable effect thereof. According to the undisputed evidence, the court said, the plaintiff was afflicted with a rare disease not commonly known or recognized, difficult of diagnosis and discovery and unusual in its nature; the plaintiff received no treatment at any time except from the defendant company physician or physicians in communication with the defendant company. The instructions given placed the burden on the plaintiff of proving not only that the physicians discovered the disease but that they did not at any time tell him of his condition or the nature and characteristics of the affliction and that he did not receive such knowledge from any source. According to the undisputed facts in this case, the court concluded, the instruction given in effect required the plaintiff to establish that the employer knew him to be ignorant of his condition, and the jury resolved this question in favor of the plaintiff.

In conclusion, the Supreme Court held that the instructions correctly stated the issues presented by the pleadings and the evidence and correctly stated the law applicable thereto and, further, that there was competent evidence reasonably tending to support the verdict of the jury. The judgment in favor of the plaintiff was accordingly affirmed. *Atchison, T. & S.F. Ry. Co. v. Perryman, 192 P. (2d) 670 (Okla., 1948).*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

35:369-528 (March) 1948

•Effect of Occlusive Arterial Diseases of Extremities on Blood Supply of Nerves. Experimental and Clinical Studies on Role of *Vasa Nervorum*. J. T. Roberts, W. H. Jarvis, R. S. Browne and others. -p. 369.
•Experience with Three Vascular Fragility Tests in Hypertension. J. Schweppe, H. A. Lindberg and M. H. Barker. -p. 393.
•Night Cramps in Human Extremities: Clinical Study of Physiologic Action of Quinine and Prostigmine upon Spontaneous Contractions of Resting Muscles. H. K. Moss and L. G. Herrmann. -p. 403.
Relation Between Arterial Pressure and Blood Flow in Foot. P. Scheinberg, E. W. Dennis, R. L. Robertson and E. A. Stead Jr. -p. 409.
Electrocardiogram in Chronic Cor Pulmonale. R. Zuckermann, E. Cabrera C., B. L. Fishleder and D. Sodi-Pallares. -p. 421.
Familial Incidence of Rheumatic Fever: I. Discussion of Relationship Between Positive Family History and Development of Rheumatic Fever in Individuals of Military Age. G. C. Griffith, F. J. Moore, S. McGinn and R. S. Cosby. -p. 438.
Id.: II. Statistical Study of Familial and Personal History of Rheumatic Fever. G. C. Griffith, F. J. Moore, S. McGinn and R. S. Cosby. -p. 444.
Different Mechanisms of Fusion Beats. M. R. Malinow and R. Langendorf. -p. 448.
Glossopharyngeal Neuralgia: Cause of Cardiac Arrest. B. S. Ray and H. J. Stewart. -p. 458.
Diminished Efficiency and Altered Dynamics of Respiration in Experimental Pulmonary Congestion. H. E. Heyer, J. Holman and G. T. Shires. -p. 463.
Prolongation of Q-T Interval in Electrocardiogram Occurring as Temporary Functional Disturbance in Healthy Persons. With Proposal That (Q-T) Cal. May be Used to Designate Q-T Intervals Calculated for Physiologic Variables, Cycle Length, Age and Sex. O. Horwitz and A. Graybiel. -p. 480.

Effect of Occlusive Diseases on Blood Supply of Nerves.—According to Roberts and associates the blood supply of peripheral nerves has received little attention in connection with clinical problems since it is common belief that the metabolism of a peripheral nerve depends on the cell bodies of its neurones rather than on the nourishment of its axones. The author's studies indicated that ischemic nerves suffered changes in function and structure. Experiments consisted of interference with the blood supply of peripheral nerves in various ways. Clinical cases were collected where the influence of ischemia on a peripheral nerve could be demonstrated by dissection and injection. The blood supply of nerves has been shown to be abundant. This blood supply was obliterated by ligating nutrient arteries of a nerve, by stripping off the epineurium, by compressing a nerve or stretching it and by injecting embolic substances into a nutrient artery. Having produced ischemia of the nerve by these methods, it was studied by injecting dye through the aorta into the vasa nervorum and was found to alter the function and structure of the nerve. Peripheral nerves of man may be made ischemic by similar processes and by proliferative, vasospastic or thromboembolic vascular diseases affecting either arterial or venous blood supply of the nerves in a great variety of clinical conditions (for example, diabetes mellitus, thromboangiitis obliterans, arteriosclerosis, arterial embolism and thrombosis, phlebothrombosis, stretching or compression of nerves, anemia or hemoconcentration). Sensory and motor changes were closely correlated with ischemia of nerves in the cases studied by injecting dye or by sections. Crossing the legs, sleeping or sitting in a position that causes compression or stretching of nerves, and the use of constricting clothing or vasospastic drugs like tobacco should be avoided by patients with ischemia of limbs. Tingling, numbness and similar mild complaints may indicate early stages of ischemic neuropathy and may therefore be signs of serious import. Benefit may follow vasodilation and correction of causal factors.

Vascular Fragility Tests in Hypertension.—Schweppe and his associates attempted to evaluate the three capillary fragility tests, the Gothlin, the negative pressure and the cuff trauma test. None of the tests adequately fulfils the need for an accurate quantitative test. Abnormal capillary fragility was found in 15.9 per cent of 44 hypertensive patients. Thiocyanates did not increase capillary fragility in this particular series. Rutin, administered in 180 mg. doses daily, reduced the susceptibility to capillary hemorrhage in 3 patients. In 3 the results were questionable. Abnormal capillary fragility was associated with advanced diffuse degenerative arteriosclerosis in most of the cases that were investigated.

Night Cramps in Human Extremities.—Moss and Herrmann present observations on 20 patients with nocturnal muscle cramps. Night cramps seem to result from the action of some end product of metabolism, as in diabetes, or from poor elimination of normal end products of muscle metabolism, as in patients with venous stasis due to varicose veins or pregnancy, or following deep venous occlusion. Increased muscular activity favors the development of night cramps during the rest which follows such activity. No relationship exists between intermittent claudication and muscle cramps at rest. Quinine sulfate has been found to give prompt relief of night cramps in extremities. Evidence indicates that the action of quinine is directly on muscle, rather than on the myoneural junction. Quinine sulfate produces a refractory period in skeletal muscle that is similar to the refractory period in heart muscle.

American Journal of Medicine, New York

4:313-389 (March) 1948

•Endocrine Changes Associated with Laennec's Cirrhosis in Liver. C.W. Lloyd and R.H. Williams. -p. 315.
•Complications of Alkalosis. W.J. Grace and D.P. Barr. -p. 331.
•Electrolyte Partition in Patients with Edema of Various Origins: Sodium and Chloride. Edith B. Farnsworth. -p. 338.
Serum Concentrations of Penicillin G in Man Following Intramuscular Injection in Aqueous Solution and in Peanut Oil-Beeswax Suspension. H.A. Tucker and H. Eagle. -p. 343.
Streptomycin: Clinical Study of Its Use in Twenty-Six Cases. W.S. Priest and J.B. O'Neill. -p. 355.
Clinical Studies in Use of Myanesin. E.B. Schlesinger, A.L. Drew and Barbara Wood. -p. 365.
Correlation Between Effect of Quinidine Sulfate on Heart and its Concentration in Blood Plasma. R. Wegria and Margaret N. Boule. -p. 373.
Clinical Evaluation of Treatment of Pneumococcic Type III Pneumonia. M.F. Collen and R.L. Dobson. -p. 383.

Endocrine Changes in Cirrhosis of Liver.—Lloyd and Williams studied the endocrine functions in 71 patients with cirrhosis of the liver. Fifty-five of the subjects were men and 16 were women. Decrease in libido and potentia were found in 37 of the 52 men, who could be questioned in this respect. Decrease in the axillary hair growth was present in 46 of 55 male patients. Testicular atrophy was present in 36 of 50 men. Gynecomastia was present in 23 of 55 men. The women with hepatic cirrhosis had alteration in the menstrual pattern, in sexual drive, in body hair, in the uterus and in other target organs of estrogen, including the breast. Reviewing the results of postmortem examinations on 87 patients with Laennec's cirrhosis who were examined at the Mallory Institute of Pathology, the authors say that almost all had a decrease in the liquid content of the adrenals and in 8 of 23 patients there was atrophy of the testes.

Complications of Alkalosis.—Grace and Barr call attention to the fact that the use of gastric suction and sodium lactate solutions may lead to alkalosis which may be accompanied by changes in personality, delirium, stupor or convulsions and by renal insufficiency which tends to persist. The state is often unrecognized and if neglected may lead to serious consequences. The authors present the histories of 9 patients, of whom 6 exhibited both delirium and renal insufficiency, 2 showed delirium only and 1 had renal insufficiency without mental disturbance. Primary conditions included subtotal pancreatectomy, intestinal obstruction, cancer of the colon and peptic ulcer. Three of 4 patients with peptic ulcer were also emphysematous. It seems that emphysematous patients are more than ordinarily susceptible to alkaline therapy. In 2 of the emphysematous patients with peptic ulcer, the administration of Sippy powders or similar alkaline treatment seemed to be the exciting cause. The alkalosis may correct itself if the cause can be removed. In several patients spontaneous remission occurred when the alkaline powders were withdrawn or the gastric suction and parenteral administration of lactate solution were discontinued. In others it appeared necessary to administer autoclaved 2 per cent solution of ammonium chloride in distilled water. The usual procedure was to administer a liter of such a solution (20 Gm. ammonium chloride) over a period of two and one half to three hours. The results were satisfactory and frequently dramatic, with almost immediate improvement in the orientation and cooperation of the patient as well as rapid disappearance of the disturbing symptoms.

Electrolytes in Edema.—Farnsworth collected data on electrolyte partitions in the urine of patients with congestive heart failure, hepatic cirrhosis and nephrosis for the purpose of demonstrating renal function in fluid retention associated with these entities. Clearance evaluation of sodium and chloride in cardiac decompensation and in normal subjects showed a decrease in sodium clearance with respect to chloride in the cardiac group. Comparison of sodium to chloride in milliequivalent ratios showed a constant decrease in sodium excretion and a depression in the sodium-chloride ratio. This depression varied directly with the severity of the disease process and the degree of fluid retention. These results are compatible with the hypothesis that edema is a result of retention of sodium by the renal tubules rather than of increased venous pressure. Patients with hepatic cirrhosis were found to release greatly reduced amounts of sodium; several showed only traces. In this group the sodium-chloride ratio was even more sharply reduced than in the cardiac group. Such evidence of pathologic physiology in the kidney is difficult to reconcile with the widely held theory that fluid retention in cirrhosis is inversely proportional to the plasma albumin concentration. No disturbance in the normal sodium-chloride ratio could be found in 9 patients with nephrosis. It was concluded that fluid retention in cardiac decompensation and in hepatic cirrhosis is not due solely to increased hydrostatic and decreased oncotic pressure, respectively, but to disturbance of electrolyte metabolism intimately associated with the renal tubules. Thus the kidney seems to play an active role in the establishment and maintenance of certain types of fluid retention.

American Journal of Pathology, Ann Arbor, Mich.

24:235-450 (March) 1948

Pathology of Secondary Shock. V. H. Moon. -p. 235.

Studies on Mechanism of Action of Nitrogen and Sulfur Mustards in Vivo. D. A. Karnofsky, I. Graef and H. W. Smith. -p. 275.

Histologic Studies on Virilizing Tumor of Adrenal Cortex. E. J. Weber and Maud L. Menten. -p. 293.

*Tumors of Carotid Body. P. M. LeCompte. -p. 305.

Paracoccidioidal Granulomatosis: Cardiac Localization in Case of Generalized Form. L. da Cunha Motta. -p. 323.

Systemic North American Blastomycosis: Report of Case with Cultural Studies of Etiologic Agent and Observations on Effect of Streptomycin and Penicillin in Vitro. M. L. Littman, E. H. Wicker and A. S. Warren. -p. 339.

Persistent "Insect Bites" (Dermal Eosinophilic Granulomas) Simulating Lymphoblastomas, Histiocytoses, and Squamous Cell Carcinomas. A. C. Allen. -p. 367.

Allergic Hyperglobulinosis and Hyalinosis (Paramyloidosis) in Reticulo-Endothelial System in Boeck's Sarcoid and Other Conditions. Morphologic Immunity Reaction. G. Teilum. -p. 389.

Hyperglobulinemia, Periarterial Fibrosis of Spleen, and Wire Loop Lesion in Disseminated Lupus Erythematosus in Relation to Allergic Pathogenesis. G. Teilum. -p. 409.

Effects of Alloxan upon Function and Structure of Normal and Neoplastic Pancreatic Islet Cells in Man. J. W. Conn and D. L. Hinerman. -p. 429.

Tumors of Carotid Body.—LeCompte points out that tumors of the carotid body or glomus caroticum have been called by many names, including perithelioma, endothelioma, angioma, chromaffinoma, adenoma, paraganglioma, pheochromocytoma and sympathoblastoma. The variety of names reflects the current confusion regarding the development, structure and function of the carotid body. The carotid body is a chemoreceptor, not a gland of internal secretion, and is not part of the "chromaffin system." In a series of 17 tumors of the carotid body no true chromaffin reaction was demonstrated, and no evidence for the secretion of epinephrine was obtained in assay of the fresh tissue in 2 instances. Tumors of the carotid body exhibit a basic pattern of nests of principal cells surrounded by a more or less vascular stroma. Depending on the relative amounts of principal cells and stroma, they may be described as usual, adenoma-like or angioma-like. Use of the noncommittal term carotid body tumor is preferred to other names generally used. The great majority of these tumors are both histologically and clinically benign. In view of the high operative mortality it is doubtful whether they should be removed in those cases in which ligation of the carotid arteries is necessary.

American Practitioner, Philadelphia

2:429-496 (March) 1948

Clinical Examination in Recognition of Heart Disease. B. Manchester. -p. 429.

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Effects of Alloxan upon Function and Structure of Normal and Neoplastic Pancreatic Islet Cells in Man. J. W. Conn and D. L. Hinerman. -p. 429.

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American Practitioner, Philadelphia

2: 429-496 (March) 1948

Clinical Examination in Recognition of Heart Disease. B. Manchester. -p. 429.

Ulcers of Leg in Mediterranean Disease.—Estes and his co-workers of the Mayo Clinic report observations on 3 sisters of Italian descent, aged 30, 23, and 19, respectively. All 3 at one time or another had had ulcerations of the skin of the legs. Local treatment for the ulcers and the administration of iron, liver extract and whole blood had not brought about any improvement in the ulcers or the general health of the 3 patients. In smears of specimens of blood from all 3 patients similar changes characteristic of Mediterranean disease, better known as Cooley's anemia, (familial erythroblastic anemia) were seen. These changes consisted of a great variation in the size and shape of erythrocytes, with many microcytes but no spherocytes. Hypochromasia and polychromatophilia were well defined, and normoblasts were present. Target cells were seen in all smears, but they were not conspicuous. The diagnosis of Mediterranean disease was made on the basis of familial anemia, increased resistance of the erythrocytes to hemolysis in hypotonic solution of sodium chloride, exceedingly active normoblastic erythropoiesis, and the failure of the anemia to respond to therapy. No other cause for the anemia could be found. Sickle cell anemia was eliminated by the absence of sickling, and congenital hemolytic icterus, had it been present, should have produced sperocytosis and increased fragility of the erythrocytes. Cutaneous ulceration of the legs of patients with Cooley's or Mediterranean anemia has not been described before. The observed cases prove the existence of this symptom. Such ulceration cannot be distinguished grossly from that occurring in sickle cell anemia and congenital hemolytic icterus. The outstanding histologic feature noted at biopsy of one of these ulcers is the prominent deposition of iron in the cutis. The authors conclude that the chronic ulcer on the leg of an anemic patient is not pathognomonic of a specific type of anemia. The exact character of the anemia must be determined by appropriate clinical and hematologic study.

California Medicine, San Francisco

68:121-254 (March) 1948

Cardiac Calcifications, Annular and Valvular (Leaflet). C.E. Grayson. -p. 121.
Roentgen Cardiac Kymography: Electrocardiographic Correlation. S.F. Thomas and L.H. Garland. -p. 126.
*Major Trigeminal Neuralgia: Analysis of 245 Cases. E.W. Davis and H.C. Naffziger. -p. 130.
Relationship of Health Officer and Practicing Physician to Planning of Smaller Hospital and Health Center Facilities in California. P.K. Gilman. -p. 135.
Tularean Looks at Tularemia. R.W. Rosson. -p. 137.
*Treatment of Epilepsy with Methylphenylethyl Hydantoin (Mesantoin). R.R. Aird. -p. 141.
Acute Puerperal Mastitis: Review. W.G. Leary Jr. -p. 147.
Emotional Factors in Obstetric Practice. P.A. Reynolds. -p. 151.
Choreiform Syndrome: Its Significance in Children's Behavior Problems. A.R. Timme. -p. 154.
Clinical Significance of Chronic Parametritis. C.F. Fluhmann. -p. 159.

Major Trigeminal Neuralgia.—Davis and Naffziger say that major trigeminal neuralgia has been recognized as a clinical entity since Fothergill's classic description in 1776. They review 245 cases that have been observed at their hospital. The highest incidence was observed in patients aged between 50 and 60 years. The average duration of symptoms was around seven years. There was a sudden onset of jabbing, cutting, burning, lightning-like or electric-shocklike pain which radiated over one or more divisions of the trigeminal nerve. The radiation was to the peripheral distribution. The pain stopped as suddenly as it began. There were several patients who noted a peculiar prickling, burning, throbbing sensation for days or weeks prior to the first sharp pain. Treatment was primarily surgical. Alcohol was injected in 175 cases. Many patients had multiple injections. The longest period of relief following an injection of alcohol was seven years. The average duration of relief was from six to fourteen months. Neurectomies were performed in 50 patients. These were mainly supraorbital, infraorbital and inferior alveolar neurectomies. The period of relief averaged the same as with alcohol injection. Sensory root sections were done in 179 patients. In most of these either alcohol injection or neurectomy had been performed previously. If the pain is completely relieved by alcohol injection, the diagnosis is established and sensory root section can be carried out with confidence that the pain will be permanently relieved. The anesthesia produced by the injection also serves to accustom the patient to the permanent anesthesia produced by root section. Some patients who were poor operative risks have been kept in comfort by repeated alcohol injections over a period of years. It is believed that the procedure of choice is a differential section of the sensory root with sparing of the motor root.

Treatment of Epilepsy.—Aird reports observations on 75 patients in whom methylphenylethyl hydantoin ("mesantoin") was used. The sodium salt of diphenylhydantoin had proved ineffective or toxic. Other anticonvulsive agents used with "mesantoin" were given in the same optimal doses and combinations that had been worked out prior to the addition of the new agent. Toxic symptoms appeared in 7 patients and the hydantoin derivative produced no appreciable benefit in an additional 8 patients. Eighty per cent of grand mal seizures were improved, 78 per cent of jacksonian seizures were helped and 79 per cent of psychomotor seizures were benefited. Sixteen patients with petit mal appeared to derive some benefit, but the improvement was great in only 7 of these. The limited results on petit mal forbid any final evaluation of the hydantoin derivative against this type of seizure. These results are comparable with those obtained in other studies on this new anticonvulsive agent. The great value of the drug in convulsive states other than petit mal and its relatively low toxicity suggest that it will prove a valuable substitute for "dilantin." Although of low toxicity if used cautiously, "mesantoin" may be associated with alarming toxic symptoms. One fatal case of aplastic anemia occurred in this group.

Connecticut State Medical Journal, Hartford

12:193-288 (March) 1948

Problems in Thoracic Surgery as Seen in General Hospital. R.S. Lampson. -p. 195.
Procedures for Reducing Maternal Mortality. J.H. Howard. -p. 201.
Observations on Management of Cancer in Connecticut. E.J. Ottenheimer. -p. 211.
Teratoma of Ovary, Removal with Subsequent Pregnancy. L.S. Ward and R.T. Henkle. -p. 215.
Dermoid Cyst of Bridge of Nose. A.J. Ryan. -p. 218.
Local Public Health Practice in Connecticut Today. J.A. Dolce. -p. 222.
New Horizons for Old Age. T.G. Klumpp. -p. 224.

Endocrinology, Springfield, Ill.

42:77-152 (Feb.) 1948

Metabolism of Steroid Hormones. R.I. Dorfman, Ethelreda Ross and R.A. Shipley. -p. 77.
Studies on Bioassay of Hormones. R.I. Dorfman and Adeline S. Dorfman. -p. 85.

Accumulation of Radioactive Iodide by Thyroid Gland in Normal and Thyrotoxic Subjects and Effect of Thiocyanate on Its Discharge. M.M. Stanley and E.B. Astwood. -p. 107.
Spiral Arteries in Human Ovary. B. Delson, S. Lubin and S.R.M. Reynolds. -p. 124.
Role of Steroid Hormones in Relaxation of Symphysis Pubis of Guinea Pig. M. X. Zarrow. -p. 129.
Influence of Mixtures of Androsterone and Dehydroisoandrosterone on Biologic Response. R. C. Grauer, W. F. Starkey and Eleanor Saier. -p. 141.

Geriatrics, Minneapolis

3:1-66 (Jan.-Feb.) 1948. Partial Index

Accident Hazards of Old Age: Physician's Role in Program of Prevention. F. D. Zeman. -p. 15.
•Thrombosis-Embolism Problem Associated with Hip Fractures in Aged. H. F. Bishop. -p. 25.
Further Studies on Electrocardiographic Changes in Old Age. T. T. Fox, J. C. Weaver and R. L. Francis.-p.35.

3:67-134 (March-April) 1948. Partial Index

Gynecologic Surgery in Elderly Woman. A.F. Lash. -p. 67.
Progress in Solution of Cancer Problem. W. S. Bainbridge. -p. 72.
Treatment of Trauma in Aged. I. E. Siris and J. H. Mulholland. -p. 79.
Geriatrics and General Practitioner. H. Seidel. -p. 89.
Personality Adjustment Following Hospital Treatment in Patients with Involutional Psychosis, Melancholia. H. E. Clow. p. 94.

Thrombosis-Embolism Problem in Hip Fractures.—Bishop presents the case of a woman, aged 76, who died during manipulation of a hip that had been fractured for eighteen days. Thrombosis had not been suspected. Since this is a common type of fracture in the aged, and since many such patients are not manipulated or operated on for several days or weeks following time of injury, it was thought that perhaps other similar types of death might be explained on the basis of thrombosis and embolism. A search for similar cases has been maintained by careful scrutiny of the literature and close questioning of orthopedic, geriatric and anesthetist physicians. A total of 17 cases has been collected in which death occurred from pulmonary embolism during or shortly following operative procedures on fractured femurs. Necropsies substantiated this diagnosis in 14 cases of this series. The embolus was fat in 3 instances. Death was sudden and occurred during operation (without forewarning) in 11 of the 17. The ages of the patients in this series ranged from 35 to 86 years. The author points out that a relation exists between the elderly patient confined to bed with a hip fracture and thromboembolic disease and that the longer operative treatment is delayed following injury, the greater will be the possibility for thrombosis to develop in the fractured extremity. If the fracture is old, preventive measures should be instituted prior to surgical procedures. These might include the use of anticoagulants, venous ligation or mobilization of the patient. A plea is made for early ambulation in all elderly patients suffering from fracture of the hip. Rest in bed should be considered unphysiologic in the management of hip fractures in the aged.

Journal of Aviation Medicine, St. Paul

19: 1-60 (Feb.) 1948

Development of Aircraft Oxygen Equipment by USAF. F. W. Berner and D. R. Good. -p. 2.
Nominating Technic as Method of Evaluating Air Group Morale. J. G. Jenkins. -p. 12.
Psychologic Research at AAF School of Aviation Medicine. M. Roff. -p. 20.
•Of What Importance are Psychological Factors in Motion Sickness? G. R. Wendt. -p. 24.
Training for Voice Communication at High Altitudes. J. W. Black. -p. 34.
Human Tolerance to Negative Acceleration of Short Duration. R. S. Shaw. -p. 39.
Application of Human Engineering to Flight Problems. L. C. Mead. -p. 45.
Aero Medical Program in Army Air Forces. M. C. Grow. -p. 52.
Distance Discrimination. VI. Relationship of Visual Acuity to Distance Discrimination. M. J. Hirsch and F. W. Weymouth. -p. 56.

Psychologic Factors in Motion Sickness.—Wendt states that the character of the motion, the posture of the head and the physiologic state are major determiners of motion sickness rates. The Army and Navy personnel who were the subjects of these experiments did not get sick, even though psychologic factors were present, unless the combination of physical and physiologic factors was appropriate. Although psychologic factors are operative, physical and physiologic factors outweigh them in practical importance. The view that airsickness is " all psychologic " is a defeatist position. In practice, psychologic preventive measures are sometimes a failure. Such procedures should be used, but fewer miracles are to be expected of them than from manipulation of the physics and physiology of the situation. After citing several psychologic factors that would help in overcoming motion sickness, the author stresses the importance of a better understanding of the kinds of motion that produce sickness, followed by changes in design and operating procedures, a better understanding of the role of posture, followed by routine adoption of favorable postures when the motion becomes unfavorable, and better understanding of the physiology of motion sickness so that prophylactic drugs may be studied.

Journal of Bacteriology, Baltimore

55: 287-450 (March) 1948. Partial Index

International Bacteriologic Code of Nomenclature. R. E. Buchanan, R. St. John-Brooks and R. S. Breed. -p. 287.
Demonstration of Phosphatases and Lipase in Bacteria and True Fungi by Staining Methods and Effect of Penicillin on Phosphatase Activity. M. Bayliss, D. Glick and R. A. Siem. -p. 307.
Production of Streptomycin by *Streptomyces Bikiniensis.* D. B. Johnstone and S. A. Waksman. -p. 317.
Physiologic Studies on Spore Germination, with Special Reference to Clostridium Botulinum. III. Carbon Dioxide and Germination, with Note on Carbon Dioxide and Aerobic Spores. E. S. Wynne and J. W. Foster. -p. 331.
•Relative Antisyphilitic Activity of Penicillins F, G, K, and X and of Bacitracin, Based on Amounts Required to Abort Early Syphilitic Infections in Rabbits. H. Eagle and R. Fleischman. -p. 341.
Action of Bacitracin and Subtilin on Treponema Pallidum in Vitro and in Vivo. H. Eagle, Arlyne D. Musselman and R. Fleischman. -p. 347.
Antigenic Structure of Bacterial Spore. Beatrice W. Doak and C. Lamanna. -p. 373.
Studies on Effect of Immune Reactions on Metabolism of Bacteria: 1. Methods and Results with Eberthella Typhosa. M. G. Sevag and Ruth E. Miller. -p. 381.
Serologic and Biologic Characteristics and Penicillin Resistance of Nonhemolytic Streptococci Isolated from Subacute Bacterial Endocarditis. S. S. Schneierson. -p. 393.
Some Properties of Antibiotic Obtained from Species of Streptomyces. D. Gottlieb, P. K. Bhattacharyya, H. W. Anderson and H. E. Carter. -p. 409.
Factors Affecting Production of Tetanus Toxin: Temperature. J. H. Mueller and Pauline A. Miller. -p. 421.

Antisyphilitic Activity of Penicillins F, G, K and X and of Bacitracin.—Eagle and Fleischman inoculated rabbits intradermally with Treponema pallidum, and treated them four days later with intramuscular injections of the various penicillins or bacitracin, repeated once daily for four days. The doses of penicillins F, G, K and X and of bacitracin that aborted infection in half the animals were, respectively, 3.5, 0.3, 2.6 and 2.2 mg. per kilogram of body weight and 90 units per kilogram. The absolute and relative activities of the various penicillins and bacitracin varied widely according to the method of assay. Penicillin G was by far the most effectively antisyphilitic of the compounds tested.

Journal of Bone and Joint Surgery, Boston

30B: 1-228 (Feb.) 1948

Recurring Dislocation of Shoulder. W.E. Gallie and A. B. Le Mesurier. -p. 9.
Habitual Dislocation of Shoulder: Putti-Platt Operation. H. Osmond-Clarke. -p. 19.
Recurrent Dislocation of Shoulder. J. C. Adams. -p. 25.
Recurrent Dislocation of Shoulder· Lesions Discovered in 17 Cases, Surgery Employed, and Intermediate Report on Results. A. L. Eyre-Brook. -p. 39.
Note on Recurrent Dislocation of Shoulder Joint: Superior Approach Causing Only Failure in 52 Operations for Repair of Labrum and Capsule. R. Watson-Jones. -p. 49.
Bone Block Method for Recurrent Dislocation of Shoulder Joint. I. Palmer and A. Widén. -p. 53.
•Evolution of Mold Arthroplasty of Hip Joint. M. N. Smith-Petersen. -p. 59.
•Postoperative Study of "Vitallium" Mold Arthroplasty of Hip Joint. W. A. Law. -p. 75.
Plantar Digital Neuritis. Morton's Metatarsalgia. K. I. Nissen. -p. 84.
Arthrodesis in Tuberculosis of Hip Joint. Analysis of 59 Cases. J. Dobson. -p. 95.
Behavior of Penicillin in Synovial Cavities. G. B. Jones. -p. 105.
•Hematogenous Osteitis in Children: Preliminary Report on Treatment with Penicillin. W.M. Dennison. -p. 119.

Mold Arthroplasty of Hip Joint.—Smith-Petersen says that a benign reaction to an inert foreign body (glass) gave rise to the thought that here was a process of repair which might be applied to arthroplasty. A mold of some inert material, interposed between the newly shaped surfaces of the head of the femur and the acetabulum, would guide nature's repair so that defects would be eliminated. The original glass molds were abandoned because of easy breakage, and the use of other materials was discontinued because of foreign body reaction. In 1938 the first "vitallium" mold arthroplasty was performed, and since then over 500 hips have been operated on by this method at the Massachusetts General Hospital. The fact that this operation has been performed on such an extensive scale is evidence that the results have been satisfactory. Malum coxae senilis, rheumatoid arthritis, complications of fractured hips, old septic hips, congenital dislocations and practically all conditions to which the hip joint is subject were treated by this operative procedure. Fifty-three patients have been subjected to revisions of the first arthroplasty. Calcification of the rectus tendon made some of the revisions necessary. Furthermore, the need for a relatively large acetabulum was not fully appreciated at first. Many patients with rheumatoid arthritis have undergone operation a second time because of a decreasing range of movement. Sepsis has been responsible for a small number of revisions. There has been no operative mortality in these 500 arthroplasties.

Postoperative Study of Mold Arthroplasty.—Law carried out a detailed study of "vitallium" mold arthroplasty of the hip joint. In this series of 150 cases of arthritis of the hip joint treated by "vitallium" mold arthroplasty (182 arthroplasties), 80 per cent of late results are satisfactory. Striking features are the relative painlessness, smooth movement of the hip joint, formation of the joint lines as seen radiographically in the postoperative period. Function of the hip joint after arthroplasty for traumatic and degenerative arthritis approaches the normal much more closely than in cases of infective and rheumatoid arthritis. There is a complete absence of low back symptoms or postural difficulties, and there is no difficulty in preventing stiffness of the knee joint. Different technical procedures are indicated according to the degree of absorption of the femoral head or neck, and the stability of the mold in the acetabulum. The operative mortality rate in this series was nil, and during the six year follow-up period only 1 patient died as the result of a complication of the arthroplasty. Secondary operative revisions are often necessary, particularly in cases of infective and rheumatoid arthritis.

Penicillin in Hematogenous Osteitis in Children.—Dennison says that during the first eighteen months in which penicillin was available in the Glasgow Royal Hospital for Sick Children, 56 patients with osteitis were treated in one surgical unit. Of these, 30 patients had severe toxemia; in 9 the bone lesion was the outstanding feature and toxemia was slight; the remaining 17 were admitted for the treatment of chronic pyogenic bone infection. The term osteitis is used as meaning acute or chronic infection of bone tissue; it includes the conditions known as osteomyelitis and periostitis. The affected part was immobilized until radiographic examination showed sound consolidation, that is, for periods of from two to eight months. During the first twelve months, penicillin was given by continuous intramuscular drip for ten to fourteen days. Subsequently, owing to difficulties with drip infusions, the author reverted to intermittent intramuscular injection. Administration of penicillin was continued for twenty-one days, or until the marrow culture was reported sterile, and the total dose varied from 1.1 to 8.4 mega (million) units according to age. If pus was present in soft tissues when the patient was admitted, general penicillin administration was started and the limb was immobilized. Pus was evacuated within twelve hours by aspiration or incision. Each morning aspiration through the indwelling tube was attempted and the fluid was sent for culture and penicillin assay; 100,000 units were again instilled. If there was no evidence of pus formation in the soft tissues the limb was immobilized and general penicillin therapy was instituted. If, pain, tenderness and signs of toxemia were not relieved within forty-eight hours, operative treatment was undertaken in order to reduce the tension of pus under the periosteum. Increasing swelling, tenderness or erythema was obvious indication for surgical intervention. Bone drilling was performed in 6 instances--always with dramatic relief from pain. Sequestrum formation requiring surgical intervention occurred in 6 cases. All wounds remained healed after primary suture. There were no deaths, pathologic fractures or ankylosed joints in the patients with acute osteitis. The average hospital stay was thirty-two days.

Journal of Experimental Medicine, New York

87: 175-258 (March) 1948. Partial Index

Effect of Enzyme Inhibitors and Activators on Multiplication of Typhus Rickettsiae: III. Correlation of Effects of PABA and KCN with Oxygen Consumption in Embroynate Eggs. D. Greiff and H. Pinkerton. -p. 175.
Studies on Proteolytic Enzyme in Human Plasma. O. D. Ratnoff. -p. 199.
Proteins in Unheated Culture Filtrates of Human Tubercle Bacilli. Ellen B. Bevilacqua and Janet R. McCarter.-p. 229.

Journal of Investigative Dermatology, Baltimore

10:91-224 (March) 1948

Foolproof Radium Technic for Treatment of Hemangiomas. G. C. Andrews. -p. 95.
Allescheria Boydii, Causative Agent in Case of Meningitis. Rhoda W. Benham and Lucille K. Georg. -p. 99.
Local Treatment of Tinea Capitis Due to M. Audouini: Importance of Inflammatory Reaction as Index of Curability. J. P. Scully, C. S. Livingood and D. M. Pillsbury. -p. 111.
Studies on Effect of Thallium Poisoning of Rat. Influence of Cystine and Methionine on Alopecia and Survival Periods. P. Gross, Edith Runne and J. W. Wilson. -p. 119.
Mycosis Fungoides: Report of 2 Unusual Cases with Autopsy Findings. C. F. Post and C. S. Lincoln. -p. 135.
Mycetoma-Like Chromoblastomycosis Affecting the Hand: Further Findings and Comparative Mycologic Studies. G. M. Lewis, Mary E. Hopper, W. Sachs and others. -p. 155.
Penicillin Treatment of Neurosyphilis: Study of 45 Cases That Had Previously Received Chemotherapy. L. P. Barker. -p. 169.
•Local Use of Bacitracin. J. L. Miller, M. H. Slatkin and Balbina A. Johnson. -p. 179.
Hamartoma of Skin: Case Report. S. C. Way. -p. 189.
Cutaneous Complications of Mass Vaccination in New York City, 1947. Helen Ollendorff Curth, W. Curth and J. Garb. -p. 197.
Polymorphic Prurigo. Psychosomatic Study of 3 Cases. E. Schneider and Beatrice Kesten. -p. 205.
Nodular Nonsuppurative Panniculitis Complicating Diabetes Mellitus. G. F. Machacek. -p. 215.

Local Use of Bacitracin.—Miller and his coworkers report the clinical results and the bacteriologic data in a study of 165 patients treated with bacitracin in an ointment base They found that bacitracin ointment, 480 units per gram, is an effective agent against superficial pyogenic infections. In impetigo the median time of cure with bacitracin ointment of eight days compares favorably with six days when penicillin or sulfonamide ointments were used. The bacitracin ointment caused a contact type of dermatitis in less than 1 per cent of cases. Patch tests after treatment, even at sites of former dermatitis, were all negative. The effectiveness and low sensitizing potential of bacitracin suggest its trial against infectious eczematoid dermatitis, folliculitis, vesiculopustular eruptions of the hands, and in the secondary infections accompanying many dermatoses. In general, organisms known to be sensitive to penicillin were found to be sensitive to bacitracin.

Journal-Lancet, Minneapolis

68:43-78 (Feb.) 1948

Cardiac Emergencies and Their Treatment. M. Barron. -p. 43.
Report of Influenza Type A Epidemic. G. X. Trimble. -p. 50.
•Histamine Antagonists in Treatment of Allergy. L. H. Criep. -p. 55.
•Metrazol Therapy in Barbiturate Poisoning Case Report. O. J. Engstrand and W. W. Hruza. -p. 59.
Allergic Carditis, Pericarditis and Pleurisy: Report of Case of Serum Sickness with Predominant Cardiac Manifestations and Symptomatic Recovery. Preliminary Report. C. A. McKinlay. -p. 61.

Histamine Antagonists in Allergy.—Based on the concept that allergic symptoms are due to histamine action, attempts have been made to treat the allergic patient with various histamine antagonists. Criep says that "hapamine," histaminase, "anthallan" (a benzofuran derivative) and histamine itself are of little value. "Benadryl," "pyribenzamine," Nu 1504 ("thephorin") and "thenylene" have proved useful only in the symptomatic treatment of certain allergic disorders. These are acute and chronic urticaria, the urticarial lesions of serum sickness, insulin and drug allergy, the pruritus of atopic dermatitis, seasonal hay fever and allergic rhinitis. The side actions evoked by these drugs limit their scope of usefulness. Some of their effect may be due to their sedative action. They do not prevent or alleviate the development of asthma in pollen-sensitive patients.

'Metrazol" for Barbiturate Poisoning.—Engstrand and Hruza report the case of a woman, aged 41, who had taken 30 to 35 tablets of phenobarbital, or about 52 grains (3.36 Gm.), with suicidal intention. She was hospitalized in deep coma about forty-five minutes after she had taken the tablets. The stomach was immediately lavaged with 2 quarts (2,000 cc.) of isotonic solution of sodium chloride, and magnesium sulfate was instilled. She was given apomorphine without effect. Picrotoxin was administered at the rate of 1 mg. per minute with a total dose of 45 mg. Improvement in the rate and depth of the respirations and in the color of the patient resulted, but the reflexes remained absent. An ampule of 25 per cent solution of nikethamide was also given without apparent effect. The patient remained comatose. Evidence of pulmonary edema with frothing at the mouth was noted. Oxygen by nasal catheter and various supportive measures were continued for many hours, but she remained comatose and cyanotic. "Metrazol" (pentamethylenetetrazol) 5 cc. was injected intravenously and repeated fifteen minutes later. This resulted in some improvement in respiration. Subsequently more of the drug was given, a total of 80 cc. in divided doses being administered over a period of eighteen hours. The patient recovered and six months later was gainfully employed.

Journal of Nat. Cancer Inst., Washington, D.C.

8:91-160 (Dec.) 1947. Partial Index

Evaluation of Carcinogenicity of a Series of Esters of Carbamic Acid. C. D. Larsen. -p. 99.
Use of Perforated Cellophane for Growth of Cells in Tissue Culture. Virginia J. Evans and W. R. Earle. -p. 103.
Inhibition of Estrogen-Induced Tissue Growth with Progesterone. R. Hertz, C. D. Larsen and W. Tullner. -p. 123.
Thiamine Deficiency and Thiamine Requirements in C3H Mice. H. P. Morris and Celia S. Dubnik. -p. 127.

Journal of Pediatrics, St. Louis

32:113-226 (Feb.) 1948

New Technic for Replacement Transfusion in Treatment of Hemolytic Disease of Newborn Infant. D. P. Arnold and K. M. Alford. -p. 113.
Prophylaxis of Upper Respiratory Infections in Children Treated with Oral Penicillin. J. H. Lapin. -p. 119.
Substitute for Skeletal Age (Todd) for Clinical Use: Red Graph Method. S. I. Pyle, A. W. Mann, S. Dreizen and others. -p. 125.
Red Graph and Wetzel Grid as Methods of Determining Symmetry of Status and Progress During Growth. A. W. Mann, S. Dreizen, S. I. Pyle and T. D. Spies. -p. 137.
Do Erythroblastotic Newborn Infants Destroy Rh-Negative Red Blood Cells? E. L. Kendig Jr. -p. 151.
Natural Incidence of Influenza Antibodies in Children of Different Age Groups. P. Cohen and H. Schneck. -p. 154.
Effect of Influenza Virus Vaccination in Infants and Children, with Antibody Studies. P. Cohen and H. Schneck. -p. 161.
•Body Size and Growth Rate of Children with Diabetes Mellitus. Carolyn K. Beal. -p. 170.
Further Studies of Nitrogen and Fat Metabolism in Infants and Children with Fibrosis of Pancreas. A. T. Shohl. -p. 180.
Torsion of Appendix Testis. W. M. Coppridge and L. C. Roberts. -p. 184.
•Megaloblastic Anemia in Infancy. B. J. Siebenthal. -p. 188.
Silver Nitrate Stencil Staining for Identification of Newborn Infants. R. Cohen. -p. 193.

Growth of Children with Diabetes Mellitus.—Beal analyzed the growth records of 200 children under treatment for diabetes mellitus and compared them with the body size and growth rates of normal children. The data for both groups were collected in Iowa between 1928 and 1945. Children who acquire diabetes mellitus are of normal height for age at the time of onset of the disease. The heights of children who were *first examined between six months* and three years after the onset of diabetes mellitus differed from normal height for age by an average of minus 1.1 inches (2.8 cm.); of children first examined more than three years after onset, by an average of minus 3.9 inches (9.9 cm.). These observations demonstrate a relationship between height and the duration of untreated or inadequately treated diabetes. The mean annual gain in weight for diabetic children between the ages of 5 and 7 years was slightly less than the gain for normal children. The mean annual gain for the diabetic children between 7 and 9 years of age was substantially less than for normal children. The diabetic boys were, on the average, 1.9 inches (4.8 cm.) shorter than normal boys at 17 years of age. However, later than normal growth in height enabled them to achieve an average gain of 1.7 inches (4.3 cm.) after 17 years of age. As a result of this gain, their mean adult height was essentially the same as normal adult height. The diabetic girls deviated from normal by an average of ½ inch (1.27 cm.) at 16 years of age and gained an average of 0.6 inch (1.5 cm.) after age 16. Thus, although both sexes were, on the average, shorter than the normal height at the time that growth is usually terminated for the normal child, additional gains led to the attainment of normal adult stature.

Megaloblastic Anemia in Infancy.—According to Siebenthal true pernicious anemia is seldom observed in infants. It differs from other macrocytic anemias, including megaloblastic anemia. This megaloblastic anemia is a temporary deficiency of the antianemic principle. The condition is seen most often in infants between 2 and 16 months of age. The child with megaloblastic anemia exhibits pallor, weakness, irritability, persistent upper respiratory infection and extreme loss of appetite. These infants have a severe normochromic anemia with many macrocytes. The bone marrow shows erythropoiesis to be megaloblastic. The author reports 2 infants with megaloblastic anemia. Both responded favorably to treatment with folic acid. The infant 6 months of age was given 5 mg. of the drug and the infant aged 16 months, 10 mg. orally twice a day. A prompt reticulocyte response was demonstrated, followed by a gradual rise in hemoglobin and red blood cell level. The folic acid therapy was continued for four months in the first infant and only during the thirty days of hospitalization in the second. The further development was satisfactory in both cases. Megaloblastic anemia is a relatively common disease of white infants. A complete and permanent recovery can be effected by folic acid therapy.

Journal of Pharmacology & Exper. Therap., Baltimore

92:207-362 (March) 1948. Partial Index

Streptomycin in Blood: Chemical Determinations After Single and Repeated Intramuscular Injections. G. E. Boxer, Viola C. Jelinek, R. Tompsett and others. -p. 226.
Pharmacologic Studies of d-Tubocurarine and Other Curare Fractions. G. M. Everett. -p. 236.
Pharmacologic Properties of New Antihistaminic, 2-Methyl-9-Phenyl-2,3,4,9-Tetrahydro-1-Pyridindene (Thephorin) and Derivatives. G. Lehmann. -p. 249.
Effect of Ether and Dial-Urethane Anesthesia on Passage of Sulfathiazole into Cerebrospinal Fluid. R. S. Teague and M. Perdue. -p. 277.
Anticonvulsant Action of Isopropyl Alcohol. Nai Chu, R. L. Driver and P. J. Hanzlik. -p. 291.
Goitrogenic Compounds: Pharmacologic and Pathologic Effects. J. Seifter and W. E. Ehrich. -p. 303.
Studies with Tetrazole Derivatives. E. G. Gross and R. M. Featherstone. -p. 323.
Influence of Autonomic Nervous System on Intestinal Absorption of Hypertonic Solution of Glucose. F. Huidobro, R. Valdés and M. Dávila. -p. 336.
Effect of Acidosis and Anoxia on Concentration of Quinacrine and Chloroquine in Blood. J. W. Jailer, C. G. Zubrod, M. Rosenfeld and J. A. Shannon. -p. 345.

Military Surgeon, Washington, D.C.

102:169-250 (March) 1948. Partial Index

Recent Advances in Medical Management of Cirrhosis of Liver. M. Friedman. -p. 169.
Thymol Turbidity Test for Liver Dysfunction. R. C. Dunn. -p. 173.
•Glass Button Operation for Palliative Relief of Ascites. J. D. Lane. -p. 177.
Bacteriologic Comparison of Penicillin and Silver Nitrate for Prophylaxis Against Ophthalmia Neonatorum. H. C. Franklin. -p. 179.
External Skeletal Fixation Used with Ordinary Extension Splints in Treatment of Fractures of Both Bones of Leg. R. L. Waugh. -p. 188.
Haynes Splint Treatment of Fractures of Long Bones. J. B. Spriggs. -p. 191.
Acute Arterial Injuries of Lower Extremity. G. E. Gillespie. -p. 193.
Clinical Use of Streptomycin. L. L. Terry. -p. 198.
•Some Otic Complications of Streptomycin Therapy. F. B. Snell. -p. 202.
Cutler-Guyton Eye Implant and Prosthesis: Two Cases. R. S. Lloyd and R. M. Jones. -p. 205.
Advantages and Disadvantages of Unit Record System for Marine Hospitals. J. L. Wilson. -p. 208.
Pain Pathways in Herniated Nucleus Pulposus Syndrome: Preliminary Report. R. H. English and J. B. Spriggs. -p. 213.
Present Trends in Research in Physical Medicine. S. Mead. -p. 217.
Information for Rheumatic Fever Patient in Military Hospital. S. R. Kelson. -p. 219.

Glass Button Operation in Ascites.—Lane believes that many patients with ascites are in no condition to undergo major surgical procedures. For this reason, the glass button operation has been tried with a certain amount of success. It consists of implanting one or more buttons or spools made of glass in the abdominal wall, so that the ascitic fluid may drain directly into the subcutaneous tissues. The author has used this procedure in 7 cases. Two of these were failures. Three have had fair to moderate results. Three have had excellent results with complete disappearance of edema and ascites; these latter 3 went into positive nitrogen balance as they gained weight without accumulations of fluid. The author admits that the procedure has its faults and does not always work, but it is a minor procedure that can be carried out in patients who are poor surgical risks. It does relieve increased intra-abdominal and intrathoracic pressure. It does allow partial restoration of protein balance.

Otic Complications of Streptomycin Therapy.—According to Snell, complications of streptomycin therapy include vertigo, tinnitus, impaired hearing, blurring of vision, eosinophilia, circumoral pruritus, dermatitis, angioneurotic edema, albuminuria and granular casts in the urine. Vertigo seems to be the most lasting of these complications. Closely associated with this vertigo or dizziness is blurring of vision. The St. Louis Streptomycin Conference held in May 1947, and sponsored by the National Research Council, presented 809 cases which had been treated according to the old regimen, which consists of dosage scale of 2 Gm. of the agent daily for one hundred and twenty days. Of these, 96 per cent showed subjective and objective symptoms of vestibular damage. The damage ranged all the way from those patients who showed only objective symptoms (caloric test) to those who were so affected that the drug was discontinued. As yet no data are available as to the permanence of this damage, but fortunately, the patient seems to recover from deafness in the majority of cases.

New Jersey Medical Society Journal, Trenton

45: 51-100 (Feb.) 1948

Volvulus of Sigmoid Colon: Report of 4 Cases. W. A. Loeb and C. M. Robbins. -p. 54.
Treatment of Coronary Thrombosis. H. C. Crossfield. -p. 58.
Conservative Use of Gastroscope. T. S. Heineken. -p. 61.
Recent Advances in Gynecology. M. H. Weiss. -p. 64.
Histamine Headache. J. L. Witkowski. -p. 69.
Ophthalmology in Pediatric Practice. L. W. Hughes. -p. 71.

45: 101-146 (March) 1948

*Osteoid-Osteoma. R. R. Goldenberg. -p. 104.
Depression Masking Organic Diseases and Organic Diseases Masking Depression. S. A. Sandler. -p. 108.
*Thrombophlebitis Migrans in Carcinoma of Stomach. L. F. Baum, O. S, Baum and J. H. Hermann. -p. 111.
Infantile Paralysis in Newark—1947. C. V. Craster. -p. 113.
Leukemia-Like Reaction to One Dose of Sulfadiazine. L. G. Scott. -p. 115.
Sources and Potencies of Hormones, W. H. Stoner. -p. 116.

Osteoid Osteoma.—Goldenberg says that in the twelve years which have elapsed since Jaffe first described the clinical and pathologic characteristics of a benign tumor which he designated as osteoid-osteoma, 141 cases have been reported. An osteoid-osteoma is usually about a centimeter in diameter. The tumor has been found in almost all bones but is more commonly observed in the lower extremities. The pain, usually mild and intermittent at the time of the onset, may be aggravated by activity. Later the pain becomes constant and increases in intensity. In early cases the roentgen examination discloses a small oval area of rarefaction surrounded by a zone of sclerosis. In 3 of Goldenberg's 4 cases a history of trauma was elicited. Three of the 4 patients were treated surgically, and the symptoms subsided in each of these. The fourth case is incomplete, in that operation was postponed on account of pregnancy. The symptoms in this case had persisted for ten years. Because of the small size of the lesion it is imperative that roentgenograms be available in the operating room for accurate localization and for postoperative assurance that the tumor has been completely excised. The removal of the sclerosed bone does not appear to be necessary as long as the nidus has been removed.

Thrombophlebitis Migrans in Carcinoma of Stomach.—The Baums and Hermann discuss the syndrome of migrating thrombophlebitis in association with carcinoma. Carcinoma of the body or tail of the pancreas is most frequently implicated in this syndrome, but carcinoma of the stomach is sometimes the etiologic factor. A case of carcinoma of the stomach with symptoms of migrating thrombophlebitis and few gastrointestinal complaints is reported. Because of anemia and migrating thrombophlebitis, a presumptive diagnosis of carcinoma of the body or tail of the pancreas was made, and an exploratory laparotomy was performed. A carcinoma of the stomach was found on the lesser curvature near the cardia with metastases to the regional lymph nodes and the left lobe of the liver. The patient had an uneventful postoperative course. At home his course was slowly downhill with gradual emaciation and episodes of thrombophlebitis involving the left femoral and left subclavian veins. Terminally a cord bladder was noted, due either to metastatic involvement or possibly to thrombosis of spinal cord veins.

Ohio State Medical Journal, Columbus

44: 225-328 (March) 1948

New Anticonvulsant Drugs in Treatment of Epilepsy. H. D. Fabing and J. R. Hawkins. -p. 257.
Medical Aspects of Juvenile Delinquency. W. F. Schneider. -p. 260.
Present-Day Concepts of Rheumatic Fever. A. T. Martin. -p. 265.
Soils and Health. P. B. Sears. -p. 269.
Surgical Conditions of Infancy. D. M. Glover. -p. 272.
Chemotherapy in Infants and Children: II. Penicillin. J. G. Kramer. -p. 277.
Squamous Cell Carcinoma Following Prolonged Use of Arsenic: Case Report. J. W. Robertson and K. W. Clement. -p. 280.

Rocky Mountain Medical Journal, Denver

45:97-184 (Feb.) 1948

Care of Patient with Terminal Cancer. H. J. Morgan. -p. 116.
Analysis of 4,000 Operations for Gallbladder and Biliary Duct Disease. C. G. Heyd. -p. 119.
Treatment of Psychosomatic Conditions: Psychosomatic Concept. O. S. English. -p. 123.
Endocrine Problems in Adolescence. H. H. Gordon. -p. 127.
*Protein Nutrition and Conservation. Gladys Kinsman. -p. 133.
"Catch" in Sickness Insurance. F. B. Exner. -p. 135.

Protein Nutrition and Conservation.—Kinsman points out that proteins are unique among the three classes of food substances (carbohydrates, fats and proteins) because they alone contain the most important raw materials, the amino acids out of which the complex tissues of the body are constructed. Since only protein can furnish amino acids for the building of body tissues, it is obvious that the protein requirement is greatest when new tissues or secretions are being formed, i.e., during the growth period and during pregnancy and lactation. The normal adult, man or woman, requires for optimal health only slightly more protein than is sufficient to replace the body and plasma proteins that are being broken down in tissue metabolism. In infancy and childhood protein requirements are much higher in relation to body weight. When protein is used for energy it yields approximately the same number of calories per unit of weight as does carbohydrate. When protein-containing foods are scarce, it is obviously unsound practice to use protein for energy. It might be more economical to obtain sufficient calories from carbohydrates and fats to meet the energy requirements of the body. The protein, supplied in an amount sufficient to meet the specific protein requirement, is then available for the repair and building of body tissues. If enough calories from carbohydrate and fat sources are not provided in the diet, the ingested amino acids will be used for energy.

Southern Surgeon, Atlanta

14:61-164 (Feb.) 1948

Venous Thrombosis of the Extremities. D.C. Elkin.—p. 61.
*Sympathectomy in Treatment of Thromboangiitis Obliterans F.W. Cooper Jr. and M.H. Harris.—p. 70
Diverticula of the Colon. J.D. Martin Jr. and R.S. Caudle.—p. 82.

Carcinoma of the Breast. H.L. Brown, J.E. Scarborough and M.H. Davis.—p. 94.
Modern Methods of Diagnosis and Treatment of Mediastinal Masses. O.A. Abbott.—p. 101.
Spinal Cord Tumors and Similarity of Their Symptoms to Those of Other More Common Diseases. E.F. Fincher and H.S. Swanson.—p. 111.
Posterior Tibial Nerve Injuries. W.C. Ward.—p. 124.
Place of Colostomy in Present Day Surgery. D.H. Poer.—p. 130.
Transverse Abdominal Incisions. W.G. Whitaker Jr.—p. 143.
Surgical Treatment of Growth Deformities of Mandible. F.F. Kanthak and W.G. Hamm.—p. 147.
Fractures of Radial Head Associated with Chip Fracture of Capitellum in Adults, Surgical Considerations. P.L. Rieth.—p. 154.

Sympathectomy in Thromboangiitis Obliterans.—Cooper and Harris performed 186 sympathectomies on 113 men between the ages of 20 and 46 who had thromboangiitis obliterans. The duration of symptoms varied from one month to thirteen years. Both lower extremities were involved in 62 patients, one lower extremity in 45, one lower extremity and one upper extremity in 2, both lower and upper extremities in 4. Spinal anesthesia vasomotor tests to demonstrate the proportion and the pattern of organic and functional spastic elements of the disease in a given patient were performed before surgical intervention. All patients showed a rise in temperature of the feet during the test, the magnitude depending on the degree of vasospasm as well as the extent of development of collateral channels in the extremity. No instances of drop in skin surface temperature were encountered. Sympathectomies were performed on all patients who had ulcerations or gangrene. Bilateral lumbar sympathectomies were performed on all patients showing advanced arterial change in one lower extremity, even though only slight change was present in the opposite extremity. Division of the rami communicantes to the second and third dorsal ganglions and division of the chain below the third ganglion were performed for all operations on the upper extremities. All patients were admonished to abstain completely from the use of tobacco in any form. Additional therapy consisted of whiskey in small amounts four times daily and local care of the ulcers or gangrenous areas. After sympathectomy there was immediate relief of the unbearable aching and burning. The pain which persisted was described as a slight burning sensation which did not interfere with sleep and which was easily controlled by mild sedatives. Edema of the foot rapidly subsided. Healing of the wounds was rapid. In no instance was there a progression of gangrene following operation if the patient had stopped smoking. All patients appreciated the warmth of the extremities and the increased tolerance for cold. Major amputations were obviated in all patients except 3 in whom gangrene of a large portion of the foot had developed prior to sympathectomy. Sympathectomy is the treatment of choice in thromboangiitis obliterans.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

56:65-126 (Feb.) 1948

Present Day Trends in Thyroid Research. J. H. Means. -p. 65.
Evaluation of Newer Methods of Treatment of Thyrotoxicosis. R. H. Williams. -p. 72.
Evaluation of Routine Exposure of Recurrent Nerves During Thyroid Operations. R. B. Cattell. -p. 77.
Functional Activity of Thyroid Tumors, Benign and Malignant, as Gauged by Their Collection of Radioactive Iodine. R. W. Rawson, Janet W. McArthur, B. M. Dobyns and others. -p. 82.
•Clinical Significance of Solitary Nodule in Thyroid Gland. M. H. Soley, S. Lindsay and M. E. Dailey. -p. 96.
Amputations. H. C. Blair and H. D. Morris. -p. 105.
Carcinoma of Colon. Comparative Study of Private and Charity Patients. T. M. Joyce. -p. 110.
Infertility Associated with Masculinizing and Feminizing Syndromes. S. J. Glass. -p. 116.
What Do We Know About Sterility? L. W. Mason. -p. 119.

Solitary Nodule in Thyroid.—According to Soley, Lindsay and Dailey, the single nodule in the thyroid is regarded by some as of the same significance as a nodule in the breast. It arouses suspicion because of the possibility of cancer. At the thyroid clinic of the University of California Hospital 96 patients with solitary thyroid nodules were seen between 1935 and 1944. Pathologic studies of the nodules showed 38 to be involutionary, 21 to be adenomas and 15 to be malignant neoplasms. In addition, 18 could not be classified as either involutional or neoplastic in origin. Rapidity of growth, coincidental appearance of goiter and symptoms, residence in an endemic goiter region, a family history of goiter, age, clinical history suggesting hemorrhage into a nodule, pressure symptoms and texture of the nodule were not as helpful as might be expected in the clinical differentiation of involutionary from neoplastic nodules. The singleness of the nodule is the most important factor. A solitary nodule in the thyroid should be radically resected.

Yale Journal of Biology and Medicine, New Haven

20:225-320 (Jan.) 1948

Trypanocidal Effect of Antibiotic Lactones and of Their Analogs. B. A. Rubin. -p. 233.
Arteriography in Cases of Aneurysm and Arteriovenous Fistula with Review of Literature Concerning Choice of Solution. H. B. Shumacker Jr. and Anne F. Godley. -p. 273.
•Method for Obtaining Bone Marrow by Vertebral Spinous Process Puncture. J. H. Huss, J. Gilbert and A. A. Liebow. -p. 291.
Immunochemistry of Mouse Tissue Components: I. Comparative Antigenic Composition of Normal Mouse Tissues. Esther S. Maculla. -p. 299.

Obtaining Bone Marrow from Vertebral Spinous Process.—Huss and his co-workers found that a method for obtaining marrow from the vertebral spinous process was in use in Japan. This technic had been extensively employed by the hematologist Nakao and his associates of Tokyo Imperial University. Its origin is apparently Japanese. The utility and simplicity of the method are impressive: (1) the patient faces away from the operator and is not disturbed by the sight of the needle; (2) the momentary pain when suction is exerted is less in the spinous process than in the sternum, (3) draping of the field is not necessary; the patient cannot breathe on the operative site, (4) the spinal column offers much more rigid support than does the sternum, (5) the cortical lamina of the spinous process is thinner and easier to penetrate than is the sternum; and (6) vital structures are removed by many centimeters from the point of entrance into the bone. With the sternal method penetration of the sternum has occasionally occurred with mediastinal hemorrhage, and there have been accidents from injury of the internal mammary artery. The authors made a statistical comparison of the differential counts of the sternal and of the vertebral bone marrows on 25 persons, 15 of whom were healthy and 10 were patients. They conclude that marrow comparable to that from the sternum may be obtained, although there is considerable variation in the differential counts, as there is in successive sternal punctures from the same patient. Vertebral puncture has additional value for the detection of tumor cells metastatic from the prostate or other organs.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian and New Zealand J. Surgery, Sydney
17:163-232 (Jan.) 1948

Some Observations on Early Management of Gunshot Wounds of Arteries. D. Leslie. -p. 163.
*Reconstruction of Opposition Digits for Mutilated Hands. B.K. Rank and A.R. Wakefield. -p. 172.
Hirschsprung's Disease. J.A. Jenkins. -p. 189.
Indirect Inguinal Hernia: Contrast Between Sites of Recurrence After Simple and After Plastic Operation. C. Craig. -p. 207.

Reconstruction of Mutilated Hands.—Rank and Wakefield show that in the management of destructive hand injuries, consideration must be given to the possibilities of reconstruction or substitution for parts that are lost. Many of the ingenious and tedious operations that have been carried out on mutilated hands have a rare application; but some have become procedures, to be known and considered by all concerned with hand injury and repair. One such procedure concerns restoration of the "pinch" function to a mutilated hand by plastic reconstruction of an opposition digit or digits. The "pinch", or opposition, function in a normal hand involves essentially the function of a normal thumb. For this three considerations must be satisfied: (1) the thenar muscles must be present and in a functioning state; (2) there must be an adequate length of thumb; (3) there must be present an adequate length of finger or fingers to which the remaining length of thumb can become apposed. Many wounded hands are left without "pinch" function by reason of defects in one or more of these three factors; but provided the first factor is satisfied their "pinch" function can still be restored. A free thumb can be remade or adequately lengthened, or a rigid digit can be made to which the thumb element may be apposed. Discussing the reconstruction of an opposition digit, the author describes: the raising of a tube pedicle; the attachment of the pedicle to the hand; the detachment of the pedicle from the abdomen; the bone graft, and the aftercare.

British Heart Journal, London
9:225-318 (Oct.) 1947

Heart Murmurs. W. Evans. -p. 225.
Repetitive Paroxysmal Tachycardia. J. Parkinson and C. Papp. -p. 241.
Case of Perforated Duodenal Ulcer and Cardiac Infarction. A. W. Branwood. -p. 263.
Paroxysmal Heart Block in Bundle Branch Block. W. Stokes. -p. 267.
First Heart Sound in Auricular and Ventricular Extrasystoles. P. Cossio, R. G. Dambrosi and H. F. Warnford-Thompson. -p. 275.
*Prognosis of Patent Ductus Arteriosus. J. Benn. -p. 293.
*Cardiac Catheterization in Cases of Patent Interauricular Septum, Primary Pulmonary Hypertension, Fallot's Tetralogy and Pulmonary Stenosis. Sheila Howarth, J. McMichael and E. P. Sharpey-Schafer. -p. 292.

Prognosis of Patent Ductus Arteriosus.—Benn reviews observations on 46 cases of patent ductus arteriosus, which he divides into two groups. Group A includes 30, all except 1 of which had been collected from a school cardiac clinic. This probably includes every case of patent ductus arteriosus among the younger people of Bristol, whether they had symptoms or not. Group B consists of 16 cases from areas outside Bristol referred in a few cases from school clinics but often because of symptoms. Thus group A forms a representative sample of the condition while group B approximates more nearly the type of case generally reported. The author gives particular attention to the 30 patients of group A. Here females predominate over males by more than two to one. The absence of bacterial endocarditis in group A suggests very strongly that it is much less common than has been described. Most patients lead a normal life, but many are below average weight. Bacterial endocarditis has become much less dangerous since the discovery of penicillin. Operation with its grave risks hardly seems justified merely for the prevention of the possibility of infection. However, patients cured of bacterial endocarditis appear to be proper subjects for operation as they are probably more liable to, or more exposed to, infection. In 2 cases the classic murmur disappeared without other evidence that the ductus arteriosus had closed. Precordial thrills sometimes vanish with increasing age. The diastolic blood pressure is usually normal. Pulmonary congestion is not so common as has been reported. The average body weight is significantly below normal. Operation is required in only a limited number of cases of patent ductus arteriosus. The following are indications for surgery: bacterial endocarditis, recovered bacterial endocarditis, cardiac embarrassment or poor physique.

Cardiac Catheterization in Patients with Intracardiac Shunts.—Howarth and her associates point out that the development of the technic of cardiac catheterization indicated a method for the detection of intracardiac shunts. They report data on patients that were suspected on clinical grounds of having intracardiac shunts. Samples of blood from the right auricle and right ventricle may be obtained by cardiac catheterization in cases of suspected cardiac shunts. Blood so obtained contains more oxygen than vena cava blood if the shunts is from left to right. Right to left shunts may be detected by a reduced arterial oxygen saturation in the presence of normally functioning lungs. Two of the 5 cases with patent interauricular septum showed a conspicuous increase in right auricular pressure with the shunt still left to right. A case with enlarged pulmonary arteries and a normal arterial oxygen saturation showed no evidence of a shunt and a greatly increased mean right ventricular pressure. A diagnosis of pulmonary hypertension was confirmed at necropsy. A case of Fallot's tetralogy showed an increased mean right ventricular pressure. The data suggested some left to right mixture of blood, although the main shunt was from right to left. A child with enlarged pulmonary arteries showed no evidence of a shunt. Mean right ventricular pressure was greatly increased and a diagnosis of pulmonary stenosis was made. A case of patent ductus arteriosus showed a greatly raised mean pulmonary arterial pressure, a considerably raised right ventricular pressure and highly oxygenated pulmonary arterial blood samples.

British Journal of Experimental Pathology, London
28: 377-448 (Dec.) 1947

Relation Between Serum Protein and Hemoglobin in 324 Indian Soldiers. H. Lehmann. -p. 377.
Development of Anthrax Following Administration of Spores by Inhalation. J. M. Barnes. -p. 385.
Vagaries of Agglutination-Inhibition Reaction with Newly Isolated Strains of Influenza Virus. C.H. Stuart-Harris and M.H. Miller. -p. 394.
Investigation into Production of Antibacterial Substances by Fungi. Preliminary Examination of Eighth 100 Species, all Basidiomycetes. W.H. Wilkins. -p. 416.
Licheniformin, Antibiotic Substance from Bacillus Licheniformis, Active Against Mycobacterium Tuberculosis. R. K. Callow, R. E. Glover, P. D. Hart and G. M. Hills. -p. 418.
Dehydrogenase Activity in Virus Infections. D. J. Bauer. -p. 440.

British Medical Journal, London

1: 333-378 (Feb. 21) 1948

Social Medicine in the Curriculum. J. B. Grant. -p. 333.
•Problem of Chilblains with Note on Their Treatment with Nicotinic Acid. R. J. Gourlay. -p. 336.
Hypothalamus and Pituitary Gland with Special Reference to Posterior Pituitary and Labor. G. W. Harris. -p. 339
Disorders of Nervous System Due to Malnutrition. H. S. Stannus. -p. 342.
Improved Direct Coagulase Test for Rapid Detection of Staphylococcus Aureus. I. Lominski and Erika Grossfield. -p. 343.

Nicotinic Acid in Treatment of Chilblains.--According to Gourlay the usual sites of chilblains are the dorsal aspects of the proximal phalanges of the hand, the plantar aspect of the toes, along the inner border and dorsum of the great toe, and in the region of the heel and achilles tendon. Chilblains may also occur on the ears, but in this site they resemble frostbite rather than a true perniosis. The gross pathology of the chilblain lesion is a vasoconstriction of the subcutaneous arteries and larger arterioles associated with a vasodilation of the superficial minute vessels. Having observed the vasodilator action of nicotinic acid, the author decided to use it in the treatment of the cold congested hands and noses from which so many young children suffer in the winter; the results were dramatic. The basic dose of nicotinic acid administered was for an adult 50 mg. and for a child 25 mg. thrice daily immediately after meals; this tended to reduce the incidence of flushing and caused a prolongation of the vasodilator action of the nicotinic acid. In severe cases the dose was increased, but in no case was it found necessary to give more than 300 mg. a day. Relapse was common when the nicotinic acid was withdrawn. Twenty-seven cases are reviewed. It is suggested that nicotinic acid is the method of choice in general practice owing to its ease of administration and its freedom from serious untoward effects.

Edinburgh Medical Journal

55: 1-64 (Jan.) 1948

Argument on Neural Tumors and Their Allies. W. F. Harvey. -p. 1.
•Psychologic and Social Aspects of Sydenham's Chorea. E.R.C. Walker. -p. 17.
Electro-Shock and Electronarcosis in Treatment of Mental Disorders. A. S. Paterson. -p. 33.
Esophageal Hiatus Hernia. A. W. Branwood. -p. 50.

Psychologic Aspects of Sydenham's Chorea.—Walker believes that the hardening of opinion in favor of a toxic infective theory of Sydenham's chorea which followed on the development of bacteriology, is unjustified. Certain sociologic factors in relation to 131 children treated for chorea in the Royal Aberdeen Hospital for Sick Children between 1930 and 1942 have been considered, and the influence of war conditions on the incidence of the disease in the northeastern part of Scotland. A more thorough and detailed investigation into the life circumstances of 42 of these children revealed that in every instance the child was subjected over a considerable period of time to conditions calculated to induce functional nervous disturbance. These results are shown to be similar to those of recent investigations of the same kind by pediatricians and to support the conclusion reached by many of these investigators that chorea is probably a psychologically determined disease.

Journal of Hygiene, London

45: 397-526 (Dec.) 1947. Partial Index

Morphological Appearances of Various Stages in B. Proteus and Coli. Emmy Klieneberger-Nobel. -p. 410.
Demonstration of Chromatinic Structures in Avian Tubercle Bacilli in Early Stages of Development. E. M. Brieger and C. F. Robinow. -p. 413.
•Note on Effects of Home Duties on Factory Employment of Women: Study of Absenteeism in Group of 144 Voluntary Factory Workers. D. C. Wilson. -p. 431.
Factors Affecting Warmth, Comfort and Stuffiness in Domestic Rooms. K. W. Yarnold. -p. 434.
Account of Health of Nurses at Westminster Hospital from July 1943 to July 1946. E. D. H. Cowen. -p. 443.
Variation, Diurnal and over Longer Periods of Time, in Blood Hemoglobin, Hematocrit, Plasma Protein, Erythrocyte Sedimentation Rate and Blood Chloride. E. T. Renbourn. -p. 455.
Suggested Repellent for Schistosome Cercariae. W. R. G. Atkins. -p. 468.
Epidemic Respiratory Infection in Rural Population with Special Reference to Influenza A Epidemics of 1933, 1936-7 and 1943-4. W. N. Pickles, F. M. Burnet and Norma McArthur. -p. 469.
•Occurrence of Foot and Mouth Disease in Hedgehog Under Natural Conditions. J. D. McLauchlan and W. M. Henderson. -p. 474.

Absenteeism in Women Workers.--Wilson studied factors leading to loss of working time in a group of 144 women factory workers. The majority were single women whose interests centered in their families. One third of these 144 women, owing to disability of some near relative, had home duties which were sufficiently heavy to interfere at times with their factory work; a contributory cause of absenteeism was ill health, ascribed by many workers to cold and draughty working environment. Examination of the factory records showed more than twice the rate of absenteeism due to certified sickness among women with home ties and responsibilities.

Foot and Mouth Disease in Hedgehogs.--McLauchlan and Henderson say that foot and mouth disease was observed in hedgehogs (Erinaceus europaeus) in connection with outbreaks of the disease among farm stock in Norfolk during the summer of 1946. It seemed probable that affected hedgehogs were responsible in some instances for spreading the disease to cattle.

Acta Medica Orientalia, Jerusalem

6: 371-394 (Dec.) 1947

•Antibiotic Bacterial Strains from Human Sources. R. Reitler and J. Boxer. -p. 371.
Clinical Remarks on Hypertension and Unilateral Kidney Disease. J. Kleeberg. -p. 382.
Errors of Refraction and Visual Efficiency. P. H. Boshoff and E. Jokl. -p. 384.

Antibiotic Bacterial Strains from Human Sources.-Reiter and Boxer have isolated three bacterial strains from human sources, which exhibited considerable antibiotic activity. One belongs to the Bacillus brevis group and proved antagonistic mainly to gram-positive organisms. It has been isolated from mesenteric lymph nodes with reticuloendothelial hyperplasia. An extract prepared from the culture was not only antibiotically active but stimulated also the reticuloendothelium in rabbits. Two strains of Pseudomonas fluorescens, predominantly antagonistic against gram-negative organisms were isolated from stools. The administration of living cultures to patients with enteric infections appeared to shorten the disease if the cultures were given after the bacteremic stage had passed but was without effect during this period of the disease

Archiv für Dermatologie und Syphilis, Heidelberg

186: 457-724 (Jan. 3) 1948. Partial Index

Experimental Studies on Epidermal Sensitization: I. Intraepidermal Dissemination of Eczematous Sensitization. K. W. Kalkoff. -p. 493.

*Diagnostic Importance of Eosinophil Blood Count for Detection of Intolerance for Arsphenamine. O. Kleifeld. p. 512.
Erythema Nodosum with Particular Attention to So-Called Symptomatic Forms in Venereal Diseases and After Sulfathiazole. A. Greither. -p. 525.
*Tuberculosis and Syphilis. Hilde Sczuka. -p. 553.
Protective Ferments in Nutritional Allergy. W. Gahlen. p. 580.
Bee Sting as Allergic Disease. G. Ackermann. -p. 596.
Water Sodium Chloride Exchange and Dermatoses. H. Koehler and O. Koenig. p. 669.

Eosinophils in Detection of Intolerance for Arsphenamine.—In investigating the problem whether the eosinophils in the blood are of value in the recognition of an intolerance for arsphenamine, Kleifeld directs attention to considerable margins of error with various methods of counting eosinophils. Clinical observations have revealed that neither immediately after nor during an injection of arsphenamine, alone or combined with bismuth, is there any causal relation to the behavior of the eosinophils. Increases, reductions or stationary eosinophil counts were found to be accidental. Consequently, control of the eosinophilic blood picture is of no value for the early recognition of intolerance for arsphenamine treatment and earlier reports to this effect are erroneous.

Tuberculosis and Syphilis.—Sczuka is concerned with the problem whether in case of concurrence of tuberculosis and syphilis the two processes exert influence one on the other. This problem is of vital importance at present, when, as a result of the war, both diseases are increasing. The author discusses similarities and differences between the two diseases with regard to the morphology, biology and dissemination of their causal organisms. She observed that the new, florid, open and exudative forms of tuberculosis promote the dissemination of the syphilitic organism in the body. Tuberculous processes of the skin and the mucous membranes become superinfected with syphilis. Conversely, secondary syphilis, inadequately treated syphilis and old syphilis with organic and visceral symptoms, such as tabes or paralysis, predispose a patient to the acquisition and dissemination of tuberculosis. The author proves this on the basis of literature reports and of 4 cases observed at a hospital in Hannover and presented in this report.

Maandschrift voor Kindergeneeskunde, Leyden

15:403-434 (Dec.) 1947

*Epidemic of Meningomyeloencephalitis After Vaccination Against Smallpox. J.L. Keyzer and P.P.M. Nieuwenhuis. -p. 403.
Congenital Atresia of Esophagus. J. Ten Kate. -p. 417

Epidemic of Postvaccinal Meningomyeloencephalitis.—According to Keyzer and Nieuwenhuis 27 cases of smallpox occurred in Belgium in the spring of 1947. Because of this outbreak a large part of the population of the adjoining provinces of Holland (Limburg and N. Brabant) were vaccinated. In the course of these vaccinations 27 patients with postvaccinal encephalitis were admitted to the author's hospital. One patient presented the symptoms of a transverse myelitis. All patients had been vaccinated for the first time. The age varied between 7 and 16 years. The incubation period lasted 11.8 days on an average. Four severe cases are described. The clinical pecularities of all the 27 cases are tabulated. Two patients died. In the others no mental or physical defect remained. The morbidity was very high: one case of encephalitis occurred among 700 vaccinations. The authors recommend compulsory vaccination for children under eighteen months.

Medicina, Mexico, D. F.

28:73-94 (Feb. 25) 1948. Partial Index

*Virginal and Gravidic Hypertrophy of Mamma. A. Diez de Urdanivia M. and D. Gutierrez Garcia. -p. 78.

Virginal Hypertrophy of Breasts.—The condition is rare. It occurs in adolescent girls and in young pregnant women. It is due to special reactivity of the breast to hormonal stimulation. Hypertrophy can be limited to one or several lobes of the breast or be diffuse. In either type the breast grows rapidly. It is painless and soft on palpation. The treatment consists of simple mastectomy followed by plastic surgery. In the limited type of the disease, partial mammectomy followed by plastic surgery is indicated. The histopathologic picture is similar to that of diffuse fibroadenoma. A case in a Negro girl of 13 years of age is reported. Hypertrophy began with appearance of menstruation at the age of 12 years. "Perandren" failed. Within one year the breast was larger than the head of the patient. The histopathologic study of the removed breast confirmed the clinical diagnosis of hypertrophy in adolescent girls.

Nederlandsch Tijdschrift v Geneeskunde, Amsterdam

92:1-76 (Jan. 3) 1948. Partial Index

*Experiences with Retropubic Prostatectomy According to Terrence Millin. F. H. Van Gulik. -p. 9.
Treatment of Diphtheria Bacilli Carriers with Local Application of Penicillin. W. H. Borst. p. 12.

Retropubic Prostatectomy According to Terrence Millin.—Van Gulik reviews the literature on retropubic prostatectomy according to Terrence Millin and says that he himself has performed this operation on 50 patients, of whom 33 could be reexamined. On the basis of his results he concludes that this method should not be compared with the transvesical method of Freyer. He thinks that Millin's retropubic prostatectomy should be used for enlarged prostates and that transurethral resection should be reserved for small prostates. He reemphasizes that Millin's method should be executed only by surgeons well schooled in urologic surgery, not by general surgeons who only now and then operate on the prostate.

Nervenarzt, Heidelberg

18:433-480 (Oct.) 1947 Partial Index

Organic Disease and Neurosis. H. Goppert -p. 437.
Concept of Character. U. J. Wassner. -p. 441.
*Centrally Caused Disturbances of Blood Pressure, Respiration and Basal Metabolism After Encephalitis. R. Frowein and G. Harber. -p. 444.
Addiction to Ether. H. von Keyserlingk. p. 450.
Arteriographically Demonstrable Disturbances in Cerebral Blood Perfusion as Chronic Sequel After Cranial Injury. T. Riechert. -p. 453.

Postencephalitic Disturbances in Blood Pressure, Respiration and Metabolism.—Frowein and Harber present the history of a man, aged 30, who during his army service on the Russian front had contracted typhus, which became complicated by encephalitis. Subsequently he had frequent attacks of cerebral convulsions, which became more frequent in spite of antiepileptic treatment. He also had disturbances in blood pressure, pulse rate, respiratory rate, heat regulation, sweat secretion and basal metabolic rate. Investigation of these disturbances made it evident that the considerable increase in the basal metabolic rate was not caused by hyperfunction of the thyroid but was of central origin. The authors cite observations of W. R. Hess, who in studies on the hypothalamus found that the sphere which regulates the circulation coincides largely with that regulating the respiration. Both form a systemic aggregate, and there are connections with the centers of the other sympathetic functions. This indicates that the diencephalon is organized not so much according to organs but according to functional aims. Many functional aims are accomplished by the simultaneous activity of several sympathetic organ systems. This may explain the close connection between the various functional disturbances observed in the present case.

Nordisk Medicin, Gothenburg

37: 1-50 (Jan. 2) 1948. Partial Index

Pneumonia Treatment Before and After Introduction of of Penicillin. H. S. Mathisen. -p. 1.
Antipneumolysin Titer (APL) in Serum. N. Oker-Blom. -p. 4.
*Roentgen Treatment of Peritendinitis Calcarea of Shoulder. E. T. Madsen. -p. 7.
Hygienic and Bacteriologic Examination of Men's Hairdressing Salons in Bergen. H. Saxholm. -p. 15.
Significance of Exogenic Factors in Origin of Strabismus. O. Heinonen. -p 22.
Diagnosis of Omental Adhesions to Anterior Abdominal Wall. New Objective Clinical Symptom. K. Strav. -p. 29.
BAL Therapy in Gold Dermatitis. G. Edström. -p. 30.
Bleeding From Lateral Part of Nasal Cavity. Method of Treatment. W. Behrman. -p. 31.

Roentgen Treatment of Peritendinitis Calcarea of Shoulder.—Madsen found this disorder in 81 of 701 patients with painful shoulder examined. There were perhaps more cases, as the importance of roentgen examination with the arm in internal and in external rotation, with comparative pictures of both shoulders, was not recognized at the start. It is an affection of the shoulder with roentgenologically demonstrable calcium deposits in the soft parts. It appears more often on the right side, which testifies somewhat to traumatic etiology, and seems to be mainly a disease of middle and later life, in which occupation plays no part. The clinical symptoms and positive roentgen results establish the diagnosis. In latent cases roentgen examination accidentally reveals a calcification in the soft parts; clinical symptoms often develop later. Peritendinitis calcarea of the shoulder is regarded at least in the acute stage as a clinical entity. Roentgen therapy is an effective and relatively inexpensive method of treatment of a painful and disabling disorder and the results surpass those attained by other methods of treatment.

Paris Médical

1: 49-68 (Jan. 24) 1948. Partial Index

Dermatology and Syphilis in 1947. F. P. Merklen and P. De Graciansky. -p. 49.
*Falsely Positive Reactions in Syphilis. R. Demanche. -p. 61.
Treatment of Cancer of the Skin. R. Degos. -p. 55

Falsely Positive Reactions in Syphilis.—Demanche agrees with those American authors who do not consider the serologic tests as strictly specific for syphilis, but he stresses the point that falsely positive reactions are exceptional. Falsely positive biologic reactions are nearly always incomplete, dissociated and weakly positive. The Bordet-Wassermann is usually negative; only the Kahn and the Meinicke test may show a partial flocculation. Moreover these false reactions may be temporary and may disappear after weeks or months. Occasionally the false reaction may be permanent and definitely positive; those are the extremely rare cases depending on the serologic constitution of the patient for which Kolmer has coined the term "biologic type." False reactions present a risk which can not be avoided completely, but which can be reduced by serial serum tests which may be repeated weekly or monthly and carried out by two or three laboratories for control purposes; in addition an analysis of the cerebrospinal fluid may be done in certain cases. One should also keep in mind that the serum reaction presents only a symptom and, therefore, it should never be considered as pathognomonic. In cases in which for certain reasons antisyphilitic treatment cannot be postponed, it should be practiced by means of drugs which do not involve any risk, and the patient should be informed that this treatment presents only a test and does not imply a definite diagnosis. In case of premarital examination a person examined may be permitted even to marry provided that his or her nervous system is normal and that the usual precautions are prescribed for the event of pregnancy. The serum reactions although not infallible are of great value and are indispensable. The serologic results should always be considered together with the clinical picture and interpreted in its light.

Prensa Medica Argentina, Buenos Aires

34: 2405-2450 (Dec. 19) 1947. Partial Index

*Rheumatic Stigma in Endocardium and Myocardium of Apparently Non-Rheumatic Hearts. R. Barahona and M. Gorena N. -p. 2407.

Rheumatic Lesions in Endocardium and Myocardium of Apparently Non-Rheumatic Hearts.--Barahona and Gorena studied 230 hearts removed postmortem from nonselected adults of both sexes. The majority of the patients died between the ages of 21 and 60 years. The method of study consisted in injecting the heart through the coronaries with a 10 per cent colored gelatin solution. The injections were made in non-autopsied heart at a temperature of 36 C. The valvular endocardium and the myocardium were studied microscopically after injections. Thirty hearts with rheumatic valvular deformities were used as controls. Two hundred hearts were apparently non-rheumatic. Vascularization of the cusps, and inflammation or healed inflammatory lesions of the valvular endocardium were encountered in the thirty rheumatic hearts (100 per cent) and in 43 (21.5 per cent) of the 200 normal hearts. Rheumatic lesions were encountered in the myocardium of the thirty rheumatic hearts (100 per cent) and in 80 of the apparently non-rheumatic hearts (40 per cent). Myocardial rheumatic lesions were present in the 43 apparently non-rheumatic hearts whose valvular cusps presented vascularization (100 per cent), and in 37 of the apparently non-rheumatic hearts whose valves presented no vascularization (24 per cent). The authors conclude that the presence of vessels in apparently normal cardiac valves is of pathologic significance and is of rheumatic etiology. Rheumatic disease frequently appears in a given community and produces slight changes in both the endocardium and in the myocardium.

Revue Médicale de Liège

3: 49-68 (Feb. 1) 1948. Partial Index

Systolic Murmur Due to Obstruction of the Aortic Orifice. C. Lian. -p. 49.
*Xerophthalmia in Suckling Infants and Hepatic Insufficiency. R. Weekers and R. Houet. -p. 57.

Xerophthalmia in Infants.—Weekers and Houet report 2 cases of xerosis and keratomalacia in male infants aged 3 and 3 and a half months respectively. The first patient was one of twin brothers both of whom received the same food; their intestinal absorption of vitamin A was satisfactory. One of the twins developed a severe icterus; flocculation and serum coagulation tests revealed a severe lesion of the hepatic parenchyma. The xerophthalmia occurred within one month after the icterus. The other twin did not present any liver or eye symptoms. Sixty-thousand units of vitamin A were given daily to the patient; the conjunctival xerosis subsided completely and the keratomalacia improved. The second patient was a premature infant who presented signs of insufficiency of the liver which was enlarged; the urine contained urobilin. The diet of the infant did not seem to be deficient and the intestinal absorption of the liposoluble vitamins was satisfactory. The bilateral keratomalacia was severe, but cicatrization of the corneal lesions resulted from the administration of 60,000 units of vitamin A three times a day. The eye lesions of both patients were not due to an alimentary deficiency or to failure of intestinal absorption of vitamin A. It is suggested that failure of conversion of carotene into vitamin A in the hepatic parenchyma was responsible for the occurrence of the xerophthalmia.

Sang, Paris

18:521-592 (No. 9) 1947. Partial Index

*Correction of Anemia Due to Protein Deficiency, Effect of Casein, Antipernicious Hepatic Factor and Folic Acid Administered at Various Levels. A. Aschkenasy and P. Aschkenasy-Lelu.—p. 514.

Anemia Due to Protein Deficiency.--The Aschkenasys produced in rats a severe hemolytic anemia with considerable erythroblastic reaction in the bone marrow and with terminal normoblastosis of the blood associated with leukopenia and lymphopenia, by placing the animals on a diet completely lacking proteins for fifty to sixty-five days. The rats were then placed on a diet containing casein, antipernicious liver extracts and folic acid. Follow-up of the weight of the animals and blood studies were carried out for thirty to fifty days. Results showed that even far advanced anemia may subside completely provided the animals are placed on a diet which contains proteins in sufficient amounts. Thirty per cent is to be considered the optimum level of casein. The correction of the anemia manifests itself by a considerable increase in reticulocytes, which usually occurs about the fifth day of the protein regimen and which may be associated with a normoblastic discharge and the sudden occurrence of global leukocytes. The administration of liver extracts alone proved ineffective in anemia due to protein deficiency. The combined administration of casein and liver extracts, and particularly the parenteral administration of liver extracts for several days before that of casein, caused an increase in weight which was particularly evident at 7 per cent levels of casein but also occurred at 15 per cent levels although it was less. Hemopoiesis was not observed on a diet containing casein at 15 per cent levels, while the reticulocyte discharge and the synthesis of the hemoglobin were definitely activated at 7 per cent levels of casein. Correction of anemia and of leukopenia may be obtained in the absence of folic acid. The final resumption of weight gaining and hemopoiesis proves that this intestinal synthesis of microbic origin may be reestablished by the continued supply of proteins.

Schweizerische medizinische Wochenschrift, Basel

78:25-48 (Jan. 17) 1948. Partial Index

*Clinical Aspect and Differential Diagnosis of Broncnial Adenoma. A. Kappert.—p. 26.

Bronchial Adenoma.--Kappert reports 3 cases of bronchial adenoma in 1 woman aged 53 and in 2 men aged 27 and 21, respectively. Three stages of the disease may be recognized. Hemoptysis is the most important symptom of the first stage. Recurrent pleuropulmonary disturbances resulting from bronchial stenosis characterize the second stage, and exudative pleurisy may often be responsible for an erroneous diagnosis of tuberculosis. Suppurative complications such as pulmonary abscess, gangrene, bronchiectasis and empyema may occur in the third stage. Diagnosis of bronchial adenoma will best be made with the aid of bronchoscopy. Surgical treatment is indicated. As a rule, endobronchial removal of the tumor should be done first. Improvement in the clinical aspect may often result from the partial removal of the tumor for microscopic examination, but removal of the entire tumor must be the aim of the final endobronchial intervention. Lobectomy and pneumonectomy may be required in cases in which endobronchial removal of the tumor is not feasible or is contraindicated. The author's first patient presented the second stage of the disease and recovery resulted from endobronchial removal of the tumor. In the second patient the correct diagnosis was made with the aid of bronchoscopy during the third stage when a pulmonary abscess was present. Treatment with penicillin was instituted; temperature was restored to normal and the pus was expectorated. Closure of the bronchus by the adenoma may be considered as a protection against new inflammatory bouts. Complete endobronchial removal of the tumor was not feasible in the third patient, who presented a pulmonary abscess and empyema of the pleura complicating the third stage of the disease. Recovery resulted from lobectomy.

78:73-96 (Jan. 31) 1948. Partial Index

Protrusio Acetabuli (Otto-Chroback Pelvis). K. Nievergelt.—p. 31.

Treatment of Fracture of Shafts of Forearm. K. Lenggenhager.—p. 25.

*Tonsillectomy in Carriers of Diphtheria Bacilli. K. Graf. -p. 75.

Tonsillectomy in Carriers of Diphtheria Bacilli.--Graf stresses that in evaluating methods for the eradication of the carrier state in diphtheria it should always be considered that up to the eighth week after the attack the bacilli disappear spontaneously in the majority of cases and the term carrier is justified only for those who retain the bacilli longer. In such case pathologic processes generally exist in the mouth or nose. Chronically inflamed or hyperplastic pharyngeal and palatine tonsils play an important part, since there bacilli find breeding places, which are not reached by disinfection of the surface. Tonsillectomy and if necessary adenotomy usually counteract the carrier state, but remnants of adenoids and tonsils may result in failure. Ozena likewise may nullify the results of tonsillectomy, since the bacilli may continue to grow under the crusts and on the impaired mucosa. If the general condition is impaired, if patients are afraid, or the tonsils are not definitely implicated, an intervention should not be made before the eighth week has elapsed and efforts should first be made to obtain cure by conservative methods such as treatment with artificial fever or with penicillin. The latter can be applied either by injection, locally, by nasal inhalation or spray. If there is a history of repeated attacks of tonsillitis, or of peritonsillar abscesses, and if the tonsils are definitely diseased and the adenoids decidedly hypertrophied, the operation may be performed during the third or fourth week.

Book Notices

Advances in Military Medicine Made by American Investigators Working Under the Sponsorship of the Committee on Medical Research. Edited by E. C. Andrus and others. Associate editor: Tuckerman Day. Foreword by Alfred N. Richards. No. 4 , Science in World War II, Office of Scientific Research and Development. In two volumes, Cloth. Price, $12.50. Pp. 472, with 62 illustrations; 473-900, with 63-94 illustrations. An Atlantic Monthly Press Book. Little, Brown & Co., 34 Beacon St., Boston 6, 1948.

These two volumes comprise a record of results of the great cooperative effort in medical research conducted in the interests of national defense by the Office of Scientific Research and Development during World War II. The record is necessarily incomplete and lacking in technical detail. The definitive records can be found in medical and scientific journals and monographs in which more than 1,300 papers have been published and in which hundreds more will appear. In the foreword Dr. Alfred N. Richards, chairman of the Committee on Medical Research, outlines the organization and administration of that Committee, which President Roosevelt established by executive order on June 28, 1941. The Committee on Medical Research was a constituent agency of the Office of Scientific Research and Development, and it obtained vital assistance from the division of medical sciences of the National Research Council. The Committee on Medical Research by 1943 had fifty-two committees with a total membership of 297; in addition it had liaison with the armed services and many other groups. The Committee on Medical Research was legally empowered to recommend the expenditure of government funds, which the National Research Council, not being a government agency, could not do, and thus to finance numerous scientific projects. The National Research Council considered 951 proposals for research, of which 638 were approved and transmitted to the Committee on Medical Research; of these, 501 became the basis of contracts for investigations. In addition, 90 proposals were recommended and approved by the director of the Office of Scientific Research and Development without prior consideration by the National Research Council's Committees. The contracts thus entered into involved one hundred and thirty-five universities, hospitals, research institutes and industrial firms, and the sums expended on these researches amounted to about $25,000,000.

In these two volumes the fields of research involved in this great undertaking are discussed. The reports already published are tabulated, as are the subjects of the numerous contracts. Dr. Richards points out that in most cases financial loss to the nonprofit institutions was avoided. However, there can be no question, he said, of the strain put on many of the investigators who were obliged to carry on their teaching duties at an accelerated tempo at the same time.

Following the Normandy invasion in 1944, the director of the Office of Scientific Research and Development began planning to terminate its activities, and from the beginning of 1945 the Committee on Medical Research was not encouraged to make new commitments other than those of short range and practical usefulness. The military services were then given the opportunity to take over under their own contracts any investigations that were of special interest to them, and about one hundred contracts were transferred.

A partial list of subjects discussed in these volumes includes blood substitutes, the history of plasma fractionation, burns, tropical diseases, shock, motion sickness, crash injuries, wound ballistics, insecticides, insect repellents, DDT, antimalarial drugs, the development of penicillin, nutrition, chemical warfare agents and acclimatization to hot and cold. An extensive bibliography and index are included.

Animal Genetics and Medicine. By Hans Grüneberg, Ph.D., M.D. With a foreword by Sir Henry Dale, O.M., G.B.E., F.R.S. Cloth. Price, $5.50. Pp. 296, with 33 illustrations. Paul B. Hoeber, Inc., 49 E. 33rd St., New York 16, 1947.

The author has carried on extensive research on the role of hereditary factors in the development of laboratory rodents, especially the mouse. He previously published a book entitled "The Genetics of the Mouse." He has, in addition, a long list of papers to his credit which deal primarily with new mutation or inherited variations in the laboratory mouse. He may therefore be considered well grounded in the subject which he develops. The last short paragraph of the book reads as follows: "The study of inherited diseases in animals is a new branch of medical science. If this book will convince a few people of the value of this new tool for aetiological studies it will have fulfilled its purpose." This paragraph states in essence the content and purpose of the book.

After three introductory chapters on general principles, the author devotes six chapters to a discussion of inherited variations of the central nervous system as shown by studies on laboratory rodents The specific topics of these six chapters include: pseudencephaly, encephalocele and spina bifida, syringomyelia, corpus callosum, otocephaly, hydrocephaly, spastic spinal paralysis, shaking paralysis, ataxia, epilepsy and audiogenic seizures. Brief attempts are made to relate these to similar affections in the human being. The next twelve chapters concern the ear, eye, endocrine organs, blood, skeleton, digestive system, urogenital system and the skin. Chapter XXIII deals with the subject of serology as it pertains to the laboratory rodent. The K and H systems in the rabbit are discussed as is the inheritance of the capacity to develop anti-M and anti-N serums by rabbits. Short paragraphs deal with xanthine oxidases and esterases in mice. In the chapter on Disease Resistance the author discusses briefly the inheritence of resistance to bacterial toxins, bactericidal powers of the blood, leukocyte levels and resistance, and organ response to resistance. He closes this chapter with the statement "It will be obvious to the reader of this book that results of this general kind are the real essence of research into disease resistance ....It does not appear unduly sanguine to hope that the results obtained in animals may, in some cases at least, be found applicable in human beings. For a relation, once critically demonstrated in animal material, should be verifiable in many cases even in the subject of casual and formal genesis of diseases."

In the introductory chapters the author discusses man. He calls attention especially to an apparently common point of view among investigators, namely, that a disease with a hereditary basis belongs in a mysterious category of diseases which do not lend themselves to exploration. He emphasizes properly, as many geneticists have previously, that genes act only through physiologic channels and that their actions are as subject to investigation as are the effects of bacteria or any other causal factor. Objections could be raised to some of the author's opinions regarding a few general questions, but these objections are minor. The book is a laudable attempt to call to the attention of the medical investigator some of the information that is available regarding the inheritance of diseases among laboratory mammals. The book is written in a nontechnical style and should be understandable to anyone with a general biologic background. It may be recommended highly to medical investigators, and even to general medical practitioners.

Neurological Complications After Spinal Anesthesia and Results, from 2493 Follow-up Cases. By Gunnar Thorsen. Translated by Ulla Schott. Acta chirurgica Scandinavica. Vol. XCV, Suppl. 121. Paper. Price, 15 kronor. Pp. 272, with 11 illustrations. P.A. Norstedt & Söner, Tryckerigatan 2, Stockholm 2, 1947.

The following quotation from the author's preface and introduction are pertinent!

> When a medical method, whether diagnostic or therapeutic, has been generally recognized it easily becomes a matter of routine, being deprived of unceasing critical observation. Indications and contra-indications become blurred. Results are misjudged. Limitations and risks are forgotten. It therefore becomes imperative to analyze now and again the results arrived at, as well as, the risks and indications of the methods employed....I assumed, to begin with, that these complications (neurological) were rare and, therefore, almost negligible (after spinal anesthesia). I have come to the opposite conclusion.

The author send out 3,335 questionnaires to persons who had received spinal anesthesia at the Central Hospital in Orebro during a period of three years. Replies were received from 2,493 (74.7 per cent). Modified questionnaires were sent to 120 persons who had been subjected to diagnostic lumbar puncture only, and 100 replied. Analyses of these questionnaires form the basis of the monograph. In addition, reports of physical examinations of patients who complained and autopsies of those who died after spinal anesthesia are included, together with case reports from other institutions and certain experimental data. An extensive review of the literature accompanies the various sections of the monograph. The exhaustive and scholarly classifications of the signs and symptoms encountered is accompanied in each case by logical attempts to explain mechanisms, and these are supported by experimental evidence in many cases. Details of the major discussions cannot be referred to in such a review as this. Causative factors are divided into effects due to (*a*) direct trauma from the puncture needle, (*b*) leakage of spinal fluid, (*c*) infection and (*d*) the anesthetic agent itself. The following quotations are from the author's discussion of the effects of the agent:

> In all the "primary neurogenous" forms the changes of the cerebro-spinal fluid are insignificant or lacking altogether. ...The aseptic meningitis generally sets in on the third to fourth day, often being preceded by prodromes such as headache, etc. It is, as a rule, benign. The arachnitis is characterized by a free interval of days or years between the spa (spinal anesthesia) and the onset of the symptoms....Their occurrence is far more common than is generally thought and the number of the true injuries may be estimated in the present material at a minimum of 1/200. Symptoms, such as a feeling of weakness in the legs, have however been reported in 7.0 per cent and numbness in the legs in 13.3 per cent in the questionnaire material. ...Injuries to the nervous substance and membranes are highly dependent on the concentration of the anaesthetic solution. They are equally common after novocaine (procaine) and percaine (dibucaine) anaesthesia. The weakest possible solutions should, therefore, be chosen with due regard to isotonia and reaction.

A brief review of this valuable and informative piece of work cannot do it justice. It deserves careful reading and consideration by every anesthetist and every surgeon, whatever may be the technic which they use. Perhaps there may be stimulated, as a result, a series of similar thorough studies in this country, with a corresponding awakening to the imperfections of our results. The work seems to suffer considerably in arrangement and in translation. It is, however, an outstanding contribution to the literature of spinal anesthesia.

Die Skelettvarietäten des Fusses: Ihre klinische und unfallmedizinische Bedeutung. Von Dr. Theo Marti, Spezialarzt für Chirurgie F.M.H., Kreisarzt der Schweizerischen Unfallversicherungsanstalt an der Hauptagentur in Genf. Heft 2, Praktische Beiträge zur Orthopädie, herausgegeben von Prof. Dr. Hans Debrunner und Prof. Dr. Max R. Francillon. Paper. Price, 14.20 Swiss francs. Pp. 164, with 58 illustrations. Hans Huber, Marktgasse 9, Bern 16, 1947.

The author's observations are based on many months of experience in the hospital of the Swiss Traumatic Surgical Insurance Association. Variations from the normal forms of the skeletal system are not unusual in the hands and feet. They occur as supernumerary elements or as fusions of normally independent skeletal segments. Other varieties occur in relation to form, size and type of individual bones, either by partial malformations or by variations in normal positions.

The interpretation of roentgenograms with accessory bone elements following trauma may be difficult. These elements may be mistaken for fractures or arthritic changes. Likewise, the reverse may be true. When judging traumatic surgical cases, a mistake may have serious financial and social consequences. For that reason, correct differential diagnosis is necessary. The complexity of the problem is well known. While these varieties were considered at one time to be "sports of nature," there may be a connection, for example, between the accessory tarsal segments and arthritis deformans. Static complaints on the part of the patient may produce localized symptoms. Some accessory bones have a close relationship to deformities of the foot. The presence of accessory tarsal bones favors distortions.

The accessory skeletal elements themselves may be subjected to pathologic changes or may be the sites of isolated traumatic injuries. The knowledge of these changes is important from a therapeutic point of view, but also in determinations of traumatic medical judgment.

The complex problems of accessory tarsal elements are discussed, and literature on the subject is evaluated. Most of the reports in the literature are on a case history basis. They are described here in three sections. The first section describes the problem of foot variations in general, based on anatomic, morphologic, static and roentgenologic descriptions in the literature. The second section concerns the well known variations; the accessory tarsal elements and synostoses are described in detail and reference is given to our knowledge of changes and anomalies of sesamoid bones. In the third section, the author analyzes foot variations in relation to legislation in the Swiss traumatic surgical laws.

Traccion esqueletica. Por Carlos E. Ottolenghi, profesor adjunto de ortopedia, Buenos Aires. Fabrikoid. Pp. 733, with 672 illustrations. Libreria y editorial "El Ateneo," Florida, 340--Cordoba, 2099, Buenos Aires, 1946.

This monograph is a historic document of keen interest to students and practitioners alike. Unfortunately, it is not available in English. The author's qualifications are excellent, and he is well known to orthopedic surgeons, particularly in this hemisphere. The book fills a need. The contribution is of the highest quality. Although it may be criticized for being too comprehensive, it is an excellent reference book. This profusely illustrated work is a comprehensive study of skeletal traction. The historical background, including the controversy on priority, is given as far back as Codivilla and Steinmann.

The evolution of the method is carefully presented, emphasizing the necessity for special equipment. Ottolenghi summarizes his long experience and the mechanical investigations which he has pursued regarding the instruments he considers best, including a stirrup of his own design. The reaction of soft tissues and bones around pins and wires was studied from the clinical point of view and supplemented by experimental work on dogs and rabbits. A specially trained hospital staff is an important factor in obtaining excellent results. Use by inexpert operators is the cause of many failures. These failures are due to errors in technic.

There are two dangers inherent in the method: infection and the possible delay in consolidation. The first is easily avoided if all the prerequisites of asepsis and antisepsis are maintained. Delay in consolidation is due to the use of excessive traction. The importance of repeated roentgenographic control is emphasized. Continuous traction for a prolonged period preventing contact of the fragments will bring about the formation of fibrous tissue. Proper traction avoids secondary displacement and aids consolidation, because the forces of concentric pressure which act on the area bring about the formation of bone callus. The author maintains that skeletal traction applied with correct technic and precise indications is perfectly tolerated. Many interesting technical problems are referred to in the special section where all technics are analyzed and end results are shown. Ottolenghi believes that recent advances in the treatment of fractures will lessen the indications for skeletal traction. The book is accurately documented and a large bibliography is appended.

The Problem of Cerebral Palsy Today. By M. A. Perlstein, M.D. Prepared with the assistance of William McPeak. Paper. Pp. 57, with illustrations. Distributed by the National Society for Crippled Children and Adults, 11 S. La Salle St., Chicago; Published by Association for the Aid of Crippled Children. 580 Fifth Ave., New York, 1947.

In this paper-bound brochure are assembled the facts about crippling due to cerebral palsy Reasons for neglect of the palsied are: (1) ignorance that they can be helped on the part of (*a*) the physicians, (*b*) the patients and their families and (*c*) society as a whole; (2) the belief that all palsied persons are mentally defective; (3) superstition, (4) the idea that the palsy is a manifestation of some family taint; (5) the broken family situations, usually with child rejection; (6) the expense of treatment; (7) the lack of facilities for treatment; (8) the lack of an emotional appeal to the layman corresponding to that of an acute epidemic disease like poliomyelitis or smallpox, and (9) the philosophy that "only the fit should survive." This should be a valuable booklet for teachers and parents and should not be neglected by physicians. While it is not expected that physicians will personally supervise the details of care and particularly the education of the spastic person, it is of utmost importance that they understand and make the best possible use of their co-workers in the care of the spastic child, namely, the teacher and the parent. All educators should be familiar with the problems involved. This little booklet is an excellent summarization of what they need to know.

A Text-Book of Gynaecology for Students and Practitioners. By James Young, D.S.O., M.D., F.R.C.S.E., Professor of Obstetrics and Gynaecology, University of London, London. Seventh edition. Cloth. Price, $7.50. Pp. 471, with 277 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11; Adam & Charles Black, 4, 5, & 6 Soho Sq., London, W. 1., 1947.

In the seventh edition of this popular book changes were made particularly in the chapters on sex endocrinology, menstrual disorders, sterility, leukorrhea, pain and backache.

In the endocrine therapy of dysmenorrhea, Young prescribes 9.5 mg. diethylstilbestrol daily for the ten days before the onset of menstruation. Nearly all American Gynecologists who prescribe this drug for the relief of painful menstruation tell their patients to take the tablets for fifteen or twenty days beginning shortly after the onset of bleeding. The theory is that such medication inhibits ovulation and thereby relieves pain at the next menses. How the administration of diethylstibestrol during the last ten days controls dysmenorrhea is not clear. In the chapter on leukorrhea there is no mention of moniliasis. In fact, the only discussion of this condition is in the chapter on inflammation of the vulva and vagina, where the word thrush is used. There is one illustration of monilia vulvitis in a case of diabetes mellitus. Monilia infection is encountered frequently enough to warrent at least a paragraph on the symptomatology, diagnosis and treatment.

The use of the roentgen ray is recommended for leukoplakia vulvae where estrogens fail, but roentgen therapy seldom improves this condition. Also, it must be emphasized that estrogen therapy should not be continued for too long because cancer develops in a high percentage of cases of leukoplakia vulvae.

In cases of vaginal inflammation the author still finds tampons soaked in ichthammol in glycerin useful. He believes that the cervix can be a focus of serious infection. He relieves pains of the iliac fossa by injecting 85 per cent alchol or "proctocaine" into the Frankenhauser sympathetic plexus.

The section on special tumors of the ovary is excellent and ample. Only thirty-two pages are devoted to operative gynecology. This section should be either enlarged considerably or omitted entirely.

The book is well written and abundantly illustrated. However, seven illustrations are used in two different sections (figures 103, 113, 120, 121, 122, 136 and 236). In spite of the foregoing criticisms, the book will prove to be most useful to students and practitioners because it contains sound advice on all gynecologic problems. This is to be expected, because Young is one of the foremost gynecologists in the world.

A Text-Book of *Bacteriology. By R.W. Fairbrother*, M.D., D. Sc. F. R.C.P., Director of the Department of Clinical Pathology, Manchester Royal Infirmary, Manchester, England. Fifth edition. Fabrikoid. Price $6. Pp. 480, with 6 plates. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1948.

The fifth edition of this book was issued in September 1946 and reprinted in the United States in January 1948. The book is an outline of the medical aspects of bacteriology and therefore is not documented with references to the original literature. Obsolete material has been removed and an attempt made to bring the subject material up to date. Although a section on penicillin is included, no mention is made of streptomycin or other antibiotics. This may be explained on the basis of the revision date. This book should save much time for the medical student by avoiding controversial issues and presenting only the essential facts in the field of medical bacteriology.

Case Histories in Clinical and Abnormal Psychology. Edited by Arthur Burton, Associate Professor of Psychology, Willamette University, Salem, Ore., and Robert E. Harris, Associate Professor of Medical Psychology, University of California, San Francisco. Cloth. Price, $4. Pp. 680, with illustrations. Harper & Brothers, 49 E. 33d St., New York 16, 1947.

This multiple authored book contains case histories of a wide variety of psychologic disorders written by forty-one psychologists and four psychiatrists. The editors state that their purpose has been twofold: "first, to present examples of most of the personality and behavior disorders; and second, to exhibit the work of competent clinician". The medical reader may think that "clinican" means a psychologist working in his traditional functions of diagnostic testing with patients, but he will find that a psychologist as a clinician is a psychotherapist. Several case histories indicate the therapeutic role of the psychologist and one of them, entitled "Nondirective Counseling," demonstrates the "echo" technic of that school. An introduction by Henry A. Murray covers twenty pages and demonstrates his erudition by rambling somewhat incoherently through a discussion of many distantly related facts. When he comes down to a real introduction, Murray indicates the essential criticisms of this work. Some case histories contain too few important facts and are more descriptive than interpretive. Important dynamic material is not at hand to give awareness of unconscious needs and frustrations. However, the case histories are well chosen to indicate the significance of many important tests in the overall diagnosis and therapy of the mentally ill.

History of Medicine: A Correlative Text, Arranged According to Subjects. By Cecilia C. Mettler, A.B., Ed.B., A.M. Edited by Fred A. Mettler, A.M., M.D., Ph.D., Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University, New York. Fabrikoid. Price, $8.50. Pp. 1215, with 16 illustrations. The Blakiston Co., 1012 Walnut St., Philadelphia 5, 1947.

Dr. Mettler emphasizes as the purpose of this book the providing of a sense of perspective in facilitating the study of the history of medicine, emphasizing the fundamental value of important medical principles and establishing a feeling of proportion among the component fields of medicine. The student is supplied with an introduction to the principles underlying the development of the various fields embraced in the medical curriculum and an opportunity to become familiar with men who have contributed outstandingly to the progress of the medical sciences. The text is divided into chapters containing the history of a particular subject,with the idea that history of each subject may be studied concurrently with the present day texts. While for these purposes the book will undoubtedly be valuable to the student, as history it lacks unity of presentation of period and integration philosophically with the changing culture of the times . The author has been so precise in attempting to give due credit to the many individual names significant in the historical development of the several branches of medicine that the reading frequently becomes dull. Nevertheless, this same emphasis makes the book excellent for reference.

In many medical schools, after a preliminary period of enthusiastic acceptance of the teaching of the history of medicine, a failure to continue occurs, attributable to lack of systematization. With this in mind, the author has attempted an objective presentation of the verifiable facts from the time of primitive man through the nineteenth century, dividing the history into fifteen sections, including anatomy, physiology, pathology, bacteriology and the several specialties. For teaching the history of medicine in medical school the volume will find considerable acceptance and additionally will serve as an excellent reference to persons prominent in the development of medicine from early times.

New Fields of Psychiatry. By David M. Levy, M.D., Assistant Professor of Psychiatry, College of Physicians and Surgeons, Columbia University, New York. Cloth. Price, $2.75. Pp. 169. W. W. Norton & Co., Inc., 101 Fifth Ave., New York 3, 1947.

This is a brief, personal, interesting and authentic account of psychiatry as it finds application in diverse fields of human affairs. The author has been identified with the development of psychiatry in child guidance and in the field of delinquency. This in turn has involved him in the developing relationship of psychiatry to the field of social work: here he has personally made important contributions (not discussed in this volume) through his teaching and research in psychotherapy. During World War II as psychiatric consultant in the Office of Strategic Services he contributed to the task of personnel selection. Later activity with the screening center of the information control division in the United States zone in Germany brought experience in political psychiatry. Here ascertaining the reliability of Germans who would be in influential political or educational positions was a central consideration; the author also directed himself to the ascertainment of specific psychologically significant differences between Nazi and non-Nazi. This is an excellently written work that is intended to expose the broader aspects of the author's personal experience, with particular emphasis on the development of psychiatry in fields outside of but related to medicine. It should be read by every medical student and psychiatrist; a perspective about psychiatry otherwise quite difficult to achieve can be gained.

Family Skeletons. By David D. Whitney, Professor of Zoology, University of Nebraska, Lincoln. Cloth. Price, $4. Pp. 284, with 246 illustrations. University of Nebraska Press, Lincoln, 1946

This book is one of a series intended to popularize science, and the hope is expressed that this particular volume may "assuage fears and anguish over deformities." It consists largely of illustrations: the explanatory text is brief. An interesting series of pictures of twins, triplets, quadruplets and quintuplets is presented with explanation of the embryologic processes producing them. That is followed by illustrations of abnormalities, natural or artificial, which the author has found either in nature or in the literature. An estimate is given as to whether or not they are hereditary and, if they are, whether inheritance is dominant or recessive and whether of high or low "penetrance" (frequency). A general glossary of terms commonly used in the literature of human heredity is accompanied by a thirty page list (with definitions) of inherited abnormalities and diseases. Some of the illustrations may disturb rather than comfort the minds of the public, even though the conditions said to be inherited are, not all dominant or of high frequency. A little more care by the author or publisher might have prevented some errors. Flexed fingers are said to be due to shortness of extensor tendons, page 106. Hallus (sic) valgus is said to be inherited and dominant, but the illustrations suggest bad shoes and bunions, page 113. Peroneal atrophy is illustrated with legs and hands affected (sic), page 179. "A few persons can move the skin on their forehead" (sic), page 223. "Vitamin C prevents pellagra," page 239.

Surgery: A Textbook for Students. By Charles Aubrey Pannett, B. Sc., M.D., F.R.C.S., Professor of Surgery, University of London, London, England. Second edition. Cloth. Price, 27s. 5d. Pp. 757 with illustrations. Hodder and Stoughton, Ltd. Warwick Square, London, E. C. 4, 1947.

In the author's preface, he cites the need for the student to "get his relative values right." This book includes the usual chapters on diseases of the abdominal organs, head injuries, diseases of the bone, etc. However, chapters on gynecology, ear, nose and throat, bacteriology and pathology have been purposely left out by the author, who feels that these subjects rightly belong to those who teach them.

The text is easy to read; the substance is factual, and presented in a manner devoid of verbiage. The illustrations are extremely diagrammatic, and are used throughout instead of photographs or roentgenograms. The author feels that the student may grasp the point of the illustration more readily if it is simply presented. He makes the interesting observation that these "mind pictures" are more effectively portrayed with an imperfect technic by a surgeon who understands the problem at hand than by an expert who does not.

The chapter on tissue repair and the healing of wounds is comprehensive and adequate in detail. The chapter on gangrene includes an exposition of the common vascular diseases of the extremities with their management. The book is an excellent source of medical information for the student.

Studies on the Formation of Cellular Substances During Blood Cell Production. By Bo Thorell. Paper. Price, 12s. Pp. 120, with 59 illustrations. Henry Kimpton, 25 Bloomsburg Way, London, W.C. 1; P.A. Norstedt & Soner, Tryckerigatan 2, Stockholm 2, 1947.

During the last two decades, remarkable progress in hematology has been achieved by means of sharper demarcation of the various clinical pictures and by application of dynamic physiologic mechanisms to the interpretation of the presenting symptoms and signs. However, in most of the disorders full comprehension is lacking because the underlying disturbances of cellular metabolism remain an enigma. In this important monograph, Thorell has applied the ingenious technics developed by Caspersson for the study of cellular protein formation to the problems of blood cell production. The complicated microspectrographic methods used in these investigations are described in detail. By comparison of the distribution and concentration of the ribose polynucleotides in the hemopoietic cells with the quantitative cytology of the bone marrow, it could be shown that the new formation of cellular proteins during hemopoiesis takes place at an early stage of development. During this stage, high concentrations of ribose polynucleotides exist in the cytoplasm and nucleolar apparatus. During the maturation phase of the blood cells, the concentrations of the ribose polynucleotides decrease continuously, parallel with a declining growth activity of the cells. This latter activity seems to be regulated by a definite part of the chromatin. Endocellular synthesis of hemoglobin does not start before the ribose polynucleotide metabolism is finished. When the maturation phase is ended, the main synthesis of hemoglobin begins. These metabolic processes also operate in the production of the granulocytes. In leukemia, there exists a measurable hypertrophy of the metabolism of the ribose polynucleotides associated with the new formation of new cellular proteins. In pernicious anemia, the polynucleotide and hemoglobin composition during cell genesis was also found to be definitely abnormal. This study is a stimulating contribution. It will be of particular interest to investigators who realize that the future of biologic research is closely connected with a better understanding of intracellular metabolism.

Letheon: The Cadenced Story of Anesthesia. By Chauncy D. Leake. Paper. Pp. 128. The University of Texas Press. Austin, 1947.

The author suggests that this experiment in cadenced narrative of the story of anesthesia should be read aloud or not at all. The author has read it aloud to several medical assemblages, and its reception caused him to make it generally available. The story is supplemented by a chronology of anesthesia and a fine bibliography and index, which make it the kind of book one expects from Chauncey D. Leake. Except for a slight unevenness the work holds the attention, but the story is so condensed that rereading is frequently required for comprehension. Here is a sample in which the author relates a well known anecdote:

> Obstetrics grew with Simpson's chloroform.
> Amusing to us now, he drew upon himself
> the wrath of clergymen, who thundered that
> he dared attempt relief of pain
> in child birth as decreed by God
> But he prevailed by silly argument
> that God Himself approved of anesthesia,
> since He had set the precedent by giving
> sleep to Adam at the birth of Eve.
> When later he was knighted, friends proposed
> a coat of arms, a naked babe, with motto,
> "Does your mother know you're out?"

The Doctor in Oregon: A Medical History. By O. Larsell, Professor of Anatomy, University of Oregon Medical School, Portland. Cloth. Price, $10. Pp. 671, with illustrations. Published for the Oregon Historical Society by Binfords & Mort, 108 N. W. Ninth Ave., Portland 9, 1947.

The earliest doctors came to the Pacific Northwest with the explorers and fur traders. They were truly pioneers. In 1923 Dr. Olaf Larsell, professor of anatomy at the University of Oregon Medical School, initiated a medical history club of the Medical School of the University of Oregon. From this nucleus came a survey of the growth of medicine in Oregon and in the Northwest which makes this history one of the most adequate and competent in the field of the history of medicine as it covers various portions of the United States. Here is the detailed story of the medical missionaries, including the fascinating account of the Whitman Mission, already available in other published works. The biographies of individual physicians who participated in the care of the sick in the Northwest, the developments in public health and in medical science, the regulation of medical practice and the epidemiology are all fully covered in this amazing compilation of material. If there is any single criticism it is the lack of typographic variety and the somewhat congested manner of presentation.

Atlas of Bacteriology. By R. Cranston Low, M.D., F.R.C.P.E., F.R.S.E., Bacteriology Department, University of Edinburgh, Edinburgh, Scotland, and T. C. Dodds, F.I.M.L.T., F.I.B.P., F.R.P.S., Laboratory Supervisor to the Department of Pathology, University of Edinburgh. Cloth. Price, $8.50. 168 plates. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2. 1947.

This atlas is for the medical undergraduate who can compare its color photographs with what he sees under the microscope. The plates show clinical material such as pus, urine, blood and sputum with the organisms, the culture films stained, the tissues with the organism in situ and, finally, cultures on various mediums.

Medicine for Moderns: The New Science of Psychosomatic Medicine. By Frank G. Slaughter, M.D. Cloth. Price, $3.50. Pp. 246. Julian Messner, Inc., 8 W. 40th St., New York 18, 1947.

Psychosomatic medicine is the catchword of the hour, and Dr. Frank Slaughter has written about it for persons generally. While not himself especially trained in the field, he has read the best available literature, and his book is essentially a translation of the available writings into everyday English. Yet comprehension may still be difficult for those without some college background in modern psychology and even psychiatry. Dr. Slaughter has been unable to avoid the diction of this new field, and such expressions as "genitalization of the libido" and "id" and "superego" complicate the text. For the unenlightened the explanations do not quite explain. About the best of the chapters is that called "The Discontented Colon." In view of the various organic changes that have been proclaimed in fibrositis, the author seems to overemphasize its psychosomatic origin. Thus far the available evidence does not explain many of the clinical manifestations of fibrositis. Perhaps psychosomatic medicine is not yet ready for dispensing to an unaware public. The conclusion that psychosomatic medicine is the "penicillin" for emotional discord is somewhat too broad a claim.

American Medical Research Past and Present. By Richard H. Shryock, Ph.D., Professor of History and Lecturer in Medical History, University of Pennsylvania, Philadelphia. Studies of the New York Academy of Medicine, Committee on Medicine and the Changing Order. Cloth. Price, $2.50. Pp. 350. The Commonwealth Fund, 41 E. 57th St., New York 22, Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, England, 1947.

Dr. Shryock traces the historical development of medical research in the United States from European sources to the cultural independence that developed after 1895. The outstanding leadership of William Welch is recognized, and the appreciation and growth of private support are adequately recorded. After a chapter on public relations the growth of public support is described, including the work of the National Research Council and the great voluntary agencies. Dr. Shryock concludes that far more support of basic research is needed than has thus far been available, particularly because medical research makes progress chiefly on basic research. He supports the view that there should be governmental support of the social sciences, yet apparently fails to realize the possible menace in political application of social science research.

Brain and Intelligence: A Quantitative Study of the Frontal Lobes. By Ward C. Halstead. Cloth. Price, $6. Pp. 206, with 27 illustrations. University of Chicago Press, 5750 Ellis Ave., Chicago 37, 1947.

Within the narrow limits of two hundred and six pages, Dr. Halstead has compressed a report of twelve years of investigation of the relation between lesions of the brain and "biological" intelligence, which he feels is superior to psychometric, clinical and neurologic concepts of intelligence. Through intensive testing of 237 patients, and through factorial analysis of his results with twenty-seven tests (many of them devised by him for this purpose), he finds "biological" intelligence to consist of four factors: the central integrative field factor, *C*; the abstraction factor, *A*; the power factor, *P*, and the directional factor, *D*. These are measurably reduced through extirpation of cerebral tissue, and this reduction is expressed in quantitative terms as an impairment index. Part II discusses localization of function in the cerebrum through an analysis of the degree of impairment found after lobectomies in the several lobes, the greatest degree being found in the frontal lobes. The appendixes include abstracts of medical histories, diagrams of cerebral lesions, brief descriptions of tests, numerous tables and an extensive bibliography.

All readers must be impressed by the painstaking scholarship shown in the study, and by the ingenuity of the technics developed, but a few may be left with some disturbing questions: (1) Has more attention perhaps been paid to the tests than to the persons tested? (2) Can more be derived from a factorial analysis than is put into it in the first place? (3) Since the neuropsychiatric patients showed an impairment index as great before lobotomy as after it, wherein lies the unique character of "biological" intelligence?

Surgical Disorders of the Chest: Diagnosis and Treatment. By J. K. Donaldson, B.S., M.D., F.A.C.S., Professor of Surgery and in Charge of Thoracic Surgery, University of Arkansas School of Medicine, Little Rock, Ark. Second edition. Cloth. Price, $8.50. Pp. 485, with 148 illustrations. Lea & Febiger, 600 S. Washington Square, Philadelphia 6, 1947.

Dr. Donaldson has attempted to compress into four hundred and seventy pages an up-to-date presentation of the various aspects of surgical diseases of the chest. His principal objective is to supply a relatively brief and readable summary of the manifold developments in the fields of thoracic surgery so that the general practitioner and general surgeon reading the book can be kept abreast of the possibilities of thoracic surgery. The first part deals with inflammations and tumors and congenital anomalies of the thoracic wall and thoracic injuries; the second part with nontuberculous intrathoracic infection, pulmonary embolism and infarction as as well as intrathoracic tumors and congenital abnormalities; the third part deals with the surgical therapy of tuberculosis. The book is abundantly illustrated, and for those who wish to study further in any of the fields covered there is a good bibliography at the close of each chapter. In this edition the author has included a section on the advances which have come out of World War II in the treatment of traumatic lesions of the chest and their sequelae, notably, decortication of the lung. A new section has been added on antibiotic therapy, technics of anesthesia of thoracic surgery, artificial respiration, inhalation therapy and cardiac resuscitation. Advances in the field of esophageal and cardiac surgery have also been included. Clarity would have been better served at times if obsolete and unproved methods were not reported and emphasis applied to well proved methods. Insufficient space was given to the subject of pulmonary resection for tuberculosis and the indications for resorting to resection in abscess of the lung. The book is a useful adjunct to the library of the house officers, general practitioners and general surgeons for whom it was intended.

The World Within: Fiction Illuminating Neuroses of Our Time. Edited by Mary Louise Aswell. With an introduction and analyses by Frederic Wertham, M.D. Cloth. Price, $3.75. Pp. 376. Whittlesey House, McGraw-Hill Book Co., 330 W. 42d St., New York 18, 1947.

From the fiction of the world the author has chosen illuminating portions which describe neuroses as observed by competent writers of fiction. To each section there is an introduction by Frederic Wertham, representing essentially an analysis from the point of view of modern psychiatry. For both the amateur and the professional in the field of psychiatry this is a fascinating work.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST

RH SENSITIZATION

To the Editor:—A 26 year old woman, married for the second time, has a daughter 6 years old. Complications of a first pregnancy were absent. Four years ago last June she delivered a stillborn infant. At that time she found out that she was Rh negative and was told that was the reason that the baby died. Her first husband was not tested. Her second husband is Rh negative (tested at two laboratories), but last August she lost a baby after a six and one-half month pregnancy. It had been dead nine weeks before she delivered it. Could this be due to the Rh factor if both the patient and her second husband are Rh negative They are anxious to have children

Ethel M. Walker, M.D., Ardmore, Okla.

ANSWER.—The clinical story, namely, the birth of a normal child followed by two stillbirths, is compatible with the diagnosis of Rh sensitization as the cause of the stillbirths, and this is further supported by the statement that the patient is Rh negative. However, this interpretation is contradicted by the report that the second husband is Rh negative, considering that two Rh-negative parents can have only Rh-negative fetuses, and Rh antibodies cannot harm an Rh-negative fetus. Unfortunately, errors in Rh testing are notoriously frequent even in laboratories of reputable hospitals, due to the delicate nature of the tests. Unless the tests have been done by one of the central laboratories specializing in Rh testing, the report must therefore be taken with a grain of salt. It is significant that no mention is made whether the patient's serum contained Rh antibodies, and tests for Rh sensitization are essential before a reliable opinion can be offered. If the reports that the patient and her second husband are both Rh negative are comfirmed, and no Rh antibodies are demonstrable in the patient's serum, then one can safely assert that the stillbirths were not due to Rh sensitization. The prognosis for future pregnancies would then depend on the etiology of the stillbirths. For example, if the patient has latent diabetes, another stillbirth might possibly be avoided by suitable treatment of the patient during the next pregnancy, while if the stillbirth were due to accidental factors, such as knotting of the cord or abruptio placentae, repetition of such accidents would not be likely to recur in still a third pregnancy. On the other hand, if there has been a laboratory error, so that the second husband is really Rh positive and the stillbirths are due to Rh sensitization, then further studies are necessary to determine, if possible, whether the husband is homozygous or heterozygous and to determine the titer of the Rh antibodies in the patient's serum. With reliable information of this sort, a definite prediction may be possible regarding the probable outcome of subsequent pregnancies.

TRAUMA IN PREGNANCY

To the Editor:—A white woman aged 37 is 53 inches (134.6 cm.) tall and weighs 133 pounds (60.3 Kg.). She has hyperlordosis. She fell down a flight of stairs in March 1945, sustaining injury to her back. At that time history of pregnancy or bleeding was absent. On June 3, 1945, she had a complete abortion which she thought had started in February 1945. In February 1946 she had another spontaneous abortion. On Dec. 29, 1947, she had a hysterectomy because of bleeding, and a diagnosis of myoma of the uterus was made. At that time a left cystic ovary was removed. The microscopic report did not show myoma. Could these miscarriages and apparent functional bleeding be due to the injury she sustained in 1945?

M. D., Connecticut.

ANSWER—A possible connection, scientifically, with the patient's signs and symptoms and the fall and possible injury to the back is not apparent. The abortion occurred when the patient was approximately three to three and one-half months pregnant and at least two months following the injury. A second abortion is even stronger evidence against trauma's producing the abortion.

Traumatic abortions are usually produced by direct trauma against the abdomen and wall of the uterus and may lead to abruptio placentae and abortion.

Another conceivable method of production of traumatic abortion would be trauma severe enough to rupture the corpus luteum of early pregnancy. Trauma of such severity in such a well protected organ seems improbable.

A much more logical point of view would be to assume that this 37 year old woman probably had fibroid tumors for at least two years before operation and that they were more likely the cause of the abortions. Women with fibroids are less likely to get pregnant than others, are more likely to abort and if they carry a baby to visibility or term are more likely to have complications of labor.

From the wording one cannot determine whether the sections reviewed showed myomas or whether there were none present in the uterus as a whole.

With uterine fibroids, Dr. Arthur Curtis has called attention to so-called oyster ovaries, slightly enlarged and soft.

With cystic glandular hyperplasia of the endometrium or so-called swiss cheese endometrium, the ovaries may contain atretic follicle cysts. However, this type of endometrium usually shows no secretory or progestational phase and therefore the patient probably does not ovulate and therefore probably would not get pregnant In this case, the operation followed the last pregnancy by nearly two years, and therefore cause and effect relationships are only theoretical.

ELECTRICAL RESISTANCE OF BODY

To the Editor:--In volume I of "Legal Medicine and Toxicology" by Peterson, Haines and Webster, second edition, page 264, the following statement is made relative to electrical resistance between the two hands of a person. "Herold quotes Bullard's computations on 259 males, where the resistance from one hand to the other varied from 550 to 1,970 ohms, and in a series of measurements of 236 men, also quoted by Herold, the average resistance was 1,184 ohms, the extremes ranging from 610 to 1,870 ohms." These figures are so grossly at variance with a few tests which I have made on my own hands and which have been made for me by various radio men on the ohm meters which are now in common use in radio repair establishments that it is impossible for me to reconcile my figures with those stated in the book, my tests showing ohm values of ten or more times those mentioned. What is your opinion?

Robert B. Taft, M. D., Charleston, S. C.

ANSWER.—In the absence of details as to the tests conducted by the questioner, one can only answer by quoting more extensively from volume I of "Legal Medicine and Toxicology" by Peterson, Haines and Webster, second edition, pages 263 and 264.

Resistance of the Body.--One of the most important safeguards against the passage of electric currents through the human body is its high degree of resistance. This is largely proportionate to the fluid constituents. This is very frequently stated to be from 1,000 to

3,000 ohms, but there are so many circumstances which modify this that didactic statements should not be made without taking these into consideration. Thus, when the epidermis is perfectly dry, its resistance to the passage of electric currents has been shown by Jolly to be very high, measuring, in Siemen's units, from 8,000 to 40,000 ohms (Herold). Dry skins are more resistant, also hard and oily skins. Moist, soft and perspiring skins have much reduced resistance. If the skin is thoroughly moistened, the resistance of the body may register but 500 ohms, and skins treated with alkalis that remove the fat are less resistant. Herold quotes Bullard's computations on 259 males, where the resistance from one hand to the other varied from 550 to 1,970 ohms, and in a series of measurements of 236 men, also quoted by Herold, the average resistance was 1,184 ohms, the extremes ranging from 610 to 1,870 ohms. In addition to this external moisture there may be a number of important factors, pertaining to the internal composition of the tissues through which the currents may pass, which are but little understood.

"ERTRON"

To the Editor:—What is the consensus regarding use of "ertron" in certain or any type of rheumatism?

R. B. McBride, M.D., Dallas, Texas.

Answer.—Treatment of various types of arthritis by the use of concentrated vitamin D, of which "ertron" is an example, was proposed by Dreyer and Reed in 1935. Since then, certain commercial products of concentrated vitamin D have been highly, and sometimes objectionably, publicized, especially for the treatment of rheumatoid arthritis. But after their use in such cases, no significant number of sustained remissions and little or no objective improvement have been noted by the majority of critical investigators, although decrease in pain sometimes has been noted. The value of concentrated vitamin D in the treatment of other articular and rheumatic diseases is even more uncertain. Most experienced rheumatologists now regard these products as essentially useless for any type of arthritis.

The use of concentrated vitamin D is not without danger. Such therapy mobilizes calcium in the body and may lead to its ectopic localization in various parts of the body, notably in joints and in kidneys. Severe renal damage and even death may result. Although untoward reactions are said to result less often from electrically activated vaporized sterol (such as "ertron") than from ultraviolet irradiated ergosterol, severe and sometimes fatal reactions have accompanied the use of "ertron.". "The drug [ertron] is far from being as innocuous as its manufacturers claim" (Kaufman, P.; Beck, R. D., and Wiseman, R. D.: The Journal, p. 688 [June] 1947).

MALE FERTILITY

To the Editor:—1. Is there a relationship between the sperm count and protein levels in the blood? 2. Is there a relationship between the sperm count and age of the subject? 3. Please list a few articles which deal with the sperm counts and male fertility.

M.D., Wisconsin.

ANSWER.—1. Fifteen years ago Meaker and his co-workers showed that protein starvation can be a factor in human male infertility. Their diagnosis of this dietary insufficiency was made, not by direct determination of protein levels in the blood, but indirectly by a quantitative comparison of intake and output of nitrogen. The resulting infertility in such cases is evidenced by a high incidence of abnormal morphology oftener than by a reduction in the sperm count.

Reynolds and Macomber had previously reported the effect of protein deficient diets on the fertility of white rats. Among their experimental animals only 14 per cent of matings were fertile, as compared with 65 per cent among control animals on a normal diet.

2. In general, male fertility tends to decline slowly after middle age. This change may be indicated by lower sperm counts, poorer morphology or a higher incidence of abortions and stillbirths when pregnancies occur. But there is great individual variation. Even in advanced old age many men continue to produce apparently good semen, and some prove to be clinically fertile.

3. The subject of sperm counts and male fertility is adequately covered in the texts of Hotchkiss and of Lane-Roberts and associates. Each of these books gives an extensive bibliography.

MENOPAUSE

To the Editor:—My patient complains solely of her knees- " warm on the outer side, cold on the inner side." This is true on physical examination. Patient is a woman at menopause. She has no other complaints. What is your opinion?

M.D., New York.

ANSWER.—A therapeutic test with estrogens, administered either orally or parenterally, should suffice to determine whether the symptoms are ascribable to the menopause. The dosage should be that commonly given for relief of menopausal symptoms.

HEMOLYZED BLOOD

To the Editor:—Can hemolyzed blood be transfused without regard to its original type? Is it a safe procedure --safety referring to the freed hemoglobin suddenly introduced into the recipient's system? Will hemolysis of the blood destroy its respective agglutinogens, making it thus a solution of foreign protein apt to cause a foreign protein reaction in the recipient's body?

R. J. Kent, M.D., Savannah, N. Y.

ANSWER.—To the best of our knowledge transfusion of hemolyzed blood is practically and theoretically a dangerous procedure. Hemoglobin has been used experimentally as a blood substitute only after freeing the solution of cell stromas. The antigenicity of whole blood is well established, and there is no evidence that hemolysis of the red cell destroys its ability to act as an antigenic agent.

RABIES

To the Editor:—Two months previous to his death, a patient, 45 years of age, was bitten on a finger tip by his dog. The dog died a " few " days after the patient received the injury. The number of days is uncertain, but definitely less than ten. There is no record that the dog had been vaccinated against rabies. His head was examined by the state laboratory which reported that Negri bodies were not found. Intracerebral inoculation with emulsions of the dead dog's brain was not performed. A clinical record of a veterinarian to justify the assumption that the dog did not have rabies is lacking. For lack of certainty, this patient received fourteen injections of phenol-killed rabies virus vaccine. No reactions occurred and the patient was well until six days previous to his death. The onset of the final illness was sudden with severe persistent low retrosternal pain and moderate shock, but without evidence of hyperirritability, spasms or delirium. Serial electrocardiographic tracings showed a progressive, extensive, myocardial infraction involving the septum. There were moderate fever (up to 101F.) extensive myocardial infarction involving the septum. There were moderate fever (up to 101 F.) and leukocytosis. On the fourth day of the illness he became disoriented at times, unable to sleep and gradually so restless that at the end of the fifth day he had to be restrained. In spite of paraldehyd orally and hypodermically, barbiturates by mouth and intravenously, the restlessness did not abate, so that it was deemed advisable to give him " pentothal sodium " as a last resort. The patient died a few minutes after the instillation of tribromoethanol solution with sudden cyanosis and cessation of the heart action. No necropsy was permitted. The question of rabies came up for discussion before death, but in view of the history, the lack of dysphagia and respiratory disturbances, the prophylactic vaccination and the sudden onset with a classical picture of coronary infarction, it was felt that diagnosis of rabies could not be seriously entertained. The method of intracerebral inoculation of mice with penicillin-treated saliva was then not known to us. Unusual precautions to protect the physicians, nurses, or relatives were not taken. The only method of transmission to be considered in this case is the possibility of droplet infection, as he did have a moderate cough. 1. Is it reasonable to rule out rabies altogether? 2. Can the coronary infarction, and especially the terminal irritability, be considered as part of a delayed reaction to vaccine?. 3. Under the circumstances presented, should the attending personnel be vaccinated in spite of the known danger of vaccination? 4. Which vaccine should be preferred, the simple phenol-killed or the ultraviolet-killed virus?.

M.D., Pennsylvania.

ANSWER.—1. No conclusive evidence of rabies is presented in either the dog or the patient.

2. Whether the vaccination played any part in the final illness cannot be determined, but the illness may have occurred independently of the vaccination.

3. There are no indications for antirabic vaccination of the attending personnel. There is no evidence of rabies in the patient, and then rabies is not spread by droplet infection in the usual sense.

DERMATITIS HERPETIFORMIS

To the Editor:—A patient who is known to have diabetes has been taking plain and protamine zinc insulin for seven years, and the disease is well controlled. Approximately three years ago a rash developed on the elbows, knuckles, knees and buttocks. A dermatologist at that time prescribed sulfapyridine. The rash completely disappeared for five months. When it recurred, he was given roentgen therapy and again put on sulfapyridine. Since that time, rash recurs immediately whenever sulfapyridine is withdrawn, and the patient is on a maintenance dose of 5½ tablets of sulfapyridine daily. The rash does not vary in severity with temperature or seasonal changes. At this time, there is seen only a few small dried crusts on the elbows, but when sulfapyridine was withdrawn several days ago, small vesicles appeared within twenty-four hours, with only a mild degree of itching. The patient has no other complaints, and history and physical examination are otherwise negative. Various other sulfonamide drugs and penicillin fail to control the rash.

J. H. Bohnfalk, M.D., San Antonio, Texas.

ANSWER.—The original use of sulfapyridine prescribed by a dermatologist, the disappearance of the eruption following its administration and the presence of vesicles when the eruption recurs suggests diagnosis of dermatitis herpetiformis—Duhring's disease.

For reasons that are not clear the sulfonamide compounds, notably sulfapyridine, may be effective in treatment of dermatitis herpetiformis; continued administration may prevent recurrence of the disease. For some patients the maintenance dose may be as little as 1 or 2 tablets daily or every other day. The drug should be administered with sodium bicarbonate.

Dermatitis herpetiformis frequently occurs in the highly strung overactive "can't relax" type of patient. This has caused speculations on the psychodynamics of the malady. There is no known relation of the disease to diabetes.

Other phases in treatment concern attention to the general state of health; with particular reference to rest, recreation, relaxation and conservation of nervous energy, a strict saltless diet and avoidance of ingestion of the other halogen compounds—iodides and bromides. Exposure to the ultraviolet light to the extent of tanning and injections of the patient's own blood into the buttock are at times helpful. The oral administration of solution of potassium arsenite—Fowler's solution—has long been used in treatment. Too continuous administration, of course, should be avoided. In some patients recurrence of the disease may be prevented by alternating maintenance doses of Fowler's solution and sulfapyridine. Local treatment of dermatitis herpetiformis is discussed in textbooks on diseases of the skin.

ALLERGY FROM SHOES

To the Editor:—I have under my care a patient who presents a chronic papulovesicular eczema of both feet of several years' duration. Secondary fungous involvement has definitely been cleared up. Results of potassium hydroxide tests and culture (Sabouraud's) have been negative for several months. Patch tests to shoe dye and shoe leather have been negative in result, but the eruption clears up on therapy with aluminum acetate solution N.F. and boric acid ointment as soon as he is kept off his feet and prevented from wearing shoes. He has had ample roentgen therapy from previous dermatologists. Can you recommend anything as a protective agent to prevent contact with shoe leather again, or what procedure could be used to protect or substitute for shoe leather? I know of no "synthetically" made shoes, and it will be a problem to put some walking apparel on this man after the eczema clears up.

M.D., Ohio.

ANSWER.—Dermatitis from shoes may occur from materials other than the leather or dye. Shaw (Arch. Dermat. & Syph 49:191 [March] 1943) reported 22 cases of dermatitis due to shoes in which the offending substances were found to be glue, felt, canvas, polish, trimmings, dye, top leather and the lining leather of the shoes.

An effort should be made in this case to determine the offending agent by means of patch tests. In unusual cases such as this, manufacturers are usually willing to cooperate by furnishing the materials for testing. Also, it may be possible for the patient to avoid trouble simply by changing to another brand of shoes. The chemical processes used in the manufacture of shoe materials are numerous and varied, not all shoes being chemically alike. If the patient is bothered by all brands of leather, he could wear shoes made of canvas, and the skin could be protected by the application of a paste such as paste of zinc oxide thinned with a little petrolatum if necessary.

MONGOLIAN IDIOCY

To the Editor:—The wife of a major of this Command gave birth to fraternal male twins in Japan four months and three weeks ago. One weighed 5 pounds 10 ounces (2,552 Gm.) and the other 5 pounds 2 ounces (2,325 Gm.) Up to the time that I first saw them three weeks ago the parents had been told that the children were perfectly normal. Both parents are intelligent. The father is 30 and the mother 28 years of age. Family backgrounds are not unusual. The mother was the seventh child in her family, born when her own mother was 42 years of age. During the year before the last pregnancy with the twins the major's wife had irregular and briefer menstrual periods than at any other time.

Examination of the twins revealed that one weighed almost 18 pounds (8,165 Gm.); he was lethargic and pale; the anterior fontanelle admitted one finger; he had "mongoloid facies"; when he cried after I squeezed his toe hard his face flattened out. The second twin weighed almost 15 pounds (6,804 Gm.), and all other observations were the same as that for the first boy, with the addition of a flat occipital area and a right testicular enlargement, which the parents state is getting smaller. Both boys eat well and do not cry much. Movements of the first child are slower and more "massed" than those of the second; both follow light with their eyes but tire easily; if I clap my hands they blink. Although the parents insist that the infants did not seem alike at birth they appear to be perfect identical twins at present.

I thought that they might be mongolian idiots and sent them to the pediatrician at the nearest Station Hospital. He told the parents that they were idiots, without a possibility of a doubt, and painted the worst possible picture for the future. A blood cholesterol determination on one of the boys gave normal results.

Being without the advantage of a skilled consultant over here, these are my questions: 1. What things can be done when the twins are six to seven months of age to prove definitely whether they are mongolian idiots? If this age is too early, please describe in detail the tests that can be performed and the earliest possible age?

2. If they are mongolian idiots: (*a*) can I reassure the parents that this is something for which neither of them is responsible? (*b*) The parents are anxious to have a normal family but are now extremely fearful lest this might repeat itself. Should they be advised to try again? (*c*) What is the procedure usually advised with regard to placement in an institution? What are the average costs in a state or private

institution and at what age can the children be admitted? The parents are Texans, but, being in the Army, are in travel status. (*d*) If the diagnosis is correct, the parents are willing that medical science observe the boys for research, experimental medicine. The father will even take movies of them at various ages if this would contribute anything. Is there any group who might want to work with them? (*e*) (1) Is there possible benefit from surgical intervention? (2) Can mongolian idiocy be determined before birth?

Captain, M.C., U. S. Army.

Answer.—1. Check the physical findings elicited in a more thorough examination against those listed in any standard textbook of pediatrics—even one in Japanese, with the aid of a translator The physiognomy is so characteristic that "the mongoloid facies" observed by the correspondent could be confirmed by photographs mailed to this country At any Army Command it would also be a simple process to take handprints and footprints, which would be informative.

The distance between the bregma and occiput and the circumference of the skull should be measured for comparison with norms for the age, as brachycephaly is characteristic of mongolism. Abnormal formation of the ear lobes and the presence of congenital heart disease are in favor of the diagnosis Other stigmas at 6 months of age due to generalized neuromuscular hypotonia would be inability to hold the head up, alternating or persistent strabismus and hyperflexibility of joints. No single finding is pathognomonic, but the aggregate syndrome is usually unmistakable. The testicular tumor might be an associated defect such as a hernia or hydrocele.

Roentgen examination of hands may reveal the defective formation of the middle phalanx of the fifth finger—found in about two thirds of mongoloid persons—and anteroposterior views of the skull may reveal the characteristic acromicria. Prints of these plates could easily be made for dispatch to the United States with the photographs and handprints.

2. (*a*) Epidemiologic evidence points toward maternal factors as the cause of mongolism.

(*b*) Multiple instances of mongolism in the same family are so rare as to warrant a "lightning does not strike twice in the same place" attitude toward future progeny. This advice, however, is predicated on a complete check-up of the mother's health with positive measures taken to remedy any chronic, systemic, endocrine or gynecologic disorders found (especially in view of the mother's menstrual history). It is also predicated on the placement of the mentally retarded twins in an institution in order to allow future children normal care in a normal home.

(*c*) The query should be made to the director of a state-maintained institution of Texas.

(*d*) Many large clinics would "want to work with them" However, a vast amount of research has been done on treatment of mongoloid persons without revealing substantial hope for cure Of more promise is evidence that the condition may be prevented, at least in part, by an increased understanding and control of the causative factors and mechanisms operating in early pregnancy.

(*e*) (1) No. (2) Not clinically, occasionally at autopsy.

MEASLES IMMUNE GLOBULIN

To the Editor:—Are there any clinical data on the effect of measles immune globulin given prior to exposure, as might be done in the midst of an epidemic? I am particularly interested in knowing whether a complete prevention, rather than the desired modification, would result therefrom.

Manasseh Kamen, M.D., Brooklyn.

ANSWER—The immunity against measles produced by immune globulin is a passive immunity similar to that produced by convalescent serum and cannot be counted on to endure longer than two to four weeks. If given prior to exposure, but within the period for which it is effective, it should produce complete protection for that particular exposure. If given more than four days after exposure, but within eight or nine days of exposure, it should result in a modified attack which usually will produce permanent immunity. If one is uncertain as to the exact time of exposure the degree of protection cannot be accurately predicted.

TETANUS AND DIPHTHERIA TOXOIDS

To the Editor:—The following problems have come up at our institution: 1. How long do antitoxin titers against diphtheria and tetanus toxins remain at therapeutic level in the blood following immunization? 2. If an individual receives a dirty wound several years following immunization against tetanus, how soon after a booster shot will the titer be high enough to protect him? The question also applies to diphtheria. 3. Two persons have been immunized against diphtheria and tetanus, and years later one receives a dirty wound and the other is exposed to an active diphtheria case. How should each person be treated?

Harry W. Orris, M.D., New York.

Answer.—1. For a minimum period of two years. Actually, many persons will retain an established active immunity for a much longer time

2 In the circumstances cited, the titer should rise to a high level within seven days and should protect against the disease named

3 The action indicated in regard to the two diseases, diphtheria and tetanus, would not be the same. If a number of years had elapsed since the person with the dirty wound had been immunized against tetanus it would probably be safer to resort to passive immunization rather than rely on a booster dose of tetanus toxoid for protection. In respect to the patient who was exposed to diphtheria, one might wish to know whether infection took place at the time exposure occurred. Consequently, before adopting any prophylactic measures a culture should be taken from the nose and throat to determine whether diphtheria organisms are present, and at the same time a Schick test should be performed for susceptibility If the patient is not susceptible, injections of diphtheria toxoid or diphtheria antitoxin would not be required. If the patient is susceptible but the nose and throat cultures are negative, then a booster dose of diphtheria toxoid would be proper. If the nose and throat culture is positive and the Schick test is also positive, administration of diphtheria antitoxin would be the approved procedure.

AIR IN PERITONEAL CAVITY

To the Editor:—As a general rule, how long after abdominal operation can gas or air be demonstrated by roentgen ray in the peritoneal cavity?

F. K. Hurt, M.D., Jacksonville, Fla.

ANSWER.—The presence of air in the peritoneal cavity is not uncommon following abdominal surgery, particularly when large masses of tissue, such as ovarian cysts or a large fibroid uterus, are removed. The duration of pneumoperitoneum is influenced by several factors, such as the amount of air, the position of the patient in bed and the normalcy of the peritoneum. Factors which influence the amount of air remaining in the peritoneal cavity after abdominal surgery are the length and location of the incision, the position of the patient on the operating table, particularly when the patient is shifted from the Trendelenburg to Fowler's position, the type of anesthesia, straining during the operation and drainage of the peritoneal cavity with tubes. Lewis (*Canad. M.A.J.* 28:18, 1933) reports that pneumoperitoneum is much more common when spinal anesthesia is used, due to the relaxation of the abdominal wall and the tendency to pull up the abdominal wall to the last stitch. He demonstrated air in the peritoneal cavity of 40 per cent of 25 patients when spinal anesthesia was used as compared to 13 per cent of 15 patients when gas, oxygen and ether were employed. He stated further that the major part of the air will disappear in ten days to two weeks, but in a few patients it may persist from four to six weeks. Pain and Rigler (*Surgery* 3:351, 1938) report that if 1,200 to 1,600 cc. of air is injected, pneumoperitoneum may be demonstrated roentgenologically for as long as two weeks. Bannen (*British J. Radiol.* 18:390, 1945) indicates that a small amount of air may be absorbed within twenty-four hours, but larger amounts may persist for fourteen days.

A survey of available literature indicates that ordinarily as little as 20 to 30 cc. of air can be demonstrated roentgenologically by proper positioning of the patient, that small amounts of air are absorbed within twenty-four to forty-eight hours, but that larger amounts may be observed for fourteen or more days subsequent to abdominal surgery, particularly if the patient is placed in Fowler's position; then the air remains under the diaphragm, which is a relatively poor surface for absorption.

UNDULANT FEVER

To the Editor:—Please send me information concerning treatment and diagnosis of undulant fever including use of para-aminobenzoic acid in treatment.

William A. Guenon, M.D., Greencastle, Pa.

ANSWER.—The most reliable criteria for the diagnosis of undulant fever are history of patient, clinical symptoms and signs, a positive agglutination test and a positive blood culture. If the clinical symptoms and signs are suggestive of undulant fever but the agglutination test and blood culture are negative, one may make a skin test with "brucellergen" (a suspension of nucleoprotein from Brucella cells). Caution should be used in interpreting a positive skin test as certain evidence of infection. Those who have had the disease in the past also show a positive cutaneous reaction. Recently two methods of treatment have been developed. One involves the use of sulfadiazine and streptomycin (C. W. Eisele and N. B. McCullough, THE JOURNAL, Dec. 20, 1947, p. 1053) and the other, the administration of sulfadiazine orally and an intravenous transfusion of human blood plasma or whole blood. Instructions for use of the latter method may be obtained by writing to the Brucella Laboratory, Michigan State College, East Lansing.

"ATHLETE'S FOOT"

To the Editor:—The football coach of a Baltimore school has asked me about methods of controlling "athlete's foot." He has some literature on a machine by Peda Spray, Inc., located at 55 West Forty-second Street, New York. This is a clever apparatus but expensive unless effective. Is it worth while installing? I believe there is some evidence that the Navy used it.

Karl W. Ebeling, M.D., Baltimore.

ANSWER.—The Peda Spray machine is attractive and adaptable to any shower room. Mechanically it is simple and effective, in that the solution used reaches the parts of the feet desired. It is stated that one filling of the machine supplies treatment for 11,500 persons. The composition of the solution originally used by the Peda Spray Company was said to be 1.33 per cent salicylic acid, 7.6 per cent camphorated oil, along with a small quantity of eucalyptus oil and menthol, in a base of purified naphthol. According to data supplied by the Peda Spray Company, this formula is capable of destroying in five minutes the parasitic organisms that cause ringworm of the feet. In a report by Capt. H. S. Harding, (MC), U.S.N., to the Bureau of Medicine and Surgery, United States Navy, he was enthusiastic about this solution and this method of prophylaxis. In a recent communication from the president of the Peda Spray Company, it was stated that undecylenic acid is now being added to the Peda Spray solution in the "recommended percentages." Just how effective the present solution is against fungi in aqueous suspension is not stated. Observations by competent dermatologists and mycologists suggest that the greatest value of any method of prophylaxis is the stimulation to the individual to keep his feet clean and dry.

CLAUSTROPHOBIA

To the Editor:—A girl aged 18 has menopausal symptoms—hot flushes, irregular menstruation and also claustrophobia. The history is otherwise noncontributory. The basal metabolic rate is normal. Is estrogenic therapy indicated? Is there indication for some other kind of treatment?

M.D., Massachusetts.

ANSWER.—*In spite of the hot flushes, this is not* a case of premature menopause. The exact type of menstrual disturbance is not mentioned; hence, advice on therapy cannot be given. If the menses are simply far apart or scanty treatment is not necessary at the present time. Estrogenic therapy is not indicated for the hot flushes and irregular menstruation. The claustrophobia is an indication that there is some psychic disturbance, and this may also be responsible for the flushes and menstrual irregularity. For the psychic disturbance some form of psychotherapy is necessary. In addition, a thorough physical examination must be made, including, of course, a bimanual rectoabdominal examination if the girl is a virgin or a vaginal examination if she is not. If any abnormality is found it must be corrected, but almost certainly none will be present. After psychotherapy the flushes will probably disappear.

CHEILITIS

To the Editor:—A man aged 66 has been suffering from glossitis and cheilitis for six months. Nearly all the vitamins, riboflavin 20 to 30 mg. a day, nicotinic acid 200 to 300 mg. a day, vitamin B 20 mg. and vitamins A and C in the same proportion, have been prescribed. He gets good results, but as soon as I cut the dosage to half or to one third, relapse occurs within a week. Examination of blood and urine reveals normal conditions. Reaction to the Wassermann test is negative. He has had false teeth for fifteen years. Does this man need such a large daily dosage of vitamins as long as he lives? Which of the vitamins are indicated for glossitis and which for cheilitis?

H. K. Beshlian, M.D., Paterson, N. J.

ANSWER.—The recitation of treatment the patient received is somewhat obscure, because it is not clear what 20 mg. of vitamin B is. The individual components and their quantities should be stated. The indiscriminate combination of vitamins given is reminiscent of shotgun therapy of former years with other agents. Glossitis and cheilitis that are due to dietary deficiency factors are most apt to respond to administration of members of the vitamin B complex. Of these, nicotinic acid and riboflavin are most frequently effective, the former for the glossitis and the latter for the perlèche. Where individual components are lacking and their supply is effective, it is advantageous to add other members, too. Single factor deficiencies are unlikely to occur. The entire diet of the patient should be reviewed, its adequacy assessed and corrections or modifications made if indicated. Iron therapy and hydrochloric acid are sometimes helpful.

It should be ascertained whether there are other reasons for the glossitis and cheilitis. Is the patient sensitive to something in the composition of the dentures? Do they fit properly? Are they high enough to keep redundant folds from forming at the corners of the mouth with leakage of saliva? If adequate diet alone is insufficient to control this patient's oral changes, then 10 to 20 mg of riboflavin should be tried for its effects and followed by a trial of 100 to 200 mg. of nicotinic acid alone. On the basis of the results obtained it can be ascertained which alone or in combination would be most useful.

DIARRHEAS OF INFANCY

To the Editor:—*The reply in* The Journal, *page 1186, Dec. 27, 1947, to the* question on diarrheas of infancy asked by a physician of Brooklyn stated that fluids should be given parenterally by vein or subcutaneously. There are many conditions in which fluids should be given directly into the blood stream and in which this mode of administration is preferred to the subcutaneous route, as it is more rapid with fewer complications. If use of the intravenous route is impossible, in many cases my associate *and I have used the bone marrow route (Turkel, H., and Bethell, F. H.:* A New and Simple Instrument for Administration of Fluids Through Bone Marrow, *War Med.* 5:222-225 [April] 1944). Several *hundred papers* have been published on the use of the bone marrow route.

Henry Turkel, M.D., Detroit

SENSITIVITY TO ANESTHETICS

To the Editor:-Is there any method of determining the sensitivity of a patient to local anesthetics such as "pontocaine" and cocaine? Has it been determined whether toxic reactions are more common with one or the other of these drugs?

M.D., Maryland.

ANSWER.—Methods to determine the sensitivity of patients to local anesthetics are not always reliable. By applying a patch test or by using a drop of fairly dilute solution (1 per cent) of the agent in the eye, it is possible to get an idea of the way the patient will react, especially to "pontocaine" and cocaine. Inflammatory reaction indicates probable sensitivity. Not infrequently the patient who gives a history of sensitivity to a local anesthetic is more sensitive to the epinephrine used with the local anesthetic than to the anesthetic itself.

Sensitivity of a patient to an anesthetic varies considerably. If sensitivity is only slight the agent is not dangerous for him. If sensitivity exists there is a method which usually reveals this important fact. The patient is seated with his back toward the anesthetist, and the skin of his chest is prepared by painting it with a 70 per cent alcohol solution. A separate syringe and needle are used for each solution. One of the solutions is isotonic solution of sodium chloride; the others are mild solutions (1 per cent or less) of each of the drugs to be tested - in this case "pontocaine" and cocaine.

A control wheal is raised by intracutaneous injection of 1 cc. of isotonic sodium chloride solution. Then at a distance of at least 2 fingerbreadths on one side of this wheal 1 cc. of 0.1 per cent cocaine is injected and on the other side at the same distance from the wheal, 1 cc. of 0.1 per cent "pontocaine" is injected. The wheals which appear are observed for ten minutes. If enlargement and redness occur, the patient is considered sensitive to that drug injected. If the sensitivity is well defined generalized symptoms develop, such as apprehension, shortness of breath, pronounced nervousness, sometimes tremor and pallor, an increase in pulse rate or lowering of blood pressure. In extreme cases the patient will faint. The degree of reaction to the drug determines the degree of sensitivity and also the danger involved in the use of the drug in the person being tested. Various studies concerning poisoning from local anesthetics and treatment used have been reported by D. C. Bull and C. B. Esselstyn (Pantocaine in Spinal Anesthesia, *Ann. Surg.* 103:29-37 [Jan] 1936); A. L. Tatum, A. J. Atkinson and K. H. Collins (Acute Cocaine Poisoning, Its Prophylaxis and Treatment in Laboratory Animals, *J. Pharmacol. & Exper. Therap.* 26:325-335 [Dec] 1925); V. E. Henderson (Toxicity of Anaesthetics, *Bull. Acad. Med., Toronto* 17:113-115 [April] 1944); J. S. Lundy (Clinical Anesthesia, Philadelphia, W. B. Saunders Company, 1942, p. 28), and in Queries and Minor Notes (Sensitivity to Anesthetics, *J.A.M.A.* 126:402 [Oct. 7] 1944).

STREPTOMYCIN

To the Editor:—Has streptomycin by inhalation been tried for pulmonary tuberculosis?, If so, has it been beneficial? Is there available a preparation of streptomycin in oil similar to the standard preparation of penicillin in oil and wax?

Robert S. Srigley, M.D., Hollis, Okla.

ANSWER.—Streptomycin in aerosol sprays has been used in the treatment of laryngeal and bronchial tuberculosis but it has not been used alone in pulmonary tuberculosis unassociated with laryngeal tuberculosis. Parenteral treatment associated with aerosol treatment is more effective in the treatment of laryngeal and pulmonary tuberculosis than aerosol treatment alone.

At present, there are no approved preparations of streptomycin in oil available for parenteral use that are similar to the standard preparation of penicillin in oil and wax.

BARBITURATES

To the Editor:—Does "seconal" 1½ grains (0.1 Gm.) taken every twenty-four hours for a long period of time have an effect on health? Will it shorten life? My patient is nervous and he states that "seconal" calms him. He now has taken it for three years and feels fine.

J. L. Waldner, M.D., Loveland, Colo.

ANSWER.—There is much to be learned regarding the effect on bodily function and life expectancy of the chronic use of the barbiturates. It appears well established that prolonged use of any of the barbituric acid derivatives will lead to tolerance and habituation. Hambourger has stated that one tenth of all drug habituation is due to barbiturates and that in one third of those so habituated a definite craving for the drug is experienced when it is withheld. The chronic use of the barbituates may lead to objective damage of the central nervous system as shown by nystagmus, positive Romberg sign and motility disturbances of a cerebellar nature. Euphoria is common, and in some instances mania may be the end result. In some cases of chronic barbiturate intoxication, convulsions may occur and urticarial rashes are not uncommon. As important as the physical changes which may be produced by the prolonged use of the barbiturates is the postponement of adequate treatment of the causes underlying the use of these drugs. Often they are used to combat unrecognized anxiety states and other neuroses. The proper treatment of such patients lies in adequate exploration of the underlying psychosomatic disease and the institution of appropriate remedial measures rather than the masking of such symptoms by the administration of sedatives.

DIABETIC ACIDOSIS

To the Editor:--Assume that one has a young patient with an intact cardiovascular renal system, who is diabetic and who goes into acidosis because of failure to take the required insulin. He receives insulin and fluids in amounts necessary to restore free urinary output. The aim of treatment is to stop the excessive production of ketone bodies. Therefore, urinary acetone and diacetic acid are checked hourly. Determinations of carbon dioxide combining power are also done hourly. (1) At what carbon dioxide combining power level do the acetone bodies in the urine usually disappear? I have noticed that they disappear while carbon dioxide combining power is still in the low 30's (volumes per cent). If an alkali (sixth-molar sodium lactate or 5 per cent sodium bicarbonate solution) is used, one can raise the carbon dioxide combining power more quickly and abolish the clinical hyperpnea. However, without adequate insulin and carbohydrate, the liver goes on producing acetone bodies in excess, even though the carbon dioxide combining power approaches normal. (2) How does this alkali solution affect the urinary acetone and diacetic acid tests? If the latter tests are made negative, then isn't the use of alkali solution dangerous because it masks the two tests (carbon dioxide combining power and urinary acetone bodies) that reflect the underlying pathologic physiology?

S. Richard Horio, M.D., Honolulu, Hawaii.

ANSWER.—(1) In the type of patient and situation described, it is common clinical experience that tests for acetone bodies in the urine usually become negative when the carbon dioxide combining power of the blood plasma rises to the general level of 25 to 34 volumes per cent. However, there is considerable individual variation due to a number of modifying factors, including the state of renal function and of urinary output, whether or not alkalis have been used in treatment and whether or not sufficient insulin has been given to permit resumption of utilization of carbohydrate. (2) Although the giving of sodium lactate or sodium bicarbonate furnishes base with which excess ketone acids may in part be neutralized, this is not of real value unless insulin is administered early in amounts adequate to allow utilization of carbohydrate, thereby stopping at the source the formation of ketone acids in excess. Unless enough insulin is given, the administration of alkali will not result in negative tests for acetone and diacetic acid in urine (and, in fact, ketosis may occur in alkalosis due to excessive administration of alkalis). Many clinicians successful in the treatment of diabetic coma do not use alkalis at all, and certainly serious errors in the evaluation of a patient's condition are possible when a plasma carbon dioxide value has been made artificially high by the giving of alkali.

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MALIGNANT TUMORS OF THE NOSE AND NASAL ACCESSORY SINUSES

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Boston

MATERIAL

During the past sixteen years, from 1930 to 1945, inclusive, a total of 219 patients with malignant disease of either the nose or the nasal accessory sinuses, or a combination of both, were seen at the Massachusetts Eye and Ear Infirmary. These cases were studied, the diagnosis made by biopsy, and treatment given in the Infirmary, in the X-Ray Department of the Massachusetts General Hospital, or in both, and the cases were followed by the otolaryngological staff in the Tumor Clinic of the Massachusetts General Hospital.

A recent survey[1] reveals that among these 219 cases there were 139 males and 80 females. The average age was 56 years, the youngest patient being 16 and the oldest 83 years of age. Among the 219 cases there were 10 untraced and 62 (30 per cent) with a five year survival or longer.

The relation of the treatment to the survival rate may be summarized:

Primarily surgical treatment		128	Five Year Survival
Surgical treatment alone	21		48 or 37%
Plus roentgen treatment	35		
Plus radium therapy	34		
Plus roentgen and radium therapy	38		
Primarily radiation		72	Five Year Survival
Roentgen therapy alone	59		14 or 19%
Plus surgical treatment	6		
Plus radium	4		
Plus surgery and radium therapy	3		
Primarily radium therapy		10	Five Year Survival
Radium alone	2		0
Plus surgical treatment	1		
Plus roentgen therapy	7		
No treatment		4	

The successful treatment of cancer of the nose and nasal accessory sinuses, as with cancer elsewhere, depends largely upon early diagnosis, upon prompt and thorough treatment; so that the treatment is neither too little nor too late.

If the educational campaign for the eradication of cancer is to succeed, it is necessary that medical students and physicians as well as the general public be made cancer conscious.

SYMPTOMS

The symptoms which may lead one to suspect cancer of this area are few in number and can easily be listed: (1) hemorrhage, (2) nasal obstruction, (3) referred pain to the teeth, (4) painless swelling, (5) paresthesia or anesthesia of the cheek and (6) exophthalmos.

When a new growth is limited to the nasal cavity, nasal obstruction and hemorrhage are the most frequent symptoms. A small growth of the anaplastic type with thin-walled blood vessels may show early ulceration with subsequent hemorrhage as its first symptom. With the increase in size of the growth, nasal obstruction occurs. This obstruction is usually unilateral; hence it is an axiom that any unilateral obstruction by a growth should be considered malignant until the microscope proves it otherwise. When the tumor is of the slowly growing variety, with well developed connective tissue and thick-walled blood vessels, hemorrhage may not occur and the only early symptom is that of nasal obstruction. The growth may have the appearance of a simple nasal polyp; yet on its removal, the hemorrhage may be excessive, and this should be suggestive of cancer. It hardly seems necessary to say that every specimen should be examined microscopically.

ILLUSTRATIVE REPORTS OF CASES

Case 1.—Mrs. I. H. was seen Dec. 11, 1934, by her family physician on account of repeated slight hemorrhages from the left nostril. Examination showed an irregularity along the inferior border of the left inferior turbinate. The biopsy report was epidermoid carcinoma, grade II. The treatment was a left lateral rhinotomy with removal of the entire inferior turbinate followed by 1,032 milligram-hours of radium and 1,600 r of external radiation. The patient has remained free of symptoms.

Case 2.—C. M., aged 38, on Aug. 4, 1937, was brought to the Massachusetts Eye and Ear Infirmary by ambulance on account of severe hemorrhage from the left nostril. She was exsanguinated and required repeated transfusions with postnasal and nasal packing to control the bleeding.

Examination showed an extensive new growth involving the left nostril, the left ethmoid and the maxillary sinus. Roentgenograms showed destruction of the front face of the maxillary antrum, loss of ethmoid cell outline and loss of the nasoantral wall, with superimposed infection. The biopsy report was highly malignant carcinoma. The treatment consisted of as thorough removal of the growth as was possible through a modified Moure approach followed by 3,000 milligram-hours of radium and 2,400 r of external radiation. The patient remains free of disease.

When cancer is superimposed on polypoid ethmoiditis it may be suspected if on the removal of a polyp it bleeds more than usual. I cannot emphasize too strongly the necessity of doing a microscopic examination on any tissue removed from any portion of the body. This is especially true in patients who require repeated polypectomies.

Case 3.—Mrs. E. N., seen Sept. 26, 1942, had had polyps removed every year for about ten years. One month previously, because the bleeding was a little more profuse than usual, her rhinologist suspected malignant disease and had the polyp exam-

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Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1947.

From the Department of Oto-Laryngology of The Massachusetts Eye and Ear Infirmary.

[1] This survey was made possible by a grant from The American Cancer Society, Massachusetts Division.

ined microscopically. The pathologic report was epidermoid carcinoma, grade II.

Examination showed a new growth involving the right ethmoidal labyrinth. She was treated by lateral rhinotomy with 1,000 milligram-hours of radiation followed by 7,100 r of external radiation. She remains alive and well.

Tumors arising in the ethmoidal area may invade the orbit or tumors arising in the orbit may extend to the nasal sinuses. Unilateral exophthalmos without evidence of infection should point toward malignant disease.

Case 4.—Miss S. B., aged 20, was seen in July 1940, giving a history that eight weeks previously the right eye began to water. Treatment of the eye did not give relief and the glands on the right side of the neck became swollen and tender. One week previously she had double vision; she denied having had a head cold or sore throat and said that she did not have a fever at any time. Examination showed an exophthalmos of 4 mm. of the right eye, the eyeball being deviated downward and outward. The nasal septum was straight, in the midline, and the upper part of the vestibule of the right nostril was blocked by a smooth tumor mass apparently springing from the anterior tip of the right middle turbinate. The tonsils had been removed. The postnasal space was normal. The right upper cervical nodes were enlarged, being about 3 cm. in diameter. Roentgen examination showed destruction of the inner wall of the orbit, with a question of pansinusitis.

A biopsy specimen from the right middle turbinate and also a specimen from the cervical gland showed lymphoma. Her treatment consisted of 4,200 r of external radiation, with prompt regression of the tumor mass and the exophthalmos. A recent check-up (October 1946) showed her free of symptoms and disease.

The symptoms of new growth of the maxillary sinus depend somewhat on the location of the growth. Growths originating in the hard palate or the superior alveolus are characterized by early swelling. In the early phase, there is but little pain. With the invasion and destruction of the bone, the teeth may loosen and fall out, but it is a comparatively painless process. Extensive ulceration may develop with fistulization into the maxillary antrum and still be painless. A patient under my care stated that the first symptom which he noticed from a lesion starting in the hard palate was the fact that on drinking, liquids came through his nose.

Lesions originating from the posterior, superior antral wall are characterized by paresthesia or anesthesia of the cheek of that side. They are ofttimes accompanied by pain referable to the teeth. It is not unusual for these patients to seek relief by repeated dental examinations and by the loss of one tooth after another in a vain effort to alleviate the discomfort. As infection is superimposed on the original lesion, there may be early pain referred to the cheek, and puncture and lavage of the antrum has been carried out in many cases. With the increase in size of the new growth, there is extension into the nasal cavity with a mass which may block the entire nostril. Then, too, there is extension into and destruction of the bones of the maxilla, with erosion of the anterior face of the maxillary antrum or destruction of the rim of the orbit. Many patients do not seek medical advice until the growth has reached such a size that there is a mass over the cheek, or until the extension into the orbit has produced exophthalmos.

Case 5.—Mrs. R. E. R., aged 73, seen in the last five year period, illustrates well the symptom of anesthesia of the cheek. Her chief complaint was anesthesia of the right cheek. She described it as a queer sensation and it just did not feel right. She had no difficulty in breathing.

A roentgenogram showed extensive destruction of the right zygoma and the infratemporal fossa with tumor in the roof of the right maxillary sinus. A biopsy specimen taken through a Caldwell-Luc approach revealed epidermoid carcinoma, grade II. In spite of extensive external irradiation, she died a painful death in June 1942.

Pain in the upper teeth without dental disease is suggestive of cancer of the superior posterior part of the maxillary sinus.

Case 6.—J. F., aged 24, in August 1934, after having a dental check-up, experienced severe pain in his left upper teeth. Repeated dental examinations failed to show any pathologic condition in the teeth. The sixth dentist whom he consulted took roentgenograms of his sinuses, and the sinuses were reported as showing chronic infection. In the dentist's office a Caldwell-Luc operation on the left side was attempted with the patient under local anesthesia. On removing the face of the canine fossa, the dentist saw what he interpreted to be a large antral polyp. On removal of the polyp, there was such profuse bleeding that I was called in consultation. The biopsy report was osteogenic sarcoma.

On August 23, a modified Moure operation on the left side revealed that the growth arose from the back wall and the superior part of the left maxillary antrum. The growth was surgically removed as thoroughly as possible and, although osteogenic sarcomas are not radiosensitive, the patient was treated by the local use of radium to the maximum tolerance, followed by the maximum skin tolerance of external radiation. He remained free from his disease for eighteen months, and then one recurrence followed another in rapid succession. His external carotid artery was tied; when exophthalmos developed his orbit was exenterated, and in the next eighteen months he underwent about thirteen major procedures for the removal of fungating growth of the orbit, finally dying in October 1937.

New growths originating in the posterior part of the ethmoidal labyrinth may extend into the sphenoidal sinus, and if the optic nerve is involved, the first symptom is a loss of vision on that side.

Case 7.—Mrs. R. G., aged 45, was seen Feb. 13, 1936. Her first complaint was a sudden loss of vision of the left eye followed by some nasal obstruction. Examination showed a new growth of the left ethmoid and sphenoid sinus. The biopsy report was adenocarcinoma, the treatment consisting of a left lateral rhinotomy and removal of new growth followed by maximum radiation; and external radiation was carried out at the Huntington Memorial Hospital and the Massachusetts Eye and Ear Infirmary. Recurrence developed in 1938 uncontrolled by treatment, with death in 1941.

BIOPSY

I am an advocate of biopsy in every case, for the treatment depends on the type of tumor as shown by the microscopic examination. The biopsy should be done and the findings known so that the plan of treatment can be outlined. I do not agree with those who rely on a frozen section at the time of operation. A low grade lesion may best be treated by operation and radiation, while an anaplastic growth may do better under radiation. A knowledge of the pathologic nature of the tumor is necessary for the plan of treatment.

When in doubt, I am an advocate of an exploratory operation. A lateral rhinotomy, or an external canine fossa operation on the maxillary antrum, in my opinion, in a doubtful case is not only advisable but justifiable.

ROENTGEN EXAMINATION

A unilateral mass obstructing a nasal cavity is suggestive of cancer. The usual roentgen picture of sinus cancer is that of the late stage, when destruction of bone has already taken place. Repeated roentgen examinations in every suspicious case should be the rule, if the diagnosis is to be made early.

TREATMENT

There are but two methods of treatment of cancer of the nose and nasal sinuses that have proved of value; namely, surgical treatment and irradation, or a combination of the two. If the biopsy shows the tumor to be an anaplastic new growth of the radiosensitive type, radiation may be used alone. This can be either in the form of external radiation or by the use of radium. When there is superimposed infection, adequate drainage must be supplied. Occasionally interstitial radiation by the implantation of radium needles directly into the tumor has been of value. When the new growth is not of the anaplastic type, surgical treatment followed by radiation, or the direct implantation of radium in the operative field, supplemented by external radiation, is the treatment of choice.

Operation for Nasal Lesions.—Adequate exposure should be obtained for any operative procedure. New growths limited to the nasal cavity can be adequately exposed through a lateral rhinotomy. This incision starts opposite the inner canthus of the eye and goes down the lateral wall of the nose and around the ala. The periosteum and soft parts are elevated from the bone, and the nasal cavity entered through the lacrimal fossa, followed by the removal of the ascending process of the superior maxilla and the lateral nasal bone. By extending the incision upward, and with bone removal to include the floor of the frontal sinus, access to the frontal sinus can be obtained. This exposure permits access to the ethmoidal region, to the sphenoid, to all of the turbinates; and through this exposure the antrum can be explored. After removal of the new growth, the cavity is lined with petrolatum gauze, packed with narrow-folded strips of gauze, in which radium in either platinum or steel needles can be embedded. An attempt should be made to obtain at least 1 cm. of distance between the septum and the radium. The septum can be further protected by a shield of at least 1 mm. of lead. The packing is brought out the nostril and the incision closed, unless it is desirable to leave it open for further inspection.

Tumors of the Sinuses: The surgical approach to tumors of the sinuses should depend on the point of maximum involvement. If exophthalmos exists and if it is questionable whether the orbit has been invaded the ideal approach is through the orbit by an exenteration of the orbital contents. This approaches the maxillary antrum from above and the ethmoidal labyrinth from the side. By removal of the floor of the orbit, the antrum can be explored; and by removal of the lateral orbital wall, the ethmoidal labyrinth can be exenterated. It permits, too, an easy access to the frontal sinus.

When the lesion has originated in the superior alveolus or from the hard palate with extension into the antrum the ideal approach is from below by resection of the superior alveolus, including half or all of the hard palate. This approach permits access to all the accessory sinuses. It provides the best of drainage, but it handicaps the patient in that he must wear a dental prothesis. Lesions involving the ethmoidal labyrinth and the maxillary sinus without extension into the orbit, or without evident involvement of the hard palate, can be reached by any of the face-splitting operations.

For extensive involvement of sinuses, I have been using a modified Moure incision. This incision starts opposite the inner canthus of the eye, goes down the lateral wall of the nose, around the ala to the midline of the upper lip. It then goes straight down through the columella dividing the upper lip and with an incision through the buccal mucous membrane from the nasal spine to the last molar tooth. The entire cheek is turned back, exposing the superior maxilla. This exposure permits excellent inspection of the operative field and permits the removal of the entire maxilla, if it is found to be necessary.

The incision is made with the cutting electric current, and all bleeders are stopped by electrocoagulation. The bone is removed with rongeur forceps. The tumor is shelled from the antrum by a curet. Its removal is accompanied by a profuse hemorrhage, so that it should be removed rapidly. A large sponge soaked with hot saline solution is inserted into the cavity. The bleeding stops when the tumor is removed. Ligation of the carotid artery has been advocated to control the hemorrhage and to diminish the blood supply of the tumor. I have not found it necessary to ligate the carotid artery in any case.

The ideal removal of any cancerous growth is by its removal through normal tissue. This is absolutely impossible in a region such as the nasal sinuses. Here the removal amounts to a curettage. The operation is ideal for disseminating the growth and producing either distant metastasis or local recurrences. For that reason, the entire operative cavity should be desiccated with the coagulating current. For this reason, too, I have advocated the local insertion of radium to destroy any scattered tumor cells. The orbit is protected with a shield of 1 mm. of lead, the cavity lined with petrolatum gauze, gauze packing is inserted, and the radium placed within the gauze packing so that there is at least 1 cm. of gauze to act as protection. This gauze is brought out and partly through the buccal incision. The musculature of the lip is sutured with buried surgical gut sutures, care being taken that the vermillion border of the lip is approximated exactly. The skin edges are then closed with dermal sutures. Depending on the sensitivity of the tumor, the radium is left in place for a total dosage of 2,000 to 4,000 milligram-hours. At the end of the desired time, with the patient under intravenous anesthesia, the packing is removed through the buccal incision. In the after-treatment, care must be taken that the buccal incision does not close. This can be kept open by an obturator made of dental compound.

Exophthalmos due to radiation reaction occasionally occurs. It is exceedingly painful, and plastic procedure on the lids to preserve the cornea have been of no avail. This reaction may take place early, or it may be delayed as long as six months to one year after radiation. It is a trying situation, as one must think of orbital extension or recurrence within the orbit. Orbital exenteration may be necessary, not only to relieve the pain, but to make certain that extension of the disease has not taken place. Studies of 8 such cases show the pathologic change to be that of edema and fibrosis.

The after-care consists of keeping the cavity clean. The patient can use a nasal irrigation at home with frequent applications of potassium permanganate spray, 1 : 10,000. The discharge ceases in about two to three months. By keeping the buccal incision open, inspection of the operative cavity can be thoroughly made.

This operative procedure of primary closure of the incision in the face leaves the patient with a minimum of deformity and permits the social and business life of the patient to continue without embarrassment.

Irradiation.—When the first supervoltage x-ray apparatus was developed at The Huntington Memorial Hospital in conjunction with the Massachusetts Institute of Technology, it was freely predicted that most operative procedures for cancer would be discarded. I shared in the enthusiasm, but my experience throughout the years has convinced me that the old surgical principles of removal, if only to provide drainage for superimposed infection, and then irradiation, offers the best hope for improving treatment of cancer involving the nose and accessory sinuses.

Our study[1] shows that patients treated primarily by surgery, supplemented by external radiation, or by radiation by means of radium in the operative cavity, have a better than a 2 to 1 chance of a five year survival than those treated primarily by radiation.

CONCLUSIONS

Physicians as well as the laity should become cancer conscious. Early diagnosis followed by adequate treatment is the only hope of saving more patients with cancer of the nose and nasal accessory sinuses.

ABSTRACT OF DISCUSSION

Dr. H. B. Orton, Newark, N. J.: There is little that I can add except to emphasize the fact that we all should be made cancer conscious as well as the general public. This not only applies to cancer of the nose and accessory sinuses, but to other parts of the body as well. Early diagnosis and symptoms leading to a probable diagnosis should be very carefully looked into. To look and see is far better than to wait and see. In the operations of these growths, the tumors that arise from the lower portion of the nasoantral wall have a much better prognosis than those arising above this level. A wide exposure of the area involved should be made in attempting to remove these malignant growths. I am glad to hear Dr. Schall emphasize the importance of statistics based on a five year follow-up. It might be a good rule to have in the various societies that only those statistics based on a five year follow-up be presented, thereby eliminating much of the confusion in relation to the results of the various methods of treatment of cancer not only of the nose and accessory sinuses, but elsewhere in the body. Dr. Schall's percentage of patients living is commendable. It shows that in his locality earlier diagnosis is being made so that appropriate treatment is instituted. There should be no reason why growths originating in the hard palate or superior alveolus should not be diagnosed early. The patient should realize that something is wrong if he looks into his oral cavity; and if he consults a doctor the doctor should see to it that a biopsy is taken. Roentgenograms of sinuses should be encouraged. All tissue removed from the nose or accessory sinuses should be subjected to thorough histologic study. It is surprising to find every so often malignant changes taking place; when the diagnosis is made early the patient has a far better prognosis if proper treatment is instituted. It is extremely interesting to note that Dr. Schall's results with surgical treatment first, followed by some form of irradiation, is far better than in those cases in which he primarily used irradiation. This brings out a point that I have been stressing for some time, namely, that where malignant growths are accessible to operation it should be the procedure of choice.

Dr. G. E. Martin, Edinburgh, Scotland: Dr. Schall's results are extremely good, and this principle of reporting five year survivals is one which I think should be done by every section. We do not want to see the early cases. We can all get good results in a year's time, but what about five years? It is only the five years that count, because, after all, five years added to a man's life at the cancer age, 55 or so, means much, especially if it is five years without discomfort and without pain, and also five years which he can continue with his fellow men. The pendulum has swung both ways as to whether there should be surgical or roentgen therapy. I remember as an intern, seeing an operation in which the surgeon split the face and proceeded to remove the whole of the upper jaw, the eye, part of the forehead and part of the ear, and then, turning, he said, "Gentlemen, I think some people might say this was an heroic operation." It was. The patient was dead an hour afterward. We in Edinburgh pride ourselves on our follow-up cases. We now adopt the principle in most of these cases, not of surgical but of roentgen therapy, plus radium, and there is one point I want to show in that: it is that we find, especially in cases of carcinoma of the antrum, it is important not to remove the tumor. We remove a small part for biopsy, but beyond that, we do nothing more. We put in radium for a short period, regulated by the roentgen service, and then the patient is examined roentgenologically afterward, and with these results our survival figures have gone up; they are now comparable with those shown by Dr. Schall.

Dr. Fred Z. Havens, Rochester, Minn.: There are two points which I should like to mention. In the first place, some of these tumors obstructing the nasal passage may be readily visible, and the physician seeing one may send a biopsy specimen to the laboratory and get a report of no evidence of malignancy. Do not be lulled into a sense of security by such a report, because frequently the anterior portion of such a tumor may be partially necrotic and the pathologist does not have a chance to determine whether cancer is present if such material is submitted for study. Also, particularly if the lesion is small and if you have a good reason to think that it may be carcinomatous, I would suggest that you ask yourself first, "If this is malignant, am I going to take care of it?" If the answer is, "No," then I would suggest that you do not take a biopsy but send the patient to the man of your choice and let him see the lesion in its original state and before its appearance has been obscured by the inflammatory reaction which necessarily follows biopsy.

PERTUSSIS IMMUNIZATION

Use of Two Doses of an Alum-Precipitated Mixture of Diphtheria Toxoid and Pertussis Vaccine

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There have been many studies to determine the prophylactic value of pertussis vaccine in children. Lapin[1] and Felton and Willard[2] have reviewed the literature on the subject and presented rather extensive bibliographies. A more cursory and skeptical review was published in England[3] and Prado and his co-workers[4] of Chile and Lewis[5] have reviewed a number of studies. It is difficult to determine what is the best vaccine product for general routine use, because the numerous studies differ from each other in so many respects. They utilize different methods of preparation of the vaccine, different methods of administra-

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The state and local health departments and local physicians gave cooperation and assistance; the King's Daughters Visiting Nurse Association furnished facilities and special personnel assistance, and Medical Director James P, Leake conducted the study in part of the years 1943-1945. Mrs. Anne Hodges was continuously engaged in the study since 1938. Mrs. Ruth Sargent was engaged from 1938 until relieved by Mrs. Edna McCaleb in 1942. Mrs. Mary Miller relieved Mrs. McCaleb in 1946.

1. Lapin, J.: Whooping Cough, Springfield, Ill., Charles C Thomas, Publisher, 1943.
2. Felton, H. M., and Willard, C. Y.: Current Status of Prophylaxis by Hemophilus Pertussis Vaccine, J.A.M.A. 126: 294 (Sept. 30) 1944.
3. Vaccination Against Whooping Cough, Editorial, Brit. M. J. 2: 222 (Aug. 18) 1945.
4. Prado L., E.; Ristori L., C., and Villalobos, M.: Rev. chilena de hig. y med. prev. 6: 307 (March) 1944.
5. Lewis, J. T.: Immunisation Against Whooping Cough: A Review. M. Officer 76: 5 (July 6) 1946.

tion and different study procedures. The procedures differ as to environmental groups studied, as to adequacy of observation, as to method of selection and treatment of controls and differ in criteria for evaluating protection against pertussis. After full consideration of these differences, a two dose, pertussis vaccine product was prepared which appeared most practical and suitable for routine use in the general population. An intensively observed and thoroughly controlled study was undertaken, wherein the occurrence of clinical pertussis, as judged by various criteria for diagnosis, would constitute the method for evaluating protection against pertussis. This study was started in 1941 in Norfolk, Va., and vicinity, in cooperation with the King's Daughters Visiting Nurse Association and with the assistance and approval of the state and local health authorities and physicians. The study is still under way, and, hence, several reports will be forthcoming.

SCOPE OF THE REPORT

This report covers an analysis of data collected in this study to March 1, 1947. It is concerned exclusively with answering a single question, as to whether two doses of the alum-precipitated mixture of diphtheria toxoid and pertussis vaccine, containing only 10,000,000,000 phase 1 killed Hemophilus pertussis organisms per dose, given with a four week interval between doses, conferred substantial protection against clinical pertussis. This report is not concerned with other questions, such as those pertaining to reactions, which were few and negligible, and those pertaining to the amount, nature, promptness and duration of protection. Such questions are deferred for later reports, as they require extended analyses of the epidemiologic characteristics of pertussis before they can be properly evaluated.

Questions concerning diphtheria immunity which resulted from the use of two doses of the alum-precipitated mixed product have been evaluated in a previous report on this study.[6] Many details of the study procedures have been omitted from the present report because they were included in the previous report.[6]

MATERIALS

The mixed product used in this study was prepared by mixing 2 parts of crude diphtheria toxoid with 1 part of a pertussis vaccine suspension. The mixture was then precipitated with alum, washed twice and resuspended in isotonic sodium chloride solution. The unmixed product was prepared at the same time, using the same lot of toxoid. It was prepared in an identical manner except that 1 part of isotonic sodium chloride solution was added to the toxoid prior to precipitation instead of adding the pertussis vaccine. Thus, the mixed and unmixed products were identical in every respect except that each dose of the mixed product contained 10,000,000,000 killed H. pertussis organisms and the unmixed product contained no pertussis vaccine. The two products were packaged in twenty-dose vials, and each vial was labeled "A-P diphtheria toxoid." The vials were identical in appearance except that each had a different code number, consisting of three digits. In 1941 Dr. J. P. Leake selected the code numbers from Tippett's "Random Sampling Numbers"[7] and placed them on the vials, so that the sum of the first two digits was odd when the vial contained the mixed product and the sum was even when the vial contained the unmixed product. The contents of the vials could be determined only by the code numbers, and during the observation period this code was unknown to the author and the visiting nurses.

PROCEDURES

The use of two, the mixed and unmixed, products permitted a study arrangement which approaches an epidemiologist's ideal. All of the children received one or the other product, and no one concerned knew which product was given. The products were given from January 1942 to June 1943 to children aged 2 to 23 months who visited the King's Daughters Health Stations in Norfolk, Va., and vicinity. Attendance was stimulated by using birth certificates and sending letters, urging diphtheria and smallpox immunization, to mothers of all children 2 to 12 months of age during the period of inoculation. The products were administered in a routine manner by various local health department personnel, who, together with the recipients, did not know that pertussis vaccine was involved in the study. The personnel gave to each child the product from a vial designated by certain lay persons who had no other connection with the study and who also did not know that pertussis vaccine was involved. The recipients were told that a study of communicable diseases, including diphtheria, was being made and that the children would receive a Schick test one year after immunization to assure their protection against diphtheria. By use of the code numbers on the vials, all children who were born in an odd month (as January, March, May) were to receive the mixed product and children born in an even month (as February, April, June) were to receive the unmixed product. All children who received one or more doses of the study products were under observation from the date of the injection to March 1, 1947, unless they left the study area or otherwise could not be located. Most of the children were under observation since birth. Two full time public health nurses, specially trained in communicable diseases, made routine monthly home visits and made weekly or more frequent visits during the occurrence of communicable

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6. Bell, J.A.: Diphtheria Immunization, J.A.M.A. 137: 1009 (July 17) 1948.

7. Tippett, L.H.C.: Random Samplings Numbers, edited by Pearson, K.: Tracts for Computers, no. 5, London, Cambridge University Press, 1927.

disease in the household. They made records of the clinical symptoms and signs of such diseases and of all known and suspected attributes which might influence the occurrence of such diseases. The nurses worked under my close supervision, and I made household visits as necessary to check the records and to establish diagnoses. Dr. Leake made these visits and conducted the study from July 1943 to July 1945, when I was on overseas duty. To prevent Dr. Leake from knowing which product a child had received, he was given the age rather than the birth date of the children visited and the vial number indicating the product given was concealed with gummed paper. As a minimum, Dr. Leake or I made at least one household visit whenever a study child or any member of his family household had definite or suspicious symptoms of clinical pertussis. The criteria for diagnosis[8] of a definite case of pertussis were the same as that used in another study.[9] Neither the author nor the nurse observers knew that the month of birth determined what product a child was to receive. Throughout the observation period none of the observers knew which child received which product, which child belonged to which group or whether any one child received the same product as any other child. This assured uniform observation and treatment of all children in both groups. This further assured that the two groups, which were comparable at the time the injection was given, would remain comparable throughout the period of observation. There was no way in which the household informants or the investigators could possibly bias the observations in favor of either group and no possible way for them to destroy the comparability of the test and control groups.

ADEQUACY OF PROCEDURES

With the procedures just summarized, a total of 1,238 children, representing 1,164 families, received one or more doses of the mixed or unmixed products at 2 to 23 months of age. All these children received routine monthly medical surveillance in order that the occurrence of pertussis and other common communicable diseases of childhood might be recorded. These children represented 11.3 per cent of all births reported in the study area from January 1941 through April 1943. The procedure for obtaining these children for study, together with their distribution by sex, color and family size, permitted the conclusion in the previous report[6] that they were representative of all children available in the area for voluntary immunization. Thus, the results of the study should reflect what would be expected through routine general use of the study products.

The adequacy of controls in this study was discussed in the previous report,[6] which covered the experience prior to the Schick test. It showed that 52.2 per cent of the 1,238 children were born in an odd month and further showed that in all attributes checked close to 52.2 per cent of the children were born in an odd month. The attributes checked were the sex, color, geographic section of residence, date of the first dose, age at the first dose, breast feeding at first dose, interval between doses, interval from the second dose to the Schick test, age at the time of the Schick test, mother's Schick reaction, number of other children in the household, loss from observation prior to the Schick test, receipt of smallpox vaccine prior to the time of the Schick test, receipt of whooping cough vaccine outside the study prior to the time of the Schick test and occurrence of measles, chickenpox and mumps prior to the time of the Schick test. A further check of the 1,238 children has been made in this analysis of a longer experience for the occurrence of pertussis. The percentage of children born in an odd month of the total under observation during each year from 1941 to 1947 was 51.7, 52.0, 52.9, 52.1, 52.6 and 53.0, respectively. Of the 270 study children who received prophylactic pertussis vaccine from a private physician outside the study, 53.3 per cent were born in an odd month. Of the 792 children in whom the onset of paroxysmal cough of pertussis was not prior to the first dose, who did not receive pertussis vaccine outside the study and who received two doses of the study product, as intended, 51.4 per cent were born in an odd month. Similarly, in all attributes observed, except those influenced by the different study products given, e.g., the Schick reaction and the occurrence of clinical pertussis, close to 52.2 per cent of the children were born in an odd month. Thus, all observations confirmed that the procedure used to divide the children into two nearly equal and strictly comparable groups and to observe and treat them, so that they would remain strictly comparable throughout the observation period, was effective and adequate. Within the range of chance sampling variation, the children born in an odd month are strictly comparable with children born in an even month in all respects except for the different study products given.

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[8] The following minimal criteria were adopted for the diagnosis of a definite case of clinical pertussis:

(*a*) The child must have a cough lasting longer than eighteen days, and for at least eight days of this time the cough must be unremittently paroxysmal in type and recur at least three times each calendar day of the eight. The paroxysm is defined as a spasm or fit of coughing with a sudden onset at a not definitely predictable time. The child must be practically, if not absolutely, free from cough during the period between paroxysms; due allowance in judgment, however, was permitted for children having coughs due to other causes on which pertussis infection may be superimposed

(*b*) The paroxysm must consist of a rapidly repeated series of coughs, most of which result in almost complete exhalation of supplemental air, as evidenced by history or observation of suffusion of the face and watering of the eyes, and either whooping following most of the series of coughs or the repeated occurrence of four or more successive coughs without intervening inhalation. The intensity of the paroxysm must be sufficient to arouse the child from a deep sleep on many occasions and to cause him, if physically able, to sit up in bed, or at least to get up on his knees to cough and get his breath.

(*c*) Clinical pertussis must be the most likely clinical diagnosis in the judgment of the examining physician, regardless of information concerning a prior attack of pertussis, a recent exposure to the disease or prior vaccination against the disease.

(*d*) The information concerning the clinical syndrome must be sufficiently reliable and complete to establish beyond reasonable question the true existence of the aforementioned minimal criteria.

[9] Bell, J. A.: Pub. Health Rep. 56: 1535 (Aug. 1) 1941.

• RESULTS

Table 1 was prepared to compare the total occurrence of measles, chickenpox, mumps and pertussis in children born in an odd and even month. It covers the entire life experience of each study child from birth to March 1, 1947, or until exit if lost from observation prior to that date. It covers their total experience with these diseases, regardless of whether they actually received pertussis vaccine in or outside the study, regardless of whether they received vaccine at the beginning or the end of the observation period and, in fact, without regard for any attributes which might influence the occurrence of these diseases. Incidentally, 5.3 per cent of the children born in an odd month did not receive pertussis vaccine of any kind during the observation period, whereas 24.8 per cent of the children born in an even month received at least one prophylactic dose of some bacterial pertussis vaccine. Table 1 shows merely the total number of children born in an odd and even month, the average number of years they had lived to March 1, and the total number of cases of these diseases that occurred during their life to the end of their observation period. It shows that the total percentage attacked and the average annual attack rate for measles, chickenpox and mumps is nearly equal in the two groups. In striking contrast the total percentage attacked and the average annual attack rate for pertussis is decidedly lower among children born in an odd month as compared with those born in an even month Another tabulation was prepared showing the attack rate for these diseases by separate six month periods from 1940 to 1947. This tabulation showed that the attack rate for pertussis was uniformly lower in children born in an odd month in every single six month period from 1942 to 1947, whereas no consistent difference between the groups was evident for the other diseases. It is thus obvious that some selective influence other than chance variation produced the difference in the occurrence of pertussis in the two groups. It would appear that this influence lowered the incidence of pertussis in the odd group rather than increasing the incidence in the even group, as the attack rate in the even group is not higher than that usually reported in children in a similar age group. Since the two groups are comparable in every respect with the single exception of the study product given, one can assume that the lowered incidence of pertussis in the odd group was due to the mixed product and can proceed to examine the experience to determine whether the assumption is consistent with all observations.

TABLE 1.—*Comparison of the Total Occurrence of Measles, Chickenpox, Mumps and Pertussis in Children Born in an Odd Month and in an Even Month*

Experience*	Month of Birth Odd	 Even	 Total
Number of children	646	592	1,238
Average no. years observed	4.062	4.054	4.058
No. person-years observed	2,624	2,400	5,024
Measles (no. of cases)	276	244	520
Average annual attack rate (percentage)	10.5	10.2	10.4
Total attacked (percentage)	42.7	41.2	42.0
Chickenpox (no. of cases)	175	179	354
Average annual attack rate (percentage)	6.7	7.5	7.0
Total attacked (percentage)	27.1	30.2	28.6
Mumps (no. of cases)	83	55	138
Average annual attack rate (percentage)	3.2	2.3	2.7
Total attacked (percentage)	12.9	9.3	11.1
Pertussis (no. of cases)	90	211	301
Average annual attack rate (percentage)	3.4	8.8	6.0
Total attacked (percentage)	13.9	35.6	24.3

*This table covers the entire life experience of each study child from birth to March 1, 1947, or until exit if lost from observation prior to March 1. It covers the total experience of these children without regard for immunizations or other attributes which might influence the occurrence of these diseases.

If this assumption is true, then, after excluding children who received pertussis vaccine outside the study, the observed difference in the number of cases of pertussis which occurred in the odd and even groups should be manifest only after, and not before, the children received the study products. Also, when children who had pertussis before the study products were given are excluded. the difference in the occurrence of pertussis among children of the odd and even groups who received two doses of the study products, as intended, should be greater than in the crude experience recorded in table 1. Furthermore, in such children the difference between the groups should be manifest in the white children as well as in the Negro, in boys and in girls and in every other possible attribute by which the children may be subdivided into groups of adequate size.

Table 2 presents some of the tabulations prepared to check these assumptions. It shows that prior to receipt of the study products there was no appreciable difference in the occurrence of pertussis in the odd and the even groups. It also shows that among the 792 children who received two doses of the study products, as intended, 48 cases occurred among the 407 born in an odd month, whereas 158 cases occurred among the 385 children born in an even month. This represents a proportionate difference greater. than that shown in table 1. These 792 children were subdivided into groups according to various attributes, namely, the age at the time of the first dose, date of the first dose, interval between doses, sex, race, geographic section of residence, nurse observer, occurrence of other diseases and immunizations and occurrence of pertussis in other children living in the household. In each of these attributes there were disproportionately fewer cases of pertussis among children born in an odd month as compared with children born in an even month. To exemplify, table 2 includes the attribute of the age at the time of the first dose. It shows that the disproportionately small number of cases that occurred in the odd group was manifest no matter whether the children received their first dose at 2 to 4 months of age or at 5 to 23 months of age. As a further example, one attribute, which is somewhat akin to secondary household exposure, subdivided the children into groups according to whether they had lived in the family household with definite pertussis in another child less than 10 years of age. In the 407 children of the odd group, 109 had such association and 33 (30.6 per cent) were attacked. In the 385 children of the even group, 115 had such association and 100 (87.0 per cent) were attacked. To supplement these observations, further analyses, which will be discussed in future reports, showed that the average annual attack rate in children who received no pertussis vaccine whatsoever was 11.2 per cent, the rate in children receiving only one dose of the mixed product was 8.2 per cent, the rate in children receiving two doses of the mixed product was 3.3 per cent and the rate in children who received three doses of pertussis vaccine outside the study was 4.1 per cent. It is thus obvious that all observations are consistent with the assumption that the mixed product was responsible for the disproportionately few cases of pertussis observed in children born in an odd month.

TABLE 2.—Occurrence of Pertussis Prior to and After Receipt of First Dose of Study Product

Experience	Month of Birth	Age (Mo.) at First Dose	No. of Children	No. of Person-Years Observed	Pertussis: No. of Cases	Pertussis: Total Attacked (Percentage)	Pertussis: Average Annual Attack Rate (Percentage)
Prior to first dose*	Odd		524	332	19	3.0	5.7
	Even		567	294	13	2.3	4.4
After first dose†	Odd	2-4	204	755	28	13.7	3.7
	Even		193	721	83	43.0	11.5
	Odd	5-23	203	686	20	9.9	2.9
	Even		192	671	75	39.1	11.2
	Odd	2-23	407	1,441	48	11.8	3.3
	Even		385	1,392	158	41.0	11.4

* This includes all study children who had no prophylactic pertussis vaccine prior to receipt of first dose of the study product. It covers the experience from the date of birth to the date of the first dose.

† This includes all study children who received two doses of the study product, as intended, who did not have pertussis prior to the first dose and who did not receive prophylactic pertussis vaccine outside the study. It covers the experience from the date of the first dose to March 1, 1947, or to exit if prior to that date.

This conclusion is based on the clinical criteria for definition of a case of pertussis as previously set forth. The clinical basis was used because the ultimate value of any vaccine depends on its ability to ameliorate or prevent the clinical disease. Even though the criteria used in this study are intended to include only frank cases, it is recognized that the criteria are more or less arbitrary. Accordingly, detailed records were kept for each child, noting the occurrence, duration, frequency, nature and intensity of paroxysmal cough, whooping, vomiting and other symptoms and signs of pertussis. The main purpose for collecting this data was to study the clinical disease as it occurs in the community; however, it serves to permit analysis of the data with various arbitrary diagnostic criteria for definition of a case of pertussis. Table 3 arranges the 206 cases of pertussis that occurred in children after they had received two doses of the study products, as intended, and

*TABLE 3.—Clinical Classification, Distribution of Cases of Pertussis in Children of the Odd and Even Groups, According to Duration of Paroxysmal Coughing and Whooping **

Classification	Duration (Days): Paroxysmal Cough	Duration (Days): Whooping	Odd Birth Date (Mixed Product) 407 Children: No. of Cases	Odd Birth Date (Mixed Product) 407 Children: (Percentage)	Even Birth Date (Unmixed Product) 385 Children: No. of Cases	Even Birth Date (Unmixed Product) 385 Children: (Percentage)	Total 792 Children No. of Cases	Ratio Even to Odd (Percentage)
A	9-27	0-27	22	5.41	18	4.68	40	0.87
B	>27	0-27	17	4.18	71	18.44	88	4.41
C	>27	>27	9	2.21	69	17.92	78	8.11
Total cases			48	11.79	158	41.04	206	3.48

* This table includes all study children who received two doses of the study product, as intended, who did not have pertussis prior to the first dose and who did not receive prophylactic pertussis vaccine outside the study. It covers the experience from the date of the first dose to March 1, 1947, or to exit if prior to that date.

no other prophylactic pertussis vaccine, by mutually exclusive groups according to the number of days' duration of paroxysmal coughing and whooping. It shows that the occurrence of the disease with paroxysmal cough of nine to twenty-seven days' duration was nearly equal in the two groups, but that a decided difference occurred in cases in which there was paroxysmal cough for longer than twenty-seven days. This result is amenable to diverse interpretations. It would appear possible that the clinical definition of pertussis used in this study was too broad and possibly included diseases not due to H. pertussis infection. This cannot be denied, but another interpretation seems more likely. The distribution of cases in the even group by the percentage of the total cases in that group should be nearly equal to that in the strictly comparable odd group. By application of the proportionate distribution of the 158 cases seen in the even group, according to clinical classification A, B and C, respectively, 5, 22 and 21 cases, would be expected in the odd group, whereas 22, 17 and 9 cases, respectively, were observed. This would indicate that part of the effect of the mixed product was to modify the clinical manifestations. With either interpretation, the conclusion is inescapable that, if this study had used more conservative criteria for the definition of a clinical case of pertussis, the difference in the observed occurrence of pertussis between the children receiving mixed and those receiving the unmixed product would have been even more striking than with the criteria used.

Incidentally, it may be added that table 3 exemplifies one of the many difficulties involved in efforts to compare the effectiveness of vaccine products used in different studies. In addition to many differences in the conduct of reported studies, table 3 shows that the criteria for diagnosis can produce large differences in results. With the criteria used in this study the percentage attacked in the unvaccinated group was 3.48 times that for the vaccinated group. By use of more conservative criteria the percentage attacked in the unvaccinated group was 8.11 times that of the vaccinated group. Thus, when criteria for diagnosis and other attributes in different studies are not comparable it is difficult to determine whether the product used in one study is more or less efficacious than a product used in another study.

CONCLUSION

It is concluded that two doses of the alum-precipitated mixture of pertussis vaccine and diphtheria toxoid which contained only 10,000,000,000 killed Hemophilus pertussis organisms per dose and which were given routinely to children representing the general *population, with a four week interval between* doses, conferred substantial protection against clinical pertussis when the first dose was given to children either at 2 to 4 or at 5 to 23 months of age.

ASPIRATION OF BONE MARROW FROM THE ILIAC CREST

Comparison of Iliac Crest and Sternal Bone Marrow Studies

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Bone marrow was obtained in living patients for the first time in 1903 independently by Pianese[1] and Wolff.[2] These authors punctured the femur and the tibia respectively in search of another diagnostic aid in detecting parasitic infestation. At first this method of bone marrow study did not gain much recognition, since these sites of puncture in adults normally contain little active marrow and therefore failed to prove of diagnostic value in hematologic investigation.

It was only twenty years later that interest in bone marrow studies in vivo was reawakened when Seyfarth[3] in 1923 trephined the sternum and ribs in order to obtain hemopoietically active bone marrow. It remained for Arinkin[4] further to simplify the procedure by introducing in 1928 the technic of aspiration of the sternum, rendering examination of bone marrow a readily available and routine hematologic procedure. The sternum became the site of election for obtaining bone marrow because it contains normally active bone marrow even in older age groups and was thought to be most suitable for aspiration technic because of its accessibility and the thinness of its cortex.

The aspiration of sternal bone marrow was promptly generally accepted and its diagnostic importance soon recognized. Ever since its introduction it has been almost the only source of bone marrow studies in clinical medicine, so that under "bone marrow examination" one usually understands now "sternal marrow examination."

However, certain inadequacies of aspiration of sternal marrow soon became apparent. In the first place, some technical disadvantages had been recognized. This procedure involving operation with a large needle in the cardiac area usually renders patients apprehensive, in spite of the minimal pain it causes, and not infrequently it is refused before it is done. Moreover, sternal aspiration is not altogether without real danger, as the heart and great vessels are beneath the sternum and the internal mammary arteries run parallel to its borders.

Although only few fatalities have been recorded in the literature,[5] the actual number of fatal outcomes and serious complications (pneumothorax, etc.) is probably much larger. Several such accidents which occurred to well trained hematologists have come to my knowledge in the past few years. Other unreported fatal outcomes of sternal aspiration were told me by many visitors to an exhibit on iliac bone marrow at the meeting of the American Medical Association at Atlantic City, June 1947. These complications occurred chiefly when the bone was found to be exceedingly hard and much force had to be an-

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From the Medical Division, Montefiore Hospital.

The material presented in this report formed the basis for a Scientific Exhibit in the section on Internal Medicine at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 9-13 1947.

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plied to the needle, so that penetration of the inner sternal plate resulted.

Additional complications following sternal puncture have been noted since its introduction for parenteral administration of fluids.[6] These include, besides localized osteomyelitis,[7] complications attributable directly to the topographic situation of the sternum, such as suppurative anterior mediastinitis and infiltration of the pleural cavities with infused fluid, with occasional fatal outcome.[8]

Apart from these technical disadvantages, the diagnostic information gained from sternal aspiration may at times be quite inadequate. This fact has been recognized especially in those pathologic conditions in which the marrow shows patchy rather than diffuse involvement, as in certain instances of aplastic anemia,[9] in myelofibrosis[10] and in metastatic bone lesions in cancers. Other parts of the skeleton than the sternum may become involved earlier. In such instances aspiration of the bone marrow from different parts of the skeleton and especially from the site of a lesion, if it can be visualized, is indicated.

In a case of carcinoma of the breast with roentgen evidence of metastasis in the iliac bone, I attempted early in 1943 aspiration of bone marrow near the site of the lesion in the iliac crest. The aspiration proved easy to perform, but it happened that no neoplastic cells were recovered but instead normal active bone marrow was seen. Since that time I have performed aspirations of marrow from the iliac crest systematically on almost every patient of hematologic interest admitted to the hospital; in many cases studies of sternal bone marrow were done at the same time.

Differential Count of Normal Iliac Marrow

Cells	Range, Percentage
Myeloblasts	0.5-2
Promyelocytes	1-5
Myelocytes, neutrophilic	11-23
Myelocytes, eosinophilic	1-3
Myelocytes, basophilic	0.5-1
Lymphocytes	2-10
Plasma cells	5-2
Hematogones	0-3
Prperythroblasts	0.5-1
Erythroblasts	2-8
Nonsegmented neutrophilic cells	8-21
Segmented neutrophilic cells	5-15
Eosinophils	1-3
Basophils	0.5-2

The present report is based on comparative studies of bone marrow aspirated simultaneously from the iliac crest and sternum in 216 different cases showing normal and pathologic findings. The total number of iliac aspirations, with or without parallel sternal marrow studies, has exceeded one thousand.

TECHNIC

The site for puncture of the iliac bone is chosen on the crest over an area extending within 5 cm. immediately posterior to the anterior superior spine on either side of the body.

According to the thickness of the tegument, a needle, 16 gage, 1 inch to 2½ inches (2.5 to 6.4 cm.) long, and furnished with a stylet, is used for puncture (usually the same type of needle as used for sternal aspiration). A 20 cc. tightly fitted syringe is used for aspiration (a large size syringe is necessary for better suction).

The chosen area is prepared with iodine and alcohol and infiltrated with 2 per cent procaine hydrochloride solution until the periosteum is reached; the periosteal space is then injected extremely slowly. Usually not more than 2 cc. of the procaine solution is required.

The patient usually lies in the supine position; in cases with pronounced abdominal distention (ascites, enlarged viscera) the patient is turned on his side.

The puncture is performed with the needle held in the sagittal plane of the body. When it is inserted it is held at an angle of 45 degrees to the line of the crest and straightened out approximately perpendicular to it at the moment it hits the bone. The needle is then directed over the top of the crest downward (caudad) and pressure applied by the palm of the hand. The needle is forced into the bone with steady pressure and slight rotation.

A distinct "give" sensation is usually felt when the needle enters the medullary cavity. After the needle is firmly embedded in the medullary cavity, the stylet is withdrawn and the syringe attached to the needle. In order to avoid possible admixture of blood, the plunger is slowly withdrawn until the first drop of marrow fluid is visualized in the capillary end of the syringe. Bone marrow aspiration is accompanied by a slight momentary sensation of pain—"suction pain."

The material recovered may be used in the usual way for enumeration of the total nucleated cell count, for preparation of smears and for section studies.

TECHNICAL ADVANTAGES OF ILIAC CREST VERSUS STERNAL PUNCTURE

1. *Safety.*—No serious injury can be sustained by any underlying organ. It is important to have the needle directed from the top of the crest downward toward the lower extremities, and not from the outer surface of the iliac bone toward the abdominal cavity. Most accidents in cases of sternal aspiration occurred when excessive pressure was applied to a hard bone; however, no fear need be entertained in iliac puncture if the needle, when held in the indicated direction over the top of the iliac crest, is forced more deeply into the bone cavity, since there is no danger of penetration of an inner plate.

2. *Ease.*—Usually the iliac puncture, when correctly performed, is less painful during and after its performance, and the patient is less apprehensive than when subjected to a puncture in the cardiac area.

3. *Repeated Aspirations.*—Iliac crest punctures can easily be performed at frequent intervals at both sides of the body. The procedure is suitable for serial studies of bone marrow. These may be important, especially in pharmacologic or cytologic research of hemopoietic tissue and bone marrow tumors.

It is also suggested that the bone marrow cavities of the ilium could be utilized as a route for administering fluids into the general circulation when no intravenous route is accessible, and perhaps may allow for greater safety than the sternal technic. However, such procedures are still in experimental stage and results will be subsequently published.

Some disadvantage of iliac aspiration is occasional difficulty of puncturing the bone, which at times may prove to be exceedingly hard in this region. But even in these instances there is no danger of applying more force when the described technic is used.

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REVIEW OF COMPARATIVE STUDIES OF BONE MARROW ASPIRATED FROM ILIAC CREST AND STERNUM

Bone marrow obtained simultaneously from iliac crest and sternum was studied in 216 different cases showing normal and pathologic findings. In addition, about eight hundred other aspirations of the iliac crest without parallel sternal puncture were also studied.

Normal Values.—The normal cell distribution of the iliac bone marrow was found to show approximately the same range as those determined for sternal aspiration. The iliac crest contains hemopoietically active bone marrow in all age groups of all persons studied with normal findings (age range 16 to 78 years).

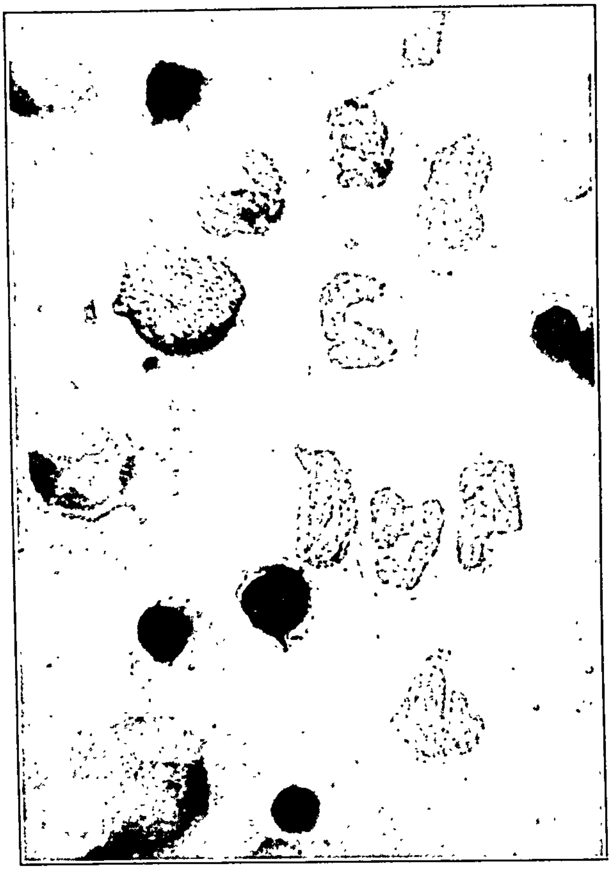

Fig. 1.—Normal iliac marrow.

The total nucleated cell count of the iliac bone marrow, as that of sternal aspiration, tends to decrease with age, falling from the average of 110,000 per cubic millimeter in persons under 20, to 50,000 per cubic millimeter in those over 60.

The differential count of the nucleated cells of the normal iliac marrow is shown in the table.

The number of megakaryocytes ranged between 22 and 88 per cubic millimeter.

The more common types of cells of a normal iliac bone marrow are depicted in figure 1.

Pathologic Pictures.—Comparative studies of iliac and sternal bone marrow were performed in various instances of secondary anemia (posthemorrhagic, iron deficiency, nutritional type), hemolytic anemia (congenital and acquired types, acute and chronic stages), aplastic anemia, pernicious anemia, sprue, osteosclerotic anemia, myelofibrosis, polycythemia, thrombopenic purpura, agranulocytosis (following administration of thiouracil and sulfonamide compounds), Banti's syndrome, Gaucher's disease, Tay-Sach's disease, Hodgkin's disease, follicular lymphoblastoma, leukemias, lymphosarcoma, multiple myeloma, various infectious diseases, renal diseases, cirrhosis of the liver and various neoplastic diseases with or without evidence of bony metastases.

In most of the cases studied the findings from both sources were parallel, and the iliac marrow presented the characteristic picture of the disease as seen in the sternal aspiration.

A few illustrative examples of iliac marrow pictures in various diseases are presented. Aspiration of sternal bone marrow in these cases revealed similar conditions; both aspirations have proved in these instances of equal diagnostic value.

However in certain cases study of iliac marrow has proved of distinct diagnostic advantage as compared to the sternal marrow alone. In some instances sternal aspiration was unsatisfactory, yielding scanty hypocellular marrow, while iliac aspiration showed cellular marrow which proved diagnostic of the disease. However, in other cases, the reverse was true. It is apparent that in some instances the disease (such as metastases, etc.) may invade one part of the bony system earlier than another.

The instances in which iliac aspiration has provided in this study more diagnostic information than the sternal technic may be divided into four groups:

1. In three cases (D. P., J. M. and B. P.) the diagnosis of leukemia, lymphatic or myelogenous, confirmed on postmortem examination, was made first in vivo on the basis of studies of iliac bone marrow. Originally the diagnosis of aplastic anemia (primary in case of D. P.; a secondary effect of administration of a sulfonamide compound in that of J. M.) or of osteosclerotic anemia (B. G.) had been made in those cases on the basis of sternal aspiration, which repeatedly revealed hypocellular bone marrow, and the associated peripheral blood picture (anemia, thrombopenia, leukopenia in the first 2 cases, and a leukemoid blood picture with normoblastosis in the third case). However, bone marrow from the iliac crest showed a picture characteristic respectively of lymphatic or myelogenous leukemia. Subsequently the sternal bone marrow developed the same picture.[11]

2. In 3 instances of multiple myeloma the diagnosis was indicated by studies of iliac bone marrow, showing from 12 to 35 per cent plasma cells, while the studies of sternal marrow were not conclusive. The diagnosis of multiple myeloma in these cases was substantiated by roentgen studies of the bones, studies of blood and urine (hyperglobulinemia and/or Bence-Jones proteinuria) and biopsy of bone lesions. In 2 of these instances associated with thrombopenia and bleeding tendency, sternal aspiration repeatedly showed extremely pronounced admixture of blood with a content of marrow cells too poor to make the diagnosis, while in the third case it showed approximately normal marrow with only 3 per cent plasma cells.

3. In some cases of aplastic anemia and osteosclerotic anemia ("spent" polycythemia) the combined examination of sternal and iliac bone marrow revealed the patchy character of the pathologic process in the bone marrow. In these, sternal aspiration yielded aplastic bone marrow while iliac aspiration showed active islands of hemopoietic tissue; in other cases the reverse was true.

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[11] These cases of leukemia with hypoplastic sternal bone marrow will be published in detail in collaboration with Dr H. Rifkin

Combined studies of sternal and iliac bone marrow are indicated wherever patchy character of distribution of the disease process in the bone marrow is suspected In 1 case of Gaucher's disease with thrombopenia, sternal aspiration repeatedly yielded bloody nondiagnostic material, while cellular marrow containing the characteristic Gaucher cells was obtained by aspiration from the iliac crest. In all other cases of Gaucher's disease which came to my observation, the diagnosis was made by aspiration of sternal bone marrow.

4. In a number of cases of various types of malignant growths, neoplastic cells were recovered in the marrow aspiration; the neoplastic cells appeared in clumps as well as singly. Such cells were seen more often in the iliac than in the sternal aspiration At times the sternal marrow was negative, while the iliac was positive for neoplastic cells

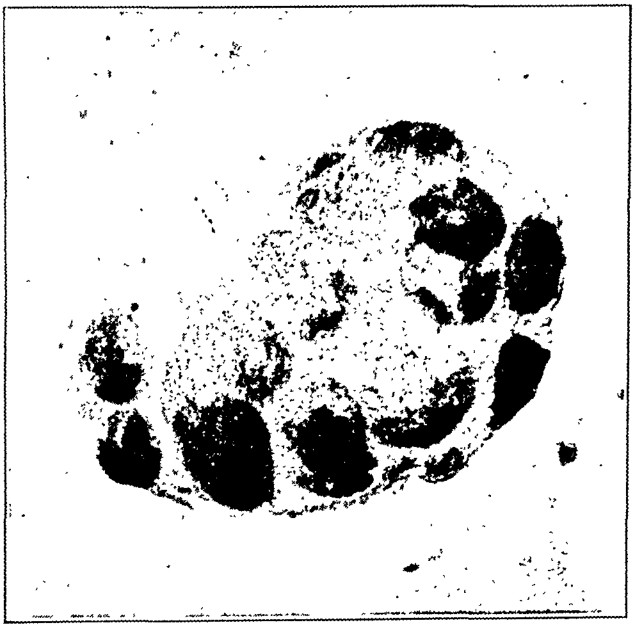

Fig. 2.—Syncytium of tumor cells in marrow in a case of carcinoma of the breast. These cells were found only in the iliac marrow and were absent in the sternal marrow

The importance of a greater possibility of recovering neoplastic cells in iliac bone marrow is threefold

(*a*) Diagnostic: In some cases the first indication of malignancy may be furnished by changes in bone marrow. This was the case of S. S., a man aged 60 years, whose chief complaint was backache; a diagnosis of sacroiliac strain was made. Physical and roentgen examinations did not indicate any abnormality. Because of incidental eosinophilia, studies of bone marrow were done which showed the presence of neoplastic cells. Subsequently roentgen studies showed neoplastic infiltration of lung and metastasis to the lumbar portion of the spine. At autopsy, an anaplastic oat cell carcinoma of the lung was found.

(*b*) Prognostic: Aspiration of bone marrow may present evidence of metastasis in a known case of cancer.

(*c*) Research. iliac bone marrow may serve as a readily accessible material for serial aspiration in following experimental procedures in research on cancer.

ILIAC MARROW AS A SOURCE OF SERIAL ASPIRATIONS

The following 2 cases will briefly be abstracted to show the advantages of iliac puncture technic, enabling serial studies repeated at frequent intervals. Aspiration of sternal bone marrow in 1 case was refused by the patient when it was to be repeated, while in the second case it did not contain the neoplastic cells which could be studied only in the iliac aspiration.

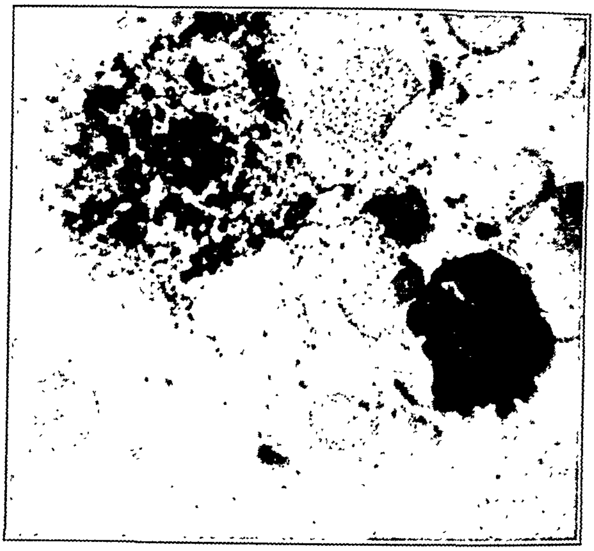

Fig. 3—Iliac marrow in a patient with melanoma showing melanin-laden cells (before thiouracil).

Case 1—S B, a woman aged 58 years, was admitted because of pain in the left lower quadrant of the abdomen, where a mass was felt roentgen studies suggested retroperitoneal tumor Iliac bone marrow puncture yielded black material which showed numerous clumps of melanin-laden cells Sternal aspiration did not reveal abnormality Later, the patient exhibited melanuria

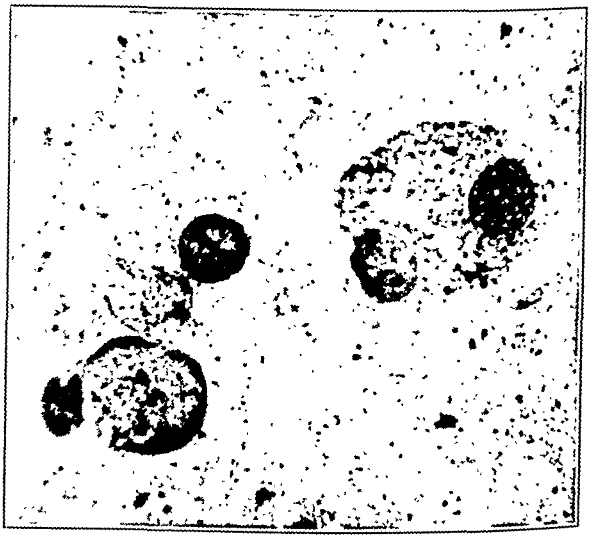

Fig. 4.—Iliac marrow in the same case of melanoma showing diminution of intracellular melanin after thiouracil.

The patient was given thiouracil, after which melanuria stopped.[12] In studies of this case the changes of the melanin content of the cells found in the iliac bone marrow were followed during the course of the experimental therapy Figure 4 shows pronounced decrease of the melanin content of the cells following administration of thiouracil. This diminution occurred gradually, as it was seen in specimens taken every six hours for several days.

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[12] These experiments with studies of melanin excretions in the urine have been repeated by Dr A White in a personal communication to the author

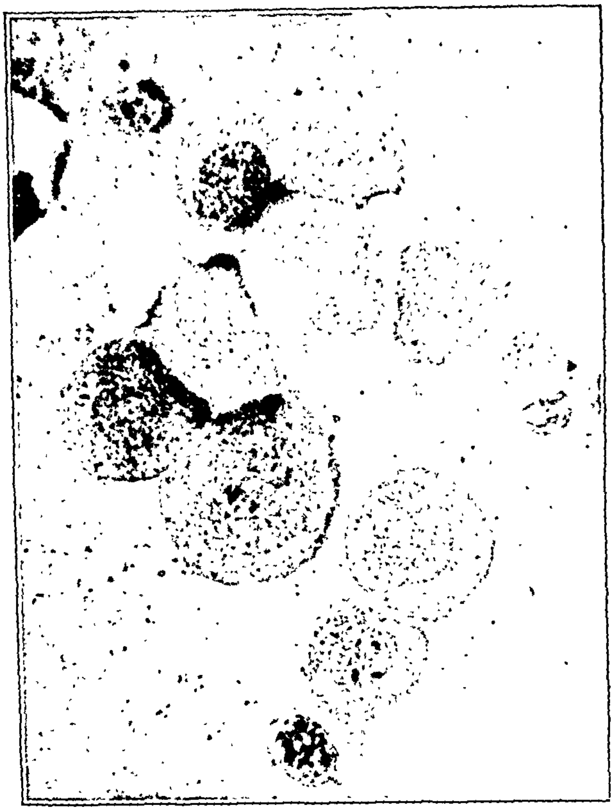

Fig. 5.—Iliac marrow in a case of pernicious anemia before folic acid therapy (megaloblastic marrow)

Case 2.—I. I., a woman aged 61 years, had untreated pernicious anemia with peripheral blood and bone marrow pictures characteristic of a relapse.

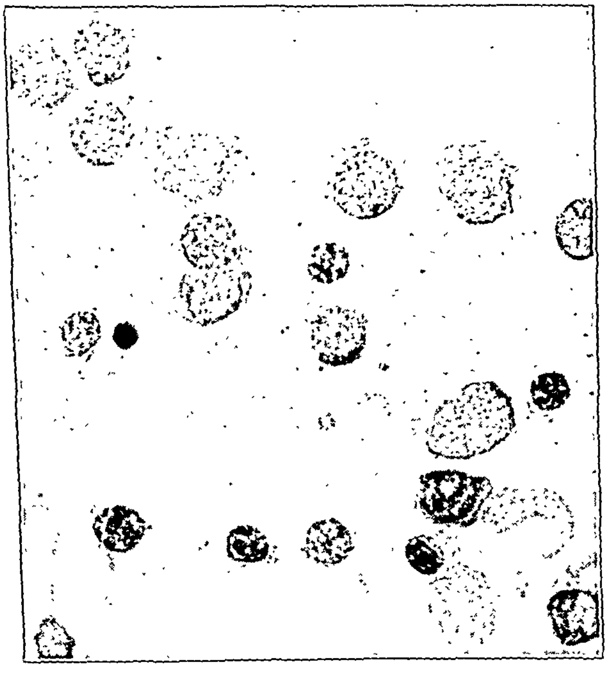

Fig. 6.—Iliac marrow in the same case of pernicious anemia after folic acid therapy (maturation of megaloblasts).

Folic acid in a dose of 40 mg. was injected intravenously and iliac bone marrow was studied at intervals of four to twelve hours for several days. The successive stages of maturation of megaloblasts and the gradual conversion of the characteristic pernicious anemia picture into a normoblastic bone marrow were studied. It was established from these studies that the first sign of folic acid effect on the bone marrow is evident several hours after its administration and precedes by far the response in the peripheral blood (reticulocytes).

The results obtained in these studies will be discussed in detail in separate reports. It is the aim of the present paper only to describe the bone marrow aspiration from the iliac crest and to indicate its advantages and possibilities.

SUMMARY

Bone marrow can be obtained easily, safely and repeatedly from the iliac crest It may provide information at times not obtainable from the sternal aspiration.

The step by step technic of aspiration of bone marrow from the iliac crest is described and its advantages versus the sternal technic are discussed.

The diagnostic advantages of iliac versus sternal bone marrow studies were seen especially in cases of infiltrative diseases of the bone marrow such as metastatic lesions of various neoplastic diseases, and in some instances of multiple myeloma.

NATURE OF THE AQUEOUS HUMOR

SIR STEWART DUKE-ELDER, M. D.
London, England

To be standing here today is one of the big events of my life. It is indeed curious how many of the happiest experiences I have had have occurred in this country or have been associated with Americans in many parts of the world. But to be here as your foreign guest of honor—if, indeed, "foreign' is the correct word—is without doubt the highlight of them all; and to me who knows and likes so many of you and who follows so closely all that you do, it is a pleasurable and moving experience. The more so is it at the moment when you are celebrating your hundredth birthday, when you have grown to the full stature of your maturity not only in nationhood but in the advancement of scientific thought, when, as I said to some of you a year ago, you among all the nations must shoulder the greatest responsibility for the advancement of our subject

These things and the exciting story of your evolution, however, I cannot talk about, for that is the privilege of your American guest of honor—and let me say here that to be bracketed as your guest with Frederick Verhoeff is to me the greatest delight of this meeting. I am under instructions, and, as a good guest should do, I must obey your secretary, who tells me that I am to give a paper on a scientific subject of importance. And so I have looked round for a subject of scientific importance and I have thought of the aqueous humor, partly because the problem of its origin and nature is perhaps the most import-

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Address of the invited foreign guest read before the Section on Ophthalmology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, June 11, 1947 ant in ophthalmologic physiology and pathology, and partly because it is an old friend of mine, with which I have spent many happy hours in my laboratory. It is an intriguing and facinating subject, this aqueous humor: Twenty-five years ago I thought that I knew all about it, but, having lived with it for twenty-five years, I find it more complex and elusive than ever, and its secret is further out of reach than it was at the beginning.

It is interesting to glance at the history of the problem, which reflects the history of much of biologic thought. One hundred years ago, when your association was born, it was generally thought that the aqueous humor was a secretion, a view accepted in that age of authority, without any convincing reason, on the dictums of such men as Haller,[1] and Zinn[2] and Vetch.[3] It was a vital process, and at that time such an explanation was sufficient. Toward the turn of the century, in an age when science had turned mechanistic and had accepted a philosophy which was exemplified by the saying of Lord Kelvin in his researches on the atom, that he could understand nothing of which he could not make a model, a simple mechanical view was put forward by Leber[4] and Wessely[5] in Germany and Parsons[6] and Starling[7] in England that the aqueous is a simple filtrate from the blood. A quarter of a century later, at the period when the technics of physicochemistry were being intensively applied to biologic problems, it was found that the chemistry of the aqueous and its energy exchanges are incompatible with a view so simple, and the theory of dialyzation was advanced. And so in the late twenties I sponsored the view that the aqueous is a simple dialysate on which a circulation is imposed by pressure differences, and I must confess, with all the assurance of youth, I protested that this must be so. Since those days knowledge has grown apace, chemistry has attained more subtle and refined methods, to the chemistry of molecules there has been added the physics of radioactive isotopes, and the result is that I know that my early theory, no matter how useful it may have been as a hypothesis, is wrong. Today I do not know what the aqueous humor really is but am vastly intrigued to find out. Neither does any one else know, but fortunately a number of researchers continue to try to solve the problems.

Of recent years especially interesting has been the work done on this subject in America, particularly in Baltimore, Boston and Philadelphia. From those three centers researchers have attacked the dialyzation theory—and rightly, but it is instructive to compare their main lines of attack and their chief conclusions. In a series of long and brilliant researches, Friedenwald[8] has come to the conclusion that the aqueous humor is essentially a secretion of the ciliary body, the necessary energy being derived from differences in oxidation-reduction potential maintained by enzyme systems so that a one way traffic for water and salts exists. On the other hand, Adler[9] and his colleagues have brought forward cogent arguments to show that the iris normally takes prominent part in its formation, while the work of the Boston School, using heavy water as a tracer, leaves little doubt that there must be a free two way transference of water between the blood and the intraocular fluids, for in their view half the water in the aqueous is renewed every three minutes. Again, Adler says that because one of the organic constituents (urea) is in less concentration than in the blood, a secretion must exist in this respect, while the kinetics of inorganic substances, the concentrations of which approximate the Donnan factors, is explicable by dialysis. On the other hand, Cogan, Kinsey and their co-workers[10] affirm the opposite: that because the organic constituents are less their transference is passive and because the inorganic constituents are nearly equal they are secreted. It would seem to me, looking at events from the comparative peace of London, that the easiest way out is to let this second American civil war continue and allow the belligerents to cancel one another out.

I think perhaps that the most unfortunate thing about the work of all of us—including myself—on this aspect of ocular metabolism is that we have been too obsessed with theories, trying to fit our results into the jigsaw puzzle of one or other of them. The more would I press this because I am convinced that none of the theories is correct I am certain that the aqueous is not completely described by the mathematical formulation for a dialysate; I

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am equally certain that it is not, in the generally accepted sense of the word, a secretion. To clarify the position let us take each constituent separately—for they all behave differently—and discover for each (1) the dynamics of its penetration into the eye and its exit from it; (2) its concentration in the steady state constituting final equilibrium, and (3) its share in the metabolic activity of the eye. Let us see where such an inquiry leads us in our knowledge today, and I hope that you do not mind if I add some unpublished results from my own laboratory, for I obviously have not the time to go into details about them and am therefore depriving you of adequate grounds for criticism of them.

WATER

The evidence, I think, is strong that the conception I suggested twenty-five years ago is valid—that there is a free and full transference of water reciprocally across most of the blood-aqueous barrier. I should think that Cogan and Kinsey's estimate of a half-renewal of the aqueous every three minutes is probably correct. It seems almost certain that normally a large part of this transference occurs through the iris, whether or not there is a peculiar unidirectional permeability in the ciliary region, as Friedenwald suggests, we do not know. There may be, and if there is, it may be of great importance. It is also certain that superimposed on this diffusion process there is a through and through current with an exit at the canal of Schlemm, and I think that Friedenwald's estimate of 1 to 2 cm. per minute is probably not far from the truth.

SALTS

I have little doubt that the essential mechanism governing the kinetics of the electrolytes is dialysis. I think that we can claim that we have proved this with respect to potassium, which, being relatively free from metabolic implications, is most susceptible to direct proof. The same applies, although less positively, to the other ions—sodium, calcium, chloride, phosphate and so on. It is true that there are some slight deviations from mathematical theory, such as excess of sodium and chlorides. These, however, are of an order susceptible to explanation, on the one hand, such as the leveling out of osmotic differences or changes in the carbon dioxide tension which itself accounts for a difference of 1.5 per cent between the plasma chloride concentrations of arterial and venous blood. On the other hand, the mathematical theory of thermodynamic equilibriums formulated by Donnan[11] may not be entirely and finally correct as applied to the complex body fluids; moreover, the base binding of the plasma proteins which determines the activities of acids and bases between dialysate and mother fluid varies in different members of the same species. The experimental fact remains, however, that the concentrations—or, more accurately, the activities—of these ions more nearly approach the factors for a dialysate, whether they apply to the normal living eye, the perfused living eye or the dead eye, than do other undoubted dialysates, such as ascitic fluid, or in vitro dialysates of plasma through an inert collodion membrane. Finally, if aqueous and plasma are separated by a collodion membrane, little change in the chloride content occurs. Taking the eye as a whole, the the passage of the salts in and out of the eye is equally easy, a circumstance which, incidentally, renders invalid Kinsey and Grant's claim that a continuous flow necessitates a steady state wherein their concentrations should be less. With regard to their kinetics, again taking the eye as a whole, the different ions enter at different speeds—sodium and chloride relatively quickly at about the estimated rate of the drainage of fluid from the anterior chamber; phosphate much slower than this. With regard to the site, the observation of radioactive isotopes shows that the easiest and most rapid entry is into the anterior chamber through the iris; entrance into the posterior part of the eye is much slower and not confined to the ciliary region. Whether or not there is unidirectional permeability there, as Friedenwald suggests, we do not know; if there is it may be important.

SUGAR

Here the evidence is clear. In its steady state the concentration of reducing substance in the eye is of the order that one would expect if its entry were by simple diffusion: It is less than that of the blood by an amount of the order of that used in the metabolism of the lens and retina. As would be expected, it rises in the aphacic eye and falls catastrophically in the incubated eye deprived of its circulation Dynamically, different sugars enter the aqueous in proportion to the size of their molecules. Glucose, 3-methyl-glucose, galactose and xylose enter at approximately the same speed: it is to be noted that 3-methyl-glucose is a synthetic compound not phosphorylated in vivo and therefore not likely to be secreted. The disaccharide, sucrose, on the other hand, penetrates much more slowly; the still larger trisaccharide, raffinose, like the proteins, not at all Most of this traffic occurs through the iris into the anterior chamber; in the case of glucose the rate of penetration into the posterior segment of the eye is only one third of this. Moreover, penetration here is more selective. Although there is no distinction made by the iris, the barrier lining the posterior segment makes a distinction between the hexoses and a pentose (xylose), and the relative rate of penetration of the large-moleculed sucrose posteriorly is but one seventeenth of its rate of penetration

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[11] Donnan, F.G.: J. Chem. Soc. 99:1554, 1911; 105:1941, 1914

into the anterior chamber. It would seem therefore, so far as sugars are concerned, that there is an inert membrane in the iris allowing the indiscriminate passage of sugars, whether natural or synthetic, into the aqueous as if through pores, the size of the pore being somewhat larger than that of the molecule of sucrose, while in the posterior segment of the eye there is a different type of membrane, more selective in its properties, more discriminating in its functions.

NITROGENOUS SUBSTANCES

The principal nitrogenous substance is urea and Adler, Benham[12] and Kinsey[13] have shown that it is normally in less concentration in the aqueous than in the blood; it varies with the concentration in the blood but with a long time lag, and only when the blood-aqueous barrier is strained by abnormal pressure differences, as by paracentesis, does it approximate the blood level. To these observations I will add others: Not only is the penetration of urea into the chambers of the eye slow, so also is that of creatinine with its readily diffusible molecule, and, more interesting still, the minute amino acids, alanine and glycine. All these enter the eye more slowly than the larger-moleculed sugars. These are facts of which we have to take account. They may be susceptible of several explanations. Thus, as happens elsewhere in the body, penetration of the barrier may be by different routes. Sugars (which are biologically useful) may traverse the cell bodies readily in their passage of the barrier, and nitrogenous substances might find transit difficult unless through the intracellular spaces when these were stretched mechanically. At any rate, granted their slow and difficult penetration, the low concentration of urea is explicable qualitatively on Kinsey and Grant's conception of the steady state reached as a result of a restricted entrance and a freer exit. An explanation of this phenomenon can thus be advanced on simple lines, but it is necessary to conclude that the blood-aqueous barrier is complex and individualistic, probably more complex than most of us have anticipated, treating each constituent in a characteristic way. It is to be noted that this conception of relative impermeability does not imply secretion unless we propose to strain the connotation of this term to describe the properties of the envelope of the red blood corpuscle.

My main thesis, therefore, is that there is no single intraocular fluid which can be discussed as an entity; that each constituent varies in its kinetics and must be considered separately; that there are at least two mechanisms in operation—a relatively simple traffic through the iris mainly into the anterior chamber and a more discriminating and subtle one in the posterior segment of the eye, and that about either, particularly the latter, we do not yet have enough facts to form a foundation whereon a structure of theory can usefully be built.

And in the erection of such a structure we should exercise the greater care, since it is of fundamental importance; for on our ideas of the kinetics of the intraocular fluid must depend much of our ideas on the basal physiology and therefore the pathology of the eye, particularly on the metabolism of the lens and that congeries of different pathologic conditions which, as if to mislead ourselves, we still place under the single label of glaucoma. It is obvious that the control of the intraocular pressure is not governed by the simple laws depending on hydrostatic and osmotic pressures which determine the behavior of a dialysate. There are regulating mechanisms of which we have some inklings only. Some fifteen years ago I demonstrated the presence of axon reflexes in the eye—the only internal organ in the body wherein they have been shown to occur. The unique presence of these significant reflexes here must surely have a meaning. In the first place it would seem probable that acute congestive glaucoma may sometimes be determined by an uncontrolled riot of these reflexes affecting primarily the anterior segment of the eye; the control of these reflexes in the eye, their bilateral association with the other eye, and their possible distant control from some regulating center, perhaps in the hypothalmic region, are indeed most intriguing subjects on which knowledge is yet completely lacking. In the second place, it may be that some forms of chronic glaucoma may be determined by more gradual disturbance—perhaps of a sclerotic or degenerative type—of the more specific mechanism in the posterior segment of the eye and the ciliary body, and sometimes, perhaps of the retina and optic nerve.

This, of course, is largely speculative. In the meantime we require many more facts, even although they may seem disparate and unconnected. Our present knowledge is as yet too fragmentary and incomplete to support a philosophy of synthesis and integration. But we are making progress. Armed with new technics which make our inquiries into these problems twenty years ago almost childishly clumsy and crude, there is no reason why we should not go on apace and reach exciting conclusions within measurable time. And I am certain that, when your children's children celebrate their bicentenary, the story which will then be told of the kinetics of the intraocular fluids and the pressure of the eye will be one of the most fascinating in biology, and I am also certain that one of its landmarks will be the surge of research and the revitalization of ophthalmology which is marking the middle of the present century in America.

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[12] Benham, G. H.: Biochem. J. 31:1157, 1937.

[13] Kinsey, V. E., and Grant, W. M.: J. Gen. Physiol. 26:131, 1942.

EVALUATION OF PROTEIN HYDROLYSATE THERAPY FOR PEPTIC ULCER

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Many new treatments for peptic ulcer continue to appear in the literature. Some of these treatments are discarded after a brief period. In evaluating the results of any treatment in peptic ulcer, caution must be exercised, because some ulcers heal spontaneously or with little treatment.

Interest has been stimulated by Co Tui and his associates[1] in the treatment of peptic ulcer with protein hydrolysate. They reported favorably on the use of protein hydrolysate in 30 patients with peptic ulcer. Hodges[2] reported favorably on 26 patients and Kimble[3] reported favorably on 11 out of the 15 patients with peptic ulcer treated with protein hydrolysate.

The purpose of this study is to evaluate the effectiveness of the oral administration of protein hydrolysate in the treatment of peptic ulcer.

Co Tui[1] stated that there is a protein deficiency in a large number of patients with peptic ulcer. We were unable to duplicate this observation among our private patients with peptic ulcer. However, in our outpatient clinics we have seen some undernourished patients who show a protein deficiency, but this is seen in patients with other diseases as well as in those with peptic ulcer. Hodges[2] made serum protein determinations in 18 patients with peptic ulcer immediately before and on completion of treatment with protein hydrolysate. In only 1 was the initial value below 6 Gm. per hundred cubic centimeters. Eleven of his patients showed a higher level of serum protein before treatment than after completion of treatment.

One of the most important factors in the treatment of peptic ulcer is the neutralization of the free acid in the stomach. We concentrated our efforts in determining the value of protein hydrolysate as a buffering agent in the stomach. Dragstedt has repeatedly stated that the medical management of peptic ulcer has been successful directly in proportion to the degree in which the acid gastric juice has been neutralized during the entire twenty-four hours.

INFLUENCE OF PROTEIN HYDROLYSATE ON THE FREE AND TOTAL ACIDITY OF GASTRIC JUICE

Fifty subjects were used for this study. All observations were made on patients on the medical services. We did not limit this study to patients with gastrointestinal disease. In each instance the patient presented himself in a fasting state; a Levine tube was introduced through the nose into the stomach, and the fasting contents were withdrawn. Five-tenths of a milligram of histamine dihydrochloride was then injected hypodermically in some of the patients. Samples of gastric juice were then aspirated at fifteen minute intervals for one hour. A test meal, consisting of various doses of protein hydrolysate in 250 cc. of water, was introduced through the tube, and a sample of gastric juice was again aspirated every fifteen minutes for two hours. The test specimens were titrated in the usual manner with tenth-normal sodium hydroxide, using Toepfer's reagent and phenolphthalein as indicators, and the free and total acidity were determined. The color of the protein hydrolysate mixture made the end point somewhat difficult to detect, but this was corrected by diluting the specimen with distilled water before titration.

The effect of 25 Gm. of protein hydrolysate on the free and total acidity is shown in table 1. In figure 1, there are two typical curves made from the data taken from the first 2 cases in table 1. These curves show that when protein hydrolysate is introduced into the patient's stomach there is a decided reduction in the free acidity and a definite

TABLE 1.—*Effect of Administration of 25 Gm. of Protein Hydrolysate in 250 Cc. of Water on the Free and Total Acidity in the Stomach*

		Time Interval After Protein Hydrolysate Feeding (Min.)								
Subject	Acidity*	Fasting	15	30	45	60	75	90	105	120
M. G.	Free	25	0	0	13	44	70	86	85	46
	Total	54	166	95	54	68	89	101	100	73
M. M.	Free	55	0	0	0	0	39	60	37	44
	Total	69	209	185	195	175	158	104	64	57
G. B.	Free	19	0	0	0	56	74	106	120	107
	Total	31	184	138	158	179	164	155	145	132
M. K.	Free	10	0	0	0	0	47	76		
	Total	33	206	218	220	202	186	170		
H. H.	Free	86	0	0	0	28	57	74		
	Total	102	194	178	157	180	174	155		
M. K.	Free	0	0	0	0	16	52	78		
	Total	18	197	183	164	147	129	111		
L. M.	Free	36	0	0	0	15	26	33		
	Total	50	203	166	132	141	144	121		
S. K.	Free	36	0	0	0	23	24	24		
	Total	60	227	225	142	153	108	49		
M. T.	Free	5	0	0	9	37	43	50		
	Total	25	205	220	110	72	72	65		
J. T.	Free	48	0	0	30	56	59	65		
	Total	61	192	213	168	155	100	105		

*Free and total acidity are expressed in cubic centimeters of tenth normal sodium hydroxide.

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2. Hodges, H. H.: Protein Hydrolysate Therapy for Peptic Ulcer, Gastroenterology, 8: 476-493 (April) 1947.

3. Kimble, S. T., Jr.: A Preliminary Report on Protein Hydrolysate Therapy for Peptic Ulcer, Gastroenterology, 8: 467-475 (April) 1947.

increase in the values for total acidity. The amino acids are all amphoteric, ionizing both as acids and as bases by virtue of their carboxyl and amino groups, thus forming salts with alkalies and with acids. The curves also show a sharp rise in the free acidity after the period of neutralization, and in most of the cases the free acid at the end of the period of neutralization returned to a figure above the initial values, as shown in table 1.

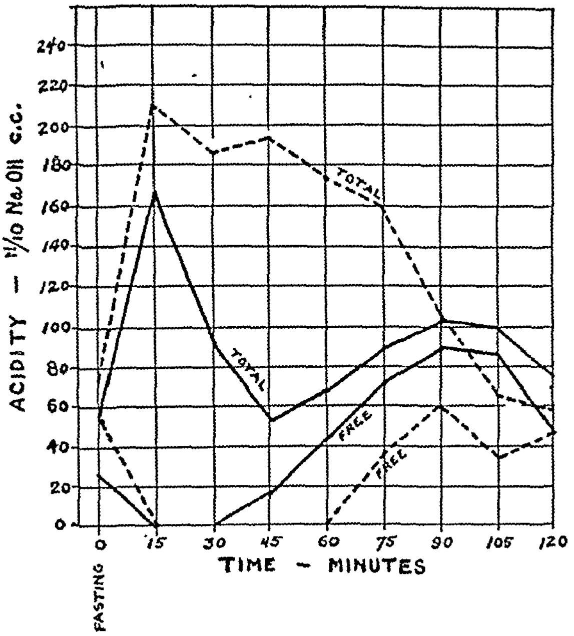

Fig. 1.—The effect of the administration of 25 Gm. of protein hydrolysate in 250 cc. of water on the free and total acidity. Data are of the first 2 subjects listed in table 1—M. G., with peptic ulcer (indicated by the unbroken line), and M. M., a normal subject (indicated by the broken line). The upper curves show the total acidity, and the lower curves show free acidity.

The high values for total acid are due to the presence of amino acid in the stomach. When the amino acid leaves the stomach, as is evidenced by a drop in the values for total acid, the free acid begins to rise rapidly (Figure 1). The total acid dropped more rapidly in the patient with peptic ulcer because the stomach emptied more rapidly, while in the patient without ulcer, the stomach emptied more slowly, causing a more gradual drop in total acid. In each case there is a rise in the free acid to a point higher than the level of the free acid during the fasting state.

In figure 2, the curve shows the effect of protein hydrolysate on the free acidity in a patient who was fed 25 Gm. of protein hydrolysate in 250 cc. of water every hour. The free acidity dropped to 0 from an initial value of 38 degrees, and remained at 0 for 45 minutes. At the end of one hour the free acidity rose to 22 degrees, at which time the patient was given another feeding of 25 Gm. of protein hydrolysate in 250 cc. of water. The free acid again dropped to 0 and this time remained at 0 for only 30 minutes, at the end of which it rose sharply, reaching 57 degrees at the end of the second hour, which was higher than the initial value during the fasting state. At the end of two hours the patient was given a third feeding of 25 Gm. of protein hydrolysate in 250 cc. of water. There was a decline of free acid to 16 degrees, but the free acid was not completely neutralized at this time. From 16 degrees the free acid rose until at the end of the third hour it reached 73 degrees, which was the highest it had ever been.

TABLE 2.—*The Effect of the Administration of 25 Gm. of Protein Hydrolysate in 250 Cc. of Water on the Free Acidity in the Stomach*

Time (Min.)	Free Acid (Degrees)	Time (Min.)	Free Acid (Degrees)	Time (Min.)	Free Acid (Degrees)
Fasting	38	Feeding 2		Feeding 3	
15	0	75	0	135	23
30	0	90	0	150	15
45	0	105	41	165	47
60	22	120	57	180	73

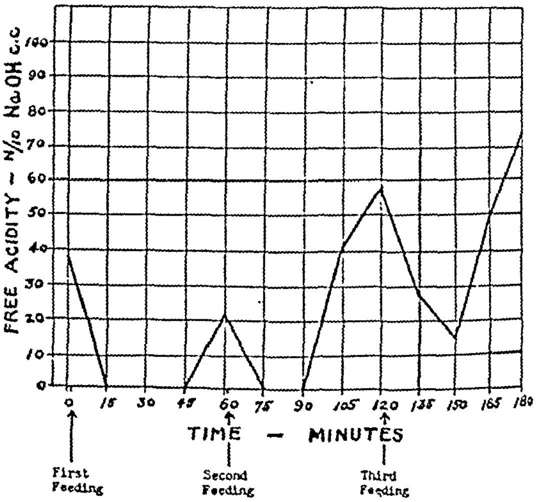

Fig. 2.—The effect of hourly feeding of 25 Gm. of protein hydrolysate in 250 cc. of water on the free acidity in the stomach. Table 2 shows the same results as are depicted in the chart.

Thus, figure 2 demonstrates that protein hydrolysate when given in small doses every hour will eventually cease to neutralize the free acid in the stomach and will cause the free acid to rise much higher than the initial value.

LENGTH OF TIME THE FREE ACID REMAINS BUFFERED IN THE STOMACH AFTER THE ADMINISTRATION OF PROTEIN HYDROLYSATE MIXTURES

The results are shown in table 3. Fifty subjects were used, and they were divided into five groups of 10 persons each.

In the first group of 10 subjects, who were given 50 Gm. of protein hydrolysate in 250 cc. of water, there was no free acid for 75 minutes in all 10, for 90 minutes in 7 subjects, for 105 minutes in 6 subjects and for 120 minutes in 2 subjects.

The second group of 10 subjects were given 50 Gm. of a commercial preparation of protein hydrolysate containing 46 per cent carbohydrate (maltose and sucrose) with vitamins, in 250 cc. of water. There was no free acid for 30 minutes in all 10 subjects, for 45 minutes in 9 subjects, for 60 minutes in 4 subjects and for 75 minutes in 2 subjects.

TABLE 3.—*Number of Subjects Exhibiting No Free Acid at Successive Fifteen Minute Intervals Following Ingestion of Various Protein Hydrolysate Mixtures*

Protein Hydrolysate Mixtures	Number of Subjects Showing Anacidity Time Interval After Protein Hydrolysate Feeding 15 Min.	30 Min.	45 Min.	60 Min.	75 Min.	90 Min.	105 Min.	120 Min.
Protein hydrolysate 50 Gm.	10	10	10	10	10	7	6	2
Protein hydrolysate, carbohydrate 46%, vitamins 50 Gm.	10	10	9	4	2	1	1	0
Protein hydrolysate 25 Gm.	10	10	7	2	0	0	0	0
Protein hydrolysate 25 Gm., cream 50 Cc.	10	10	10	7	5	0	0	0
Protein hydrolysate 25 Gm., theobroma oil 10 Gm.	10	8	8	5	3	2	2	2

The third group of 10 subjects were given 25 Gm. of plain protein hydrolysate in 250 cc. of water. There was no free acid for 30 minutes in all 10 subjects, for 45 minutes in 7 subjects and for 60 minutes in 2 subjects.

The fourth group of 10 subjects were given a mixture of 25 Gm. of protein hydrolysate and 50 cc. of cream in 200 cc. of water. The cream was added to determine whether the fat would prolong the length of time that the free acid would remain buffered in the stomach. There was no free acid for 45 minutes in all 10 subjects, for 60 minutes in 7 subjects, for 75 minutes in 5 subjects and for over 75 minutes in none of the subjects.

The fifth group of 10 subjects were given a mixture containing 25 Gm. of protein hydrolysate and 10 Gm. of theobroma oil (powdered) in 200 cc. of water There was no free acid for 15 minutes in all 10 subjects, for 30 minutes in 8 subjects, for 45 minutes in 8 subjects, for 60 minutes in 5 subjects, for 75 minutes in 3 subjects and for 90 minutes in 2 subjects.

EFFECT OF PROTEIN HYDROLYSATE ON THE GASTRIC EMPTYING TIME

Eleven patients were used for this study. Each patient was given 60 Gm. of barium sulfate in 200 cc. of water, and the normal emptying time was observed by repeated roentgenograms every 30 minutes until the stomach was empty. After the normal gastric emptying time had been determined, the effects of the addition of 25 Gm. of protein hydrolysate to this barium-water mixture were studied in each person.

Table 4 shows that 25 Gm. of protein hydrolysate when added to the barium-water mixture will delay the gastric emptying time two hours or more in 6 out of 8 cases, and one and a half hours in the other 2 cases.

In order to determine whether the buffering of the acid in the stomach had some influence on the delay in the gastric emptying time, 5 subjects were given a mixture of barium and water, to which was added 30 cc. of aluminum hydroxide gel. There was little delay in the gastric emptying time. Two of the 5 subjects were given protein hydrolysate, barium and water mixture on the previous day and the gastric emptying time studied, so that these various mixtures could be tried on the same subjects for comparison. The buffering of the acid in the stomach apparently was not responsible for the delay in the gastric emptying time. Thomas and Crider[4] have demonstrated that there is an inhibition of gastric motility when the end products of protein digestion are placed in the upper part of the small intestine.

TABLE 4.—*Effect of Protein Hydrolysate on the Gastric Emptying Time*

Patient	Gastric Emptying Time (Hr.) Barium 60 Gm. Water 200 Cc.	Barium 60 Gm. Protein Hydrolysate 25 Gm. Water 200 Cc.	Barium 60 Gm. Aluminum Hydroxide Gel 30 Cc. Water 200 Cc.
N. F.	2½	4½	
J. P.	1	2½	
A. Mc.	1½	3	
J. B.	1½	4	
M. F.	2	4	
E. W.	1½	4	
B. B.	2	4	3½
D. B.	1	5	1½
M. C.	1½		2½
E. B.	2		2½
E. S.	1½		1

RESULTS OF CONTINUOUS INTRAGASTRIC DRIP OF PROTEIN HYDROLYSATE

Twenty-two patients were admitted to the hospital for management of peptic ulcer and received the following treatment after a diagnosis of ulcer was confirmed by roentgenogram: Bed rest and a bland diet consisting of three meals a day with milk and crackers between meals were prescribed. A soft latex tube[5] was inserted through the nose into the cardiac portion of the stomach. The tube remained in place for two weeks, and through it was administered a continuous drip of 10 per cent protein hydrolysate, at the rate of 30 drops per minute. Three thousand cubic centimeters of this solution, containing 300 Gm. of protein hydrolysate, was used in twenty-four hours for the fourteen days.

A serum protein determination was made for each patient before treatment was begun. In no instance was the level of serum protein below 6 Gm. per hundred cubic centimeters.

While the patients received the continuous drip treatment with a 10 per cent solution of protein hydrolysate, random specimens were aspirated from the patient's stomach during the day and during the night, and in most instances free acid was observed in the stomach, in spite of the continuous drip of protein hydrolysate.

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[4] Thomas, J. E., and Crider, J. O.: Inhibition of Gastric Motility Associated with the Presence of Protein Hydrolysis in the Upper Small Intestine, Am. J. Physiol. 126: 28-38 (May) 1939.

[5] Woldman, E. E.: A Collapsible Indwelling Nasogastric Tube, Am. J. Digest. Dis. 4: 428-429 (Sept) 1937.

Ulcer pain continued for twenty-four to seventy-two hours while patients received this form of treatment. In some instances there was a recurrence of pain during the course of treatment.

One month after the treatment had been discontinued, 8 of the 22 patients had a recurrence of ulcer symptoms.

COMMENT

In evaluating the effectiveness of protein hydrolysate in the treatment for ulcer one must ask how this product aids in the healing of an ulcer.

Additional proteins are unnecessary in a patient whose serum proteins are normal and in whom there is a positive nitrogen balance; consequently, more proteins would not aid in healing a peptic ulcer.

From the results obtained it is to be seen that protein hydrolysate decidedly reduces the free acidity and causes a definite increase in the values for total acidity. The prolonged acid neutralization action of protein hydrolysate has been previously noted by Levy and Siler,[6] Co Tui[1] and others. However, little importance was attributed to the rise in acidity above the original level following the period of neutralization or to the fact that repeated small doses of protein hydrolysate will eventually cease to neutralize the acid in the stomach. This was demonstrated in our cases when continuous drip with protein hydrolysate was given and also after hourly feedings of 25 Gm. of protein hydrolysate.

Protein hydrolysate buffers free acid as long as it remains in the stomach; however, when it leaves the stomach there is apparently a stimulation of the production of more free acid to a higher level than the original level during the fasting state. The length of time of the period of neutralization is dependent on the gastric emptying time; in other words, the longer the protein hydrolysate remains in the stomach the longer will be the period of neutralization. We also observed that the larger the dose of protein hydrolysate the more prolonged was the gastric emptying time.

The values for total acidity remained high as long as the amino acids remained in the stomach, and a drop in the total acidity apparently occurred when the amino acids were expelled from the stomach. An interesting observation was the fact that the level of free acidity began to rise when the amino acids left the stomach and entered the small intestine, and the level of total acidity rose parallel with the free acidity. The presence of the amino acids in the upper part of the small intestine apparently causes a hormone to be liberated which stimulates the secretion of hydrochloric acid.

The buffering property, which is necessary in the healing of an ulcer, is present in protein hydrolysate, but the sharp rise in the level of gastric free acidity which follows its administration has its disadvantages. Another disadvantage is the fact that protein hydrolysate ceases to have any buffering properties after repeated small doses. It appears from our observations that the presence of protein hydrolysate in the upper part of the small intestine stimulates acid secretion faster than it can be buffered by further small doses in the stomach.

Clinically there is also evidence that this method of treatment is inadequate. Pain subsides more slowly when protein hydrolysate is used to neutralize the acid than when other antacids are given. Pain frequently recurs during the continuous drip treatment, which we have never observed with aluminum hydroxide therapy.[7] There was also rapid recurrence of ulcer symptoms after treatment has ceased in several cases. Complications of peptic ulcer during treatment with protein hydrolysate have been reported by several investigators. Ruggiero and his associates[8] reported that 2 patients in their study experienced massive gastrointestinal hemorrhage while receiving protein hydrolysate. In 2 of the patients the ulcers became perforated during the first week of the treatment. Hodges[2] reported a serious gastrointestinal hemorrhage on the tenth day of treatment in 1 of his patients receiving protein hydrolysate. During the past twelve years we have not encountered a single complication during the course of treatment with aluminum hydroxide for peptic ulcer.[7]

SUMMARY AND CONCLUSIONS

There was no evidence of protein deficiency in any of the 22 patients with peptic ulcer in this study. Therefore additional proteins are not an important part of treatment for peptic ulcer if the patient is receiving a well balanced diet.

A single dose of protein hydrolysate causes a decrease in the free acid and an increase in the total acid of the stomach. The period of neutralization varies with the amount of protein hydrolysate administered into the stomach.

There is a sharp rise in the free acidity in the stomach after the period of neutralization with protein hydrolysate, and the amount of free acid reaches a higher level than the initial level during the fasting state.

Multiple doses of 25 Gm. of protein hydrolysate every hour will cease to neutralize

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free hydrochloric acid in the stomach. The continuous drip of a 10 per cent solution of protein hydrolysate fails to neutralize free hydrochloric acid in the stomach.

Protein hydrolysate delays the emptying time of the stomach two hours when given as a single dose.

Ulcer pain continued for twenty four to seventy-two hours while patients were treated with protein hydrolysate. The ulcer pain disappeared immediately in the patients receiving aluminum hydroxide gel.

Recurrence of the ulcer within a short period after treatment is commoner during treatment with protein hydrolysate.

Complications, such as hemorrhage and perforation, have been reported to have occurred while patients were being treated with protein hydrolysate, but there were no such complications resulting from our use of aluminum hydroxide during the past twelve years.

Protein hydrolysate is of value only as a food, but has little value as a therapeutic agent for peptic ulcer.

GRANULOMA INGUINALE

Treatment With Streptomycin

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Valuable information regarding the causation, clinical manifestations and treatment of granuloma inguinale has recently been added to the knowledge of this disease.

The causative agent, the Donovan body, is an encapsulated ovoid safety-pin-like organism which can readily be demonstrated in stained smears of tissue scrapings from lesions of granuloma inguinale. Ever since its discovery by Donovan,[1] in 1905, it has been regarded as a protozoan. All attempts to grow the Donovan body on ordinary culture mediums had been inconclusive until Anderson, De Monbreun and Goodpasture,[2] in 1945, were successful in isolating and cultivating it in the egg yolk of the developing chick embryo. After observing it in continuous serial cultures, they came to the conclusion that this organism is a gram-negative bipolar bacillus. These authors suggested naming it 'Donovania granulomatis.'"

Lesions of granuloma inguinale are most frequently seen about the genitalia, but extragenital lesions (mouth, larynx, face, neck and eyelids) have also been described.[3] In our series of 122 patients,[4] observed from November 1943 to May 1947, there were 88 patients, or 72.1 per cent, who showed lesions limited exclusively to the external genitalia. Inguinal folds were involved in 20 patients (in combination with genital lesions in 18 of them). Lesions located chiefly on the perineum, perianal area, pubis and thighs were present in 12 patients and on the cervix in 1. A solitary extragenital lesion on the lower part of the abdomen was encountered in 1 instance.

Gardner and Kelly,[5] in 1928 were first to diagnose granuloma inguinale of the cervix. Several investigators[6] thereafter emphasized the importance of such lesions, which can easily be confused with malignant cervical growth and have been shown to involve the uterus, parametrium and adnexa. Pund and McInnes,[7] on the basis of 3 cases in which the disease was fatal, pointed out the dubious prognosis of cervical granuloma inguinale in pregnant women.

Granuloma inguinale is not limited strictly to the skin and the corium. Greenblatt, Dienst, Pund and Torpin [8] observed the pathognomonic organisms of granuloma inguinale in the regional lymph nodes even though no associated adenopathy was apparent. Sobel and Pensky[9] reported a case of granuloma inguinale with "bubonuli" (lymphangitic abscesses) on the dorsum of the penis. Two of our patients with granuloma inguinale presented Donovan bodies in material aspirated from a fluctuant inguinal bubo. The frequent involvement of the regional lymphatic system, following initial lesions, points to the associated lymphatic pathogenesis of the disease.

That granuloma inguinale can be regarded as

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From the Chicago Intensive Treatment Center, Veneral Disease Control Program. Chicago Health Department, in cooperation with the United States Public Health Service.

[1] Donovan, C.: Medical Cases from Madras General Hospital, Indian M. Gaz. 40:414 (Nov.) 1905.

[2] Anderson, K.; DeMonbreun, W. A., and Goodpasture, E. W.; An Experimental Investigation of the Etiology and Immunology of Granuloma Inguinale, Am. J. Syph., Gonor. & Ven. Dis. 2: 155 (March) 1945. Anderson K., and others: An Etiologic Consideration of Donovania Granulomatis, J. Exper. Med. 81:25 (Jan.) 1945.

[3] Greenblatt, R. B., Torpin, R., and Pund, E. Extragenital Granuloma Inguinale, Arch. Dermat. & Syph. 38 358 (Sept.) 1938 Harris, R. Granuloma Venereum, Laryngoscope 40 707 (Oct.) 1930. Pariser, H., and Beerman, H. Granuloma Inguinale, Am. J.M. Sc. 208 547 (Oct.) 1944.

[4] The diagnosis was confirmed in 98 of the patients by the presence of the Donovan bodies in smears from tissue scrapings of the lesions. In 24 patients the diagnosis was based on observations in the biopsy and the favorable response to treatment with antimonial preparations.

[5] Gardner, G. H., and Kelly, A.: Gynecology, New York, D. Appleton and Co., 1928.

[6] Arnell, R., and Potekin, J.: Granuloma Inguinale of the Cervix (Thirty-Eight Cases), Am. J. Obst. & Gynec. 39:525 (April) 1940. Pund, E. R., and Gotcher, V. A.: Granuloma Venereum (Granuloma Inguinale) of Uterus, Tubes and Ovaries, Surgery 3:34 (Jan.) 1938. Pund, E. R., and Auerbach, S. H.: Granuloma Venereum (Inguinale) of Uterus, Tubes and Ovaries, Urol. & Cutan. Rev. 48:552 (Nov.) 1944. Guerriero, W. F., Jennett, R., and Mantooth, W. B.: Infectious Granulomatous Lesions of Cervix, J.A.M.A. 133:932 (March 22) 1947.

[7] Pund, E. R., and McInnes, G. F.: Granuloma Venereum: A Cause of Death; Report of Six Fatal Cases, Clinics 3:221 (June) 1944.

[8] Greenblatt, R. B.; Dienst, R. B.; Pund, E. R.; and Torpin, R.: Experimental and Clinical Granuloma Inguinale, J.A.M.A. 113:1109 (Sept. 16) 1939.

[9] Sobel, N., and Pensky, N.: Bubonulus in Granuloma Inguinale, Arch. Dermat. & Syph. 48:498 (Nov.) 1943.

a systemic disease has been shown by Lyford and his co-workers,[10] in 1944, and Sheldon,[11] in 1945, who described cases of polyarthritis and osteomyelitis due to granuloma inguinale. Lyford's patient died of disseminated granuloma with multiple bone and joint involvement. Metastatic lesions in bones and skin, with severe constitutional symptoms, were observed by Paggi and Hull.[12] Postmortem examination revealing lesions of granuloma inguinale in the abdominal viscera and bones of the thorax was reported by Humphreys.[13]

Treatment with antimonial preparations has been generally accepted as having a specific healing effect on lesions of granuloma inguinale. In our series of 122 patients, 64[14] were adequately treated with antimonial drugs and were observed by us at regular intervals. Complete healing was evidenced in 57 patients,[15] or 89.1 per cent, of these 64 patients. The remaining 7 patients[16] (10.9 per cent) failed to respond to any number of courses of various antimonial preparations, administered regularly over a period of from one to three years. Antimony resistance in granuloma inguinale has been mentioned by others as well.[17] Robinson and his co-workers,[18] in a study of 46 patients treated with one or another of the antimony drugs, observed that only 60.8 per cent showed satisfactory response.

Toxic reactions (nausea, vomiting and generalized aching) were observed in many of our patients treated with larger doses of antimonial preparations, particularly with antimony potassium tartrate. These complications, in some cases, accounted for irregular treatment, with subsequent delay in healing of the lesions. Greenblatt and his co-workers[8] reported 2 fatalities due to antimonial preparations.

Surgical excision of small lesions has been reported as successful in cases of chemoresistant disease.[18] We, however, have observed two recurrences of lesions in the scar tissue following radical vulvectomy. None of the other methods of local treatment (roentgen therapy and fulguration) has been reported to show satisfactory results. Twenty-five per cent podophyllum suspension[19] applied locally in 7 of our cases, in addition to antimony treatment, had to be discontinued in 3 cases, because of severe burning and swelling.[20] In the other 4 cases, resolution of lesions appeared to be accelerated.

The discovery of the bacillary nature of the Donovan bodies[2] led to the thought that one or another of the antibiotics would prove to be of value in the treatment of granuloma inguinale. Several investigators demonstrated the ineffectiveness of penicillin in controlling this disease.[21] No change in the appearance of granulomatous lesions was apparent in 12 of our patients with concomitant syphilis who were given up to 4,800,000 units of penicillin over seven and one-half days.

Greenblatt, Kupperman and Dienst,[22] in a recent publication, reported 23 cases in which granuloma inguinale responded favorably to streptomycin therapy. Barton, Craig, Schwemlein and Bauer[23] described the action of streptomycin on lesions of granuloma inguinale in their report of 3 patients treated at the Chicago Intensive Treatment Center in February and March 1946. The following study includes a brief résumé of these 3 cases, with the latest follow-up observations, and a report on 8 additional patients treated with streptomycin. In each case the following laboratory studies were made: complete blood cell count, urinalysis, dark field examination, cultures for gonococci, serologic test for syphilis and roentgenogram of the chest. Examination of the spinal fluid was made in patients with concomitant syphilis. Only relevant abnormal laboratory observations are reported.[24]

REPORT OF CASES

CASE 1 (*a* and *b*).—M.N., a 26 year old Negro woman, with characteristic lesions of granuloma inguinale and "woody" edema of the vulva of fifteen months' duration, was treated with streptomycin from Feb. 20, 1946, through April 1 (0.02 Gm.

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[10] Lyford, J.; Scott, R. B., and Johnson, R. W., Jr.: Arthritis and Osteomyelitis Due to Granuloma Inguinale, Am. J. Syph., Gonor. & Ven. Dis. 28:538 (Sept.) 1944. Scott, R. B., Lyford, J., and Johnson, R. W., Jr. Granuloma Inguinale as a Cause of Arthritis and Osteomyelitis, Bull. Johns Hopkins Hosp. 74:213 (March) 1944. Lyford, J., Johnson, R. W. Jr., Blackman, S., and Scott, R.. *Pathological Findings in a Case of Granuloma Inguinale with Miliary Bone and Joint Involvement*, ibid. 79 349 (Nov.) 1945

[11] Sheldon, W. H.; Thebaut, B. R., Heyman, A., and Wall, M. J.: Osteomyelitis Caused by Granuloma Inguinale, Am. J. M. Sc. 21.237 (Aug.) 1945.

[12] Paggi, L. C., and Hull, E.: Metastatic Granuloma Venereum, Ann. Int. Med. 20:686 (April) 1944.

[13] Humphreys, E.M.: Granuloma Inguinale with Visceral and Osseous Lesions, Arch. Path 27:393 (Feb.) 1939.

[14] Of the remaining 58 patients, 51 were sent for treatment *to other clinics and were lost from observation*. Seven patients were treated with streptomycin.

[15] Favorable response was achieved in 40 patients treated with antimony potassium tartrate, in 12 treated with stibophen ("fuadin") and in 5 treated with the lithium salt of stibiothiomalic acid ("anthiomaline").

[16] Four of the 7 antimony-resistant patients responded promptly to streptomycin. Three were lost from observation.

[17] Earle, K. V.: Antimony Resistance in Ulcerative Granuloma Inguinale, Tr. Roy. Soc. Trop. Med. 31:691 (April) 1938. Fraser, A. R.: Granuloma Inguinale, Brit. J. Dermat. 37:14 (Jan.) 1925. Marshak, L. C., Barton, R.L. and Bauer, T.J.: Granuloma Inguinale: A Review of the Literature and a Report of Ninety-Seven Cases with a Note on Streptomycin Therapy, to be published.

[18] Robinson, H. M.; Robinson, H. M., Jr.; Shelley, H. S., and Mays, H. B.: The Treatment of Granuloma Inguinale, South. M. J. 35:839 (Oct.) 1942.

[19] Tomskey, G. C.; Vickery, G. W., and Gatzoff, P. L.: The Successful Treatment of Granuloma Inguinale with Special Reference to the Use of Podophyllin, J. Urol. 48:491 (Oct.) 1942.

[20] We observed 10 per cent tincture of podophyllum to be less irritating.

[21] Haserick, J. R.: The Failure of Penicillin in the Treatment of Granuloma Inguinale, Arch. Dermat. & Syph. 52:192 (Sept.) 1945.
Nelson, R.: Penicillin in the Treatment of Granuloma Inguinale, Am. J. Syph., Gonor. & Ven. Dis. 29:511 (Sept.) 1941 Goldberg, L. C.. Treatment of Granuloma Inguinale with Anthiomaline, ibid. 29: 593 (Nov.) 1945.

[22] Greenblatt, R. B.; Kupperman, H. B., and Dienst, R.B.: *Streptomycin in the Therapy of Granuloma Inguinale*, Proc. Soc. Exper. Biol. & Med. 54:399 (April) 1947.

[23] Barton, R. L.; Craig, R. M.; Schwemlein, G. X., and Bauer, T. J.: Granuloma Inguinale Treated with Streptomycin, Arch. Dermat. & Syph. 55:1 (July) 1947.

[24] Biopsy specimens were examined by Dr. Marcus R. Caro, clinical associate professor of dermatology University of Illinois.

every three hours for a total of 6.16 Gm. in forty-one days). At the end of the treatment, all lesions appeared epithelized and the edema was reduced. Donovan bodies, which were seen in smears of tissue scrapings prior to administration of streptomycin, could no longer be demonstrated after the fifteenth day of treatment. Seven months later, a minute open lesion reappeared at the anterior aspect of the fourchette. In January 1947, large granulating ulcers on the vulva, similar to the original ones, were present, and there was also a recurrence of the "woody" edema. Smears from tissue scrapings showed Donovan bodies, and the biopsy confirmed the diagnosis of granuloma inguinale. Treatment with streptomycin was resumed on January 29 through February 27 (0.05 Gm. every three hours for a total of 11.45 Gm. in thirty days). Continuous healing was observed from day to day, with complete epithelization of lesions at the end of treatment. Donovan bodies could no longer be seen after the ninth day of treatment. On August 15, or five and a half months later, the only residue was a slight swelling of the vulva.

CASE 2.—This case represents possible failure of response to streptomycin therapy.

E.H., a Negro presented a lesion of granuloma inguinale on the coronal sulcus of two months' duration. He was given 0.03 Gm. every three hours over a period of eighteen days for a total of 4.1 Gm. At the end of treatment, the lesion was completely epithelized and Donovan bodies could no longer be demonstrated. There was recurrence of the same lesion three weeks after treatment was discontinued, and the patient was successfully retreated with antimony potassium tartrate.

CASE 3.—A.M., a 21 year old Negro woman, presented typical granuloma inguinale lesions on the posterior aspect of the fourchette, of eight months' duration. She was given 0.03 Gm. of streptomycin every three hours, for a total dose of 7.05 Gm., from March 3 through April 1, 1946 (twenty-nine days) Ten days after treatment with streptomycin was started, Donovan bodies were no longer demonstrable in stained smears of the lesion. On June 17 all lesions were completely epithelized, and they had remained so when last observed on July 17, 1947 (fifteen months after treatment).

CASE 4.—F.W., a 19 year old Negro woman, was admitted in May 1946, showing characteristic granulomatous ulcerations, with a rolled border, on the fourchette (fig. 1A). The lesions were of two months' duration. Donovan bodies were seen in smears from tissue scrapings, and the observations in biopsy were consistent with granuloma inguinale. A total of 3.4 Gm. of streptomycin was administered from June 18 through July 10 (0.02 Gm. every three hours for twenty-three days). After the first week of treatment, the lesion appeared smaller and less moist and Donovan bodies were no longer demonstrable. At the end of treatment the lesion was completely healed (fig. 1B) and had remained so at the patient's last visit, ten months later.

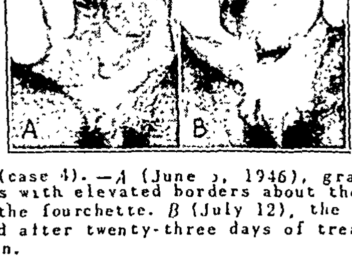

Fig. 1 (case 4).—*A* (June 5, 1946), granulomatous ulcerations with elevated borders about the posterior aspect of the fourchette. *B* (July 12), the lesions are epithelized after twenty-three days of treatment with streptomycin.

CASE 5.—C.F., a 38 year old Negro, was admitted on May 18, 1946, presenting irregular ulcerations and "woody" edema of the penis, of two months' duration. The quantitative serologic test for syphilis showed 40 Kahn units. Results in dark field examination for Treponema pallidum were negative. Donovan bodies were seen in smears from tissue scrapings. Cerebrospinal fluid showed 20 Kahn units, 70 lymphocytes, 31 mg. per hundred cubic centimeters of total protein and a negative colloidal gold curve. A diagnosis of asymptomatic neurosyphilis and granuloma inguinale was made, and the patient was given 2,400,000 units of penicillin, 600 mg. of bismuth compound and 300 mg. of dichlorophenarsine hydrochloride between May 21 and May 29. There was no change in the appearance of the lesions at the end of this treatment. From June 4 through June 29, streptomycin was administered (0.02 Gm. every three hours for a total of 4 Gm. in twenty-five days). Donovan bodies could no longer be seen after the twelfth day of treatment. On July 10, all lesions were epithelized. In March 1947, eight months later, a recurrence of penile lesions similar to the original ones was observed and Donovan bodies were again shown to be present in smears from tissue scrapings. Because of poor follow-up possibilities this patient was retreated with antimony potassium tartrate.

CASE 6.—L. H., a 36 year old Negro woman, was admitted on March 3, 1946, with cicatricial and granulomatous lesions of ten years' duration, involving the entire perineal and both inguinal regions, where numerous draining sinuses were present. Operation had been recently performed for an associated rectal stricture. Donovan bodies were demonstrated in a biopsy specimen of the lesions. There was no response to treatment with various antimonial preparations administered off and on since 1937, nor to various courses of antimonial therapy during four months' hospitalization prior to streptomycin therapy. Profuse drainage from the open sinuses in the groin persisted, and no change in the aspect of the lesions was noticeable. A course of penicillin (3,800,000 units in fourteen days) also proved ineffective. Streptomycin (0 03 Gm. every three hours for a total of 3.62 Gm.) was then administered from July 29 through August 19 (there was a lapse of six days), when treatment had to be terminated due to the exhaustion of our supply. At that time, all lesions were epithelized and the sinuses appeared to be closed or practically dry Because of inadequate dosage of streptomycin, it was deemed advisable to continue outpatient treatment with antimonial drugs. When the patient was last examined, on July 19, 1947, all lesions had remained healed.

CASE 7. D. L., a 23 year old Negro, was admitted on Oct. 10, 1946, presenting a granulomatous ulcer with elevated pearly edges on the frenulum, of four months' duration. Donovan bodies were demonstrated in spreads from scrapings of the lesions. Streptomycin was administered from October 14 through November 12 (0.03 Gm. every three hours, for a total of 7.35 Gm. in thirty days). Donovan bodies were no longer seen after two days' treatment, and two weeks later the ulcer was completely healed, with some residual edema of the prepuce. When last seen, eight months after treatment, no trace of the original lesion was evident.

CASE 8. J. R., a 27 year old Negro woman, was admitted on Aug. 26, 1946, presenting "beefy" lesions on the vulva, perineum and inguinal folds, of three years' duration. "Woody" edema of the labia majora (about three times normal size) was present. Donovan bodies were revealed in tissue scrapings. On September 5, streptomycin therapy was started (0.05 Gm. every three hours). On September 21, after administration of 6.175 Gm. in sixteen days, treatment was discontinued because of exhaustion of our supply of the drug. There was a distinct epithelization at the periphery of the lesions, and Donovan bodies were no longer demonstrable after the first week of treatment. Continuous healing was noted from day to day after streptomycin injections had been discontinued. When last seen, ten months after treatment, smooth depigmented scar tissue had replaced all previous lesions and the vulva was normal in size.

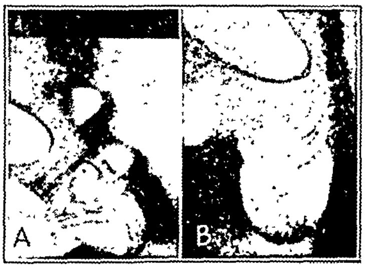

Fig. 2 (case 10).—Granuloma inguinale. *A* (May 27, 1947), elevated papuloerosive lesions on the prepuce and the frenulum. *B* (June 15), the lesions are flattened out and epithelized after twenty days of treatment with streptomycin.

Summary of 11 Cases of Granuloma Inguinale in Which Treatment Was with Streptomycin

Case No.	Patient*	Age (Yr.)	Sex	Duration of Lesions Prior to Treatment	Previous Treatment	Total Dose Streptomycin, (Gm.)	Treatment Period (Days)	Status at End of Treatment	Latest Post-Treatment Observation	Donovan Before Treatment	Bodies Disappearance Days after Beginning of Treatment
1 *(a)*	M.N.	25	F	15 mo.	None	5.45	41	Edema reduced, all lesions epithelized	Relapse in 7 mo.	Present	15
1 *(b)*	M.N.	25	F	7 mo.	Streptomycin	11.4	39	Edema reduced; lesions completely epithelized	Remained healed 5½ mo.	Present	7
2	E.H.	25	M	2 mo.	None	4.11	19	Lesion completely epithelized	Relapse in 3 weeks	Present	14
3	A.M.	21		9 mo.	None	7.05	29	Almost completely epithelized	Remained healed 15 mo. after treatment.	Present	19
4	F.W.	19	F	2 mo.	None	3.4	23	Lesions completely epithelized	Remained healed 10 mo. after treatment	Present	5
5	C.F.	32	M	2 mo.	None	4.0	25	All lesions epithelized	Relapse in 3 mo.	Present	12
6	L.H.	35	F	10 ys.	Antimonial treatment off and on since 1937; 4 mo. routine treatment in hospital	3.9	15	All lesions epithelized	Remained healed 11 mo. after treatment	Present	Not Checked
7	D.L.	23	M	4 mo.	None	7.3	20	Lesions completely epithelized	Remained healed 3 mo. after treatment	Present	2
8	J.R.	27	F	3 yr.	None	5.1	15	Two thirds of all lesions epithelized.	Remained healed 10 mo. after treatment	Present	9
9	W.G.	33	F	9 Mo.	Verified antimonial treatment for 15 mo.	10.25	29	Lesions completely epithelized	Remained healed 5 mo. after treatment	Present	9
10	A.J.	56	M	3 weeks	Verified antimonial treatment for 2½ yr.	12.15	20	Lesions completely epithelized	Remained healed 2 mo. after treatment	Present	9
11	H.M.	50	M	29 yr.	Verified antimonial treatment for 10 yr.	5.75	13	Lesions reduced one-third original size	Further involution of lesions after 2 mo.	Present	9

*All 11 patients were Negro.

CASE 9.—W. G., a 33 year old Negro woman, was first seen in October 1944, presenting large moist papilliform vegetations on the vulva, of eight months' duration. Donovan bodies were demonstrated in spreads from the lesions. From October 1944 to January 1947, she was treated regularly with various antimonial drugs, one to three times a week, practically without interruption. A certain degree of scar formation was noticed at times, but the lesions never healed, and there were periods of definite progression. Donovan bodies were still demonstrated in smears from tissue scrapings at the end of the described treatment. The lesions were considered to be resistant to antimonial preparations, and streptomycin was administered from January 28 through February 25 (0.05 Gm. every three hours for a total of 10.25 Gm. in twenty-nine days). Donovan bodies were no longer seen in tissue scrapings, and the lesions showed decided involution after the ninth day of treatment. At the end of treatment all papillomatous vegetations were replaced by depigmented scar tissue. When the patient was last examined, five months later, all lesions had remained healed.

CASE 10.—A. J., a 53 year old Negro, was treated for a dark field positive chancre in August 1945 with 2,400,000 units of penicillin given in seven and a half days. The lesion failed to heal, and three weeks after completion of treatment it presented the clinical appearance of early granuloma inguinale. Donovan bodies were present in tissue spreads from the lesion. From September until May 1947, the patient was regularly and adequately treated with various antimonial preparations. At the end of the aforementioned treatment, the lesions had the same moist granulating appearance (fig. 2*A*) and spreads for Donovan bodies were still positive. Streptomycin therapy was started on May 28, and 0.08 Gm. was administered every three hours until June 16 (12.16 Gm. in twenty days). After the ninth day of treatment, the lesions appeared smaller and Donovan bodies could no longer be demonstrated. At the end of the treatment, the lesions were completely epithelized (fig. 2*B*), and they had remained so at the patient's last visit, two months later.

CASE 11.—H. M., a 51 year old Negro, was admitted on May 25, 1947, with exuberant papillomatous vegetations occupying the scrotum, perianal region and both inguinal folds. Donovan bodies were revealed in smears from tissue scrapings. The patient dated the onset of these lesions from World War I, about twenty-eight years previously. Verified records revealed treatment with various antimonial preparations in different clinics since 1938. Three months prior to admission, he received injections of antimony potassium tartrate (every second day for a total of 133 cc.) in our outpatient department. No change in the lesions was noticeable, and Donovan bodies were still present in tissue spreads at the end of the aforementioned course of treatment. Streptomycin was given from May 27, 1947, to June 13 (0.05 Gm. every three hours for a total of 6.75 Gm. in eighteen days). Donovan bodies could no longer be seen after the ninth day of treatment. At the end of treatment the lesions showed an involution to one third of their original size. Slow but progressive healing, with scar formation, was noticeable on the patient's last visit, five weeks later

COMMENT

The therapeutic response of granuloma inguinale to streptomycin in our series of cases further substantiates the work of Anderson, DeMonbreun and Goodpasture,[2] who showed that the Donovan body is a gram-negative bipolar bacillus.

In our series of 122 patients, the exclusive localization of over 70 per cent of granuloma inguinale lesions on the genitalia showed some variation from the usual textbook description of the disease as being largely limited to the inguinal regions.

Evidence presented by other investigators and by us attests to the associated lymphatic pathogenesis of granuloma inguinale, which may possibly account for the rare disseminated type.

Streptomycin appears to be a valuable drug in the treatment of granuloma inguinale, particularly in those patients whose disease fails to respond to various antimonial drugs over a period of many years.

As demonstrated in the table, 3 patients experienced a relapse. The total dosage of these 3 varied from 4 to 6.4 Gm., given over a period of eighteen to forty-one days. The total dosage of those with favorable response ranged from 3.4 to 12.16 Gm., administered over a period of fifteen to thirty days. It is apparent, therefore, that the evaluation of this study must be regarded as a preliminary one. The total dose and time-dose relationship are yet to be determined. The scarcity of streptomycin at the time of this study was responsible for the low and variable dosage

None of the complications, such as cutaneous eruptions, vertigo or deafness, as described by others.[25] was encountered in our group of 11 patients. This was possibly due to the low dosage employed.

SUMMARY

Eleven patients with lesions of granuloma inguinale were treated with streptomycin. All patients showed an immediate favorable response, with disappearance of Donovan bodies and healing of lesions. A progressive resolution of the lesions was observed long after discontinuation of streptomycin therapy. Four patients, with lesions of from two to twenty-eight years' duration, whose disease had been resistant to antimonial therapy, showed prompt response to streptomycin. Three patients presented relapse after a period of three weeks to eight months. No sign of developing resistance to streptomycin was observed in 1 patient retreated after a relapse. Eight patients had been observed, as of the time of writing, for two to fifteen months and showed no evidence of relapse.

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25. Nichols, D. R., and Herrel, W. E.: Streptomycin, J.A.M.A. 132:200 (Sept. 28) 1946. Fowler, E. P., and Seligman, E.: Otic Complications for Streptomycin Therapy, ibid. 133:87 (Jan. 11) 1947. Brown, H. A., and Hinshaw, H. C.: Toxic Reaction of Streptomycin on the Eighth Nerve Apparatus, Proc. Staff Meet., Mayo Clin. 21:347 (Sept. 4) 1946. Hettig, R. A., and Adcock, J. D.: Studies of the Toxicity of Streptomycin for Man, Proc. Am. Federation Clin. Research 2:68 1945.

QUESTION OF CARDIAC HYPERTROPHY IN RESIDENTS OF HIGH ALTITUDES

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The Republic of Colombia, located at the northwestern corner of South America, is a tropical country. For this reason there are no seasonal changes in the whole of its territory, as there are in the Temperate Zone. The temperature is uniform all through the year in all the cities, but it varies in accordance with the altitude above sea level at which they are located. It is therefore erroneous to believe, as some residents of the Temperate Zone do, that every tropical city enjoys a hot climate. This is true only of those that are located at sea level. As the altitude increases the temperature drops, and it is for this reason that the city of Bogotá, the capital of Colombia, built on a plateau at 8,016 feet (2,440 meters) above sea level, has a normal temperature of 14.55 C. (58 F.); that is to say, a relatively cold climate.

The considerable altitude of Bogota in relation to sea level has long caused it to be the subject of discussion as to the adaptation of the human organism to the plateau.

In the year 1945, Dr. A.M. Barriga Villalba, professor of physics of the school of Medicine of Bogotá, presented to the Medical Academy a documented study on the greater task to which the heart was subjected on the plateau.[1]

Among the conclusions reached in that study

Address of the invited foreign guest read before the Section on Radiology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J. June 11, 1947.

Due to lack of space chart 4 has been omitted from THE JOURNAL but will appear in the author's reprints.

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[1] Barriga Villalba, A. M.: The Work of the Heart at High Altitudes, Rev. med., Bogotá 47:319 (Oct.) 1945

was the supposition of the existence of a relative cardiac hypertrophy in the residents of the city of Bogota, as was apparently demonstrated in the roentgenologic studies conducted in the same city by Dr. Benigno Jiménez[2] and those conducted in Oroya, Peru, at an altitude of 12,000 feet (3,660 meters), by A. J. Kerwin.[3]

Dr. Francisco Gnecco Mozo, without refuting the facts that a greater task is imposed on the heart and that there is a compensating hypertrophy at high altitudes, supported the theory that at 8,016 feet, at which height Bogotá is located, there was no increase in the work imposed on the heart, and certainly no cardiac hypertrophy either.[4]

For these reasons I thought it necessary to conduct a careful study on the subject, in order to confirm or to invalidate the hypotheses relative to a possible cardiac hypertrophy in the residents of the city of Bogotá. My first observations were presented to the Academy of Medicine in the year 1945,[5] and in this paper I wish to complete them with further research carried out since then.

Both cardiac hypertrophy accompanied by enlargement and concentric hypertrophy without any increase in the size of the heart can be confirmed in the autopsies on persons who died of causes that do not affect the heart. Unfortunately there are few such cases in Bogota, and therefore I dispensed with that type of investigation.

METHODS OF DETERMINING HYPERTROPHY

For determining whether there existed an increase in the size of the heart, it was necessary to examine a considerable number of normal persons by a simple process which offered the least possibility of error, and by trying to eliminate the subjective appreciation of the results.

I did not consider the clinical approach because, although percussion permits the limitation of the cardiac area, it is a slow process and must be performed by an expert clinician if it is to be of any value.

I should have liked to use the orthodiagram, this being the most precise method, and to take advantage of the prediction tables of the important research conducted by Drs. Hodges and Eyster,[6] but unfortunately it would have required excessive work to gather the necessary observations, and, futhermore, the personal factor would have intervened appreciably.

I then thought that teleroentgenography was the most appropriate process. If not so accurate as the orthodiagram, at least it could be easily realized. And as the percentage of error never reaches even 10 per cent,[7] the results obtained on examining a large group are completely satisfactory.

But I omitted the evaluation of the cardiac area and the longitudinal and oblique diameters of the heart because, for obtaining them, one has to fix the points, to the right and to the left, where the cardiac curve ends and where the vascular curve begins, which lends itself to individual variations of appreciation.

Therefore I restricted my investigation to the study of the transverse cardiac diameter, not taking it separately, but in relation to the weight and height of the persons examined. I dispensed with the cardiothoracic relation because it is well known today to be of little value.

The study of the transverse diameter, or of any other measurement which serves for estimating the size of the heart, is of no value whatever unless its relation to the height and weight of the person examined be established. A definite relationship is known to exist between the weight, the height and the linear measurements of the different cardiac chambers.[8] From the studies of C. P. Clark[9] it is known that the circumferences of the thorax and of the abdomen vary with the index weight/height, and it is supposed that a similar relation might exist between the transverse diameter of the heart and this anthropometric index. And, finally, I have arrived at the conclusion and the conviction that the biologic constant established by Ungerleider and Clark[10] is correct. That constant, evaluating the weight and the height of the persons examined in pounds and inches, is as follows:

$$\frac{\text{Weight x } 100{,}000}{\text{Height x (Diameter)}^2} = 13.83$$

And taking, as I have done, the weight and the height in kilograms and in centimeters, I obtained the following results:

$$\frac{\text{Weight x } 100{,}000}{\text{Height x (Diameter)}^2} = 2.47$$

All of the roentgenograms were taken at a distance of about 6 feet (183 cm.), with a moderate inspiration and with an exposure of one-tenth second The persons examined were weighed without coats, and a corresponding deduction for shoes was made in the height.

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[2] Jiménez Penuela, B.: in El ortodiagrama, Thesis, Faculty of Medicine, Bogotá, 1934.

[3] Kerwin, A. J.: Observations on Heart Size of Natives Living at High Altitudes, Am. Heart J. 28:69 (July) 1944.

[4] Gnecco Mozo, F.: New Considerations on the Work of the Heart in Bogotá, Rev. med., Bogotá 47:401 (Feb.) 1946; New Considerations on the Work of the Heart in Bogotá, ibid. 47:441 (March) 1946.

[5] Esquerra Gómez, G.: Radiological Studies to Evaluate the Size of the Heart Among Normal Individuals Living in the City of Bogotá, Bal. clin. de Marly 7:185 (June) 1945.

[6] Hodges, F. J., and Eyster, J. A. E.: Estimation of Transverse Cardiac Diameter in Man, Arch. Int. Med. 37:707 (May) 1926.

[7] Schwedel, J. B.: Clinical Roentgenology of the Heart, in Case, J. T., Annals of Roentgenology. New York, Harper & Brothers, 1945, vol. 18, -p. 1.

[8] Schwedel,[7] -p. 23.

[9] Clark, C. P.: Chest and Abdominal Measurements as Related to Height and Weight, Abstr. Prac.A. Life Insur. M. Dir. America (1929) 16:341, 1930. Theoretical Study of Blood Pressure; Relation to Heart Size, Body Surface Area and Metabolic Rate, ibid. 20:224, 1933.

[10] Ungerleider, H. E., and Clark, C. P.: A Study of the Transverse Diameter of the Heart Silhouette with Prediction Table Based on the Teleoroentgenogram, read at the Forty-Ninth Annual Meeting of the Association of Life Insurance Medical Directors, Oct. 21, 1938; New York, Recording & Statistical Corporation. 1939.

RESULTS

My first studies were conducted on 120 medical students who either were born in or had lived in the city of Bogota for more than four years, to which I added the cases presented by Dr. Jimenez[2], with which it was intended to demonstrate the existence of a slight cardiac enlargement. The first thing that attracted my attention was to find that the observations made by Jimenez based on the diameters and the cardiac area for proving the existence of a relative hypertrophy were normal when the transverse diameter of the heart was related to the anthropometric index. And the second fact to occupy my attention was that the group of students added to the cases of Dr. Jimenez fitted in normally to the prediction tables prepared by Ungerleider and Gubner[11] with a definite preponderance of point zero and with a percentage of 84.07 of the persons examined falling between plus 10 and minus 10 per cent (chart 1).

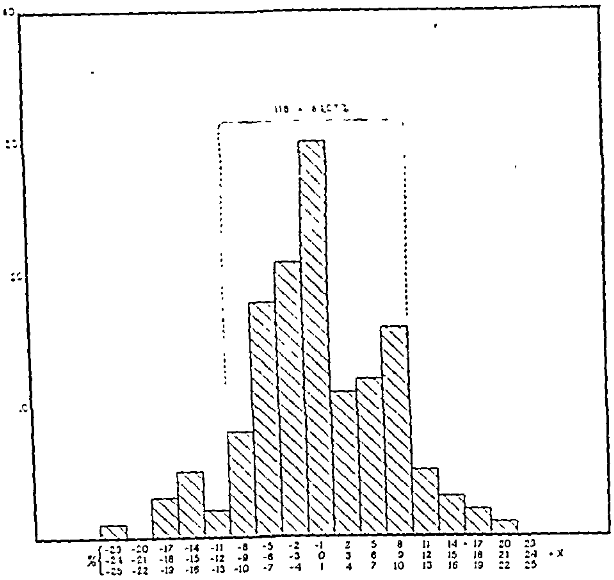

Chart 1.—Histogram of 138 persons examined in Bogota that fitted in normally with the prediction tables of Ungerleider and Gubner, with decided preponderance of point zero.

As the foregoing study leads one to the conclusion that the size of the heart could be compared with that found by Ungerleider and Clark in 1460 persons considered normal, who lived at altitudes close to sea level, it seemed to me necessary to continue this investigation.

The total number of cases which I report in this paper is 638, among which are included: 182 medical students between the ages of 17 and 30, who either were born in or had lived in Bogota for more than two years; 298 normal persons of both sexes, between the ages of 17 and 50, some of whom were natives of the plateau; others, persons who had lived in Bogotá for more than three months, and still others, persons who had been in the city for only a few days or weeks; and two military groups of 81 and 77 soldiers, respectively.

But I shall study carefully only the results obtained in 480 of these cases, because those obtained in the military groups differ from those of the other group, and open a way to further investigations. With reference to these 158 cases, I shall limit myself to making a brief summary of the results of this preliminary investigation.

The process carried out in the investigation was as follows, which, as can be seen, is the same as that followed by Ungerleider and Clark.

The anthropometric indexes were separated into groups and the transverse diameters of the heart, corresponding to each, were averaged by dividing the sum of these diameters by the number of cases. The index was averaged in a like manner, the answer being carried to the second decimal point for each case. Here are the results:

Anthropometric Index $\frac{\text{Weight in kilograms} \times 100}{\text{Height in Centimeters}}$	Diameters in Each Index	Number of Cases	Average Diameter of Each Index
19.11	83	1	83.0
23.27	105	1	105.0
24.41	185	2	92.5
25.32	100	1	100.0
26.43	617	6	102.8
27.15	395	4	98.7
28.44	1288	12	107.3
29.67	1275	12	106.2
30.43	1754	16	109.6
31.51	2271	20	113.5
32.45	5292	47	112.5
33.58	4088	34	120.2
34.57	5390	45	119.7
35.49	5408	45	120.1
36.48	5566	46	121.0
37.48	3964	32	123.8
38.56	3990	32	124.6
39.48	3506	27	129.8
40.52	3902	30	130.0
41.53	1950	15	130.0
42.50	1287	10	128.7
43.56	1533	12	127.7
44.23	953	7	136.1
45.19	556	4	139.0
46.22	565	4	141.2
47.32	719	5	143.8
48.19	144	1	144.0
49.40	154	1	154.0
50.72	283	2	141.5
51.71	283	2	141.5
52.24	145	1	145.0
56.37	302	2	151.0
57.92	130	1	130.0
	58183	480	

With these figures I plotted a graph, marking with a cross opposite each index the average corresponding to the transverse diameter. And with the value of the constant I computed the theoretic transverse diameter of each of the indexes. These values are marked by points joined together by a solid line (chart 2).

Chart 2 shows that the diameters obtained cluster in a manner similar to that of the observations made by Ungerleider and Clark.

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[11] Ungerleider, H. E., and Gubner, R.: Evaluation of Heart Size Measurements, Am. Heart J. 24:494 (Oct.) 1942.

The constant found by them is exact, inasmuch as on averaging the 480 weights, heights and transverse diameters of my observations,

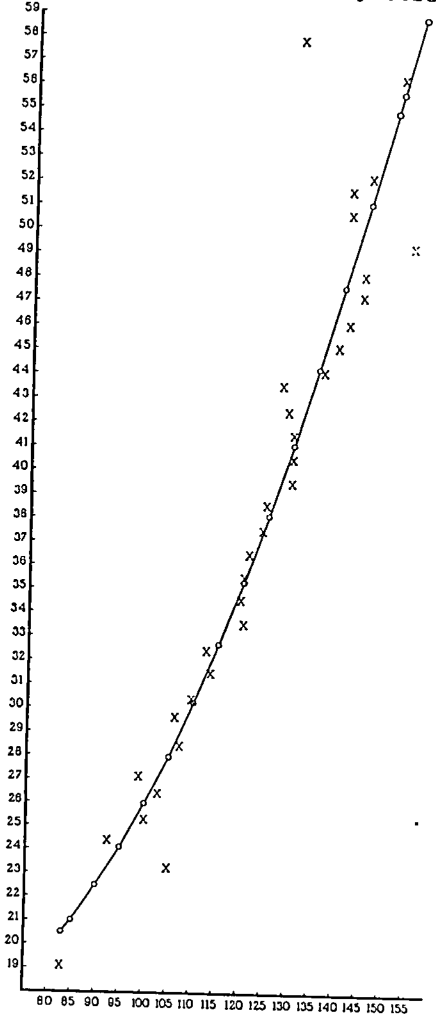

Chart 2.—Graph showing the constant established by Ungerleider and Clark (solid line) and the average corresponding to the transverse cardiac diameter of 480 normal persons examined in Bogotá marked with a cross opposite each index.

I obtained the figure 2.47, which is exactly the same as their average converted into kilograms and centimeters.

Data Obtained in Bogota

Average weight	60.42 kg.
Average height	165.96 cm.
Average transverse diameter	121.21 mm.

$$\frac{\text{Weight x 100,000}}{\text{Height x (Diameter)}^2} : \frac{60.42 \text{ x } 100,000}{165.96 \text{ x } (121.21)^2} = 2.47$$

Finally, Dr. Alfonso Esguerra Gomez, professor of physiology of the School of Medicine, produced the corresponding gaussian curve, with a modulus of 3, as the number of my observations was exactly one third of those presented by Ungerleider and Clark.

This gaussian curve helped to confirm that the cases of persons examined in Bogota fall into groups in a manner exactly similar to those of the United States. there being as a basis for comparison, in both, the theoretic prediction of the cardiac transverse diameter by the constant already mentioned (chart 3).

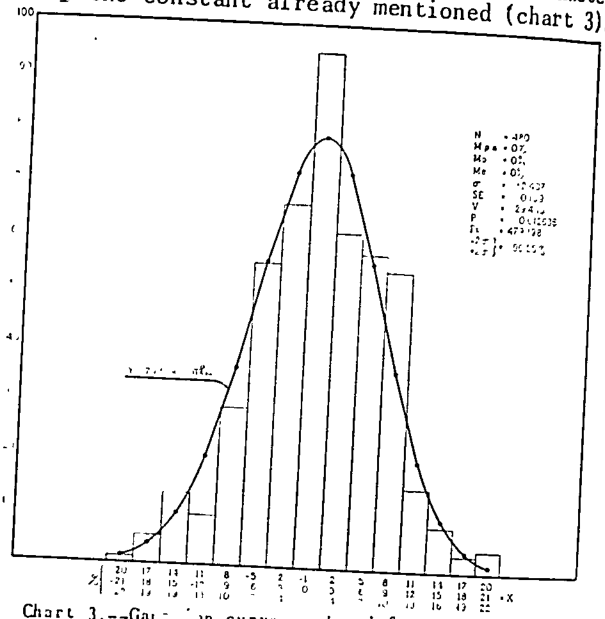

Chart 3.—Gaussian curve produced from 480 normal subjects examined in Bogotá, proving that they fall into groups exactly the same way as those of Ungerleider and Clark.

The arithmetic mean, the mode and the median all coincide at the zero point. Since, on the other hand, the standard error is 0.109, the chi square test gives a probability of 0.0126, the coefficient of variation is 29.446, the difference between the cases studied and the theoretic frequencies of the curve is 0.802, and the cases comprised between minus 2 sigma and plus 2 sigma are 462, or in other words 96.25 per cent, I consider that the conclusions arrived at are correct.

It can therefore be asserted that the average heart of the 480 persons examined in the city of Bogotá has the same transverse diameter, with relation to the anthropometric index, as that of the persons living at sea level. There is no increase, therefore, in heart size.

It only remains for me to make a brief commentary on the preliminary study conducted on the soldiers.

The first group examined comprised 77 men, with a minimum service of six months in the army and a residence in Bogotá of two years. The second was formed by 81 soldiers with six months' service in places close to sea level and who had come to the plateau twelve days before. As the histograms of both groups are so evidently equal, I have grouped them into one (chart 4).

Chart 4 indicates a deviation of plus 4 when compared with the other normal cases examined, and therefore it must be admitted that a slight cardiac hypertrophy exists in the soldiers. This enlargement cannot be attributed to their stay in the plateau, because the group of new arrivals demonstrated the same deviation and because the 480 persons not in the army are normal. Nor can one say that the arrival at the high plateau caused this hypertrophy, because there was no difference between the two groups and because among the remaining 480 whom I have just discussed, there were many who had arrived at the plateau a few days previously and the diameters of whose hearts were always within the same normal limits as those of the residents of Bogotá.

I believe, for these reasons, that it is a case of slight cardiac hypertrophy caused by the strenuous physical training to which the military men are subjected.

In order to arrive at a definite conclusion in this respect later on, roentgenologic examinations of the soldiers will be established in the army from the moment of enlistment to the time of their release. This will be done not only in Bogota but also in other cities close to sea level.

The fact that there is no enlargement of the heart in persons living in a city like Bogota, located 8,016 feet above sea level, does not mean that the heart does not work more and that it is free from hypertrophy in high altitudes. There are experimental facts, both in animals and in human beings, that prove the existence of this hypertrophy.

Van Liere[12] found that in guinea pigs exposed for at least 105 days to conditions similar to those prevailing in altitudes of 14,000 to 18,000 feet (4,240 to 5,490 meters) there is an increase in the heartweight/body weight ratio of the body of 55.8 per cent, and Takeuchi[13] has produced cardiac enlargement in cats by making them inhale mixtures of nitrogen and air. In human beings it has been experimentally demonstrated that from a height of 11,000 feet (3,350 meters) and up, chronic anoxia produces a decided increase in the size of the heart.

A. J. Kerwin,[3] by means of roentgenologic studies conducted on 273 persons living in Oroya, Peru, at 12,000 feet, showed that there is an increase of 11.5 per cent in the transverse diameter of the heart of the natives of this altitude, compared with the prediction tables of Ungerleider and Clark. Drs. Miranda and Rotta,[14] when comparing with these very prediction tables the results for 107 normal subjects at sea level and for 250 of Morococha (Peru) at 13,840 feet (4,220 meters), proved that in the natives of Morococha there is an increase in the cardiac transverse diameter that fluctuates between plus 11 and plus 30 per cent, with an average increase of 21 per cent.

If, in accordance with the roentgenologic studies, there is no increase in heart size in the city of Bogotá, neither does there exist cardiac hypertrophy without enlargement, as proved by the research carried out on 500 electrocardiograms by Dr. Alfonso Esguerra Gomez and by the research of Dr. J. H. Ordóñez,[15] conducted also by means of electrocardiograms, on 250 cases.

On the other hand, no pathologic variation is found in the pulse, blood pressure, number of respirations, respiratory capacity[16] or number of red blood cells in the residents of Bogotá.[17] All that can be observed are some phenomena in adaptation during the first few hours or days after arrival at the plateau. But shortly after arrival, and in many cases without any appreciable subjective symptoms, the organism adapts itself and continues functioning as at sea level.

SUMMARY

From the study of the transverse diameter of the heart by means of teleroentgenograms taken of 480 inhabitants of the city of Bogotá (altitude, 8,016 feet) the following conclusions are reached:

(a) When the values of the transverse diameter are correlated with the height and weight of the patient, they are identical with the values obtained by Ungerleider and Clark for persons living at sea level

(b) The constant $\dfrac{\text{Weight} \times 100{,}000}{\text{Height} \times (\text{Diameter})^2} = 13.83$, determined by the same authors in pounds and inches, is found to be, when converted into kilograms and centimeters, the same as the constant found when the figures obtained for the 480 persons examined in Bogotá were averaged according to weight, height and transverse diameters. The formula in kilograms and centimeters is:

$$\frac{\text{Weight} \times 100{,}000}{\text{Height} \times (\text{Diameter})^2} = 2.47$$

At 8,016 feet above sea level electrocardiographic signs of cardiac hypertrophy are not found, or abnormal variation of blood pressure, pulse, number of respirations, respiratory capacity or number of red blood cells.

In a preliminary study of 158 soldiers with six months' training in Bogota or in places near to sea level, a deviation of plus 4 was found on comparison of the transverse diameters of the heart of this group with the prediction tables based on the aforementioned constant.

It is supposed that the slight deviation observed in the soldiers is due to the intense physical training to which the soldiers are subjected.

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[12] Van Liere, E.: Anoxia - Its Effects on the Body, Chicago, University of Chicago Press, 1942, p. 97.

[13] Takeuchi, K.: The Relation Between the Size of the Heart and the Oxygen Content of Arterial Blood, J. Physiol. 59:413, 1925.

[14] Miranda, A., and Rotta, A.: Measurements of the Heart in Native and Long Time Residents of High Altitudes. An. Fac. med., Lima 26:49, 1944.

[15] Ordóñez, J. H.: Normal Electrocardiogram in Bogota: Its Relation to the Electrocardiograph Signs of Anoxemia, Rev. Fac. de med., Bogota 11:117, 1942.

[16] Esguerra Gómez, A.: Biotipo Universitario Colombiano, J. Univ. nac. de Colombia, October 1944, No. 1, p. 263.

[17] Almanzar, P. J.: Personal communication to the author.

Special Articles

TYPHOID IN THE LARGE CITIES OF THE UNITED STATES IN 1947

Thirty-Fourth Report

It has been customary in these reports to address a communication to the health officer of each of the cities requesting the number of deaths from typhoid, excluding paratyphoid, both among residents and among nonresidents. Although this practice was continued for 1947, it has been increasingly necessary to obtain from the state health departments the data on reallocations for residence, and, unfortunately, these could not be reconciled in all instances with the local reports. In such circumstances the figures provided by the state health departments have been accepted. A few local health officers seem to have no knowledge of how many deaths due to typhoid have occurred in their community, and this information can be secured only from the state health department. Some state departments have not completed the analysis of the statistical data, and the data in this article may not be complete in every detail. The possession of basic data seems paramount to an understanding of the problems of local health services.

Table 1.—*Death Rates of Fourteen Cities in New England States from Typhoid per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Cambridge.....	0.0	0.0	0.0	0.0	0.2*	0.8	2.1	4.3	2.5	4.0	9.8
Lynn...........	0.0	0.0	0.0	0.0	0.2	0.2	1.5	1.6	3.9	7.2	14.1
Springfield.....	0.0	0.0	0.0	0.0	0.3*	1.1†	0.4	2.0	1.4	17.6	19.9
Somerville......	0.0	0.0	0.0	0.0	0.6	0.4	1.3	1.8	2.8	7.9	12.1
Worcester......	0.0	0.0	0.0	0.1	0.2*	0.5*	1.0	2.3	3.5	5.0	11.8
Bridgeport.....	0.0	0.0	0.0	0.1	0.4	0.3	0.5	2.2	4.8	5.0	10.3
Lowell..........	0.0	0.0	0.0	0.2	0.4	1.2	2.6	2.4	5.2	10.2	13.9
New Haven.....	0.0	0.0	0.0	0.2†	1.0	0.7†	0.6	4.4	6.8	18.2	30.8
Waterbury.....	0.0	0.0	0.0	0.8	0.2	0.4	1.2	1.0	8.0	18.8	....
New Bedford...	0.0	0.0	0.9	0.2	0.1	1.1	1.5	1.7	6.0	15.0	16.1
Boston.........	0.1	0.0	0.1	0.1	0.3†	0.6	1.2	2.2	2.5	9.0	16.0
Providence.....	0.4	0.0	0.0	0.2†	0.6	1.1†	1.3	1.8	3.8	8.7	21.5
Hartford.......	0.6*	0.0	0.0	0.0	0.5	1.0†	1.3	2.5	6.0	15.0	19.0
Fall River......	0.9*	0.0	0.0	0.0	0.2	0.2	2.2	2.3	8.5	13.4	13.5

* All deaths from typhoid were stated to be in nonresidents.
† One third or more of the reported deaths from typhoid were stated to be in nonresidents.

For most of the cities of 100,000 population or more the Bureau of the Census has no estimates of population for dates since 1940. There are figures for a few of these cities, based on special censuses or sample censuses for various dates since 1940. Special censuses were conducted for Long Beach, Los Angeles, Oakland and San Diego, Calif., in 1946. The Bureau of the Census has released a population estimate for Washington, D. C., as of July 1, 1946. Sample censuses were taken in 1944 for Detroit, Norfolk, Va., Portland, Ore., San Francisco, Seattle and Tacoma, Wash. (A special census was taken in San Francisco in August 1945.) Estimates of the civilian population of counties are available for March 1 and Nov. 1, 1943, based on registrations for war ration books 2 and 4. Some of the cities (Baltimore, Denver, New Orleans, New York, Norfolk, Philadelphia, Richmond, Va., St. Louis, San Francisco and Washington, D. C. are coterminous with their counties, and the figures given in the releases are city as well as county estimates. Since for the vast majority of cities no official figures are available for any date subsequent to that of the 1940 federal census, it has again been deemed advisable to employ the populations determined by this uniform tabulation. For those cities for which special census figures are available, corrections in rates have been shown in footnotes. In most instances there are no, or only minor, changes in the rates. In no instance has any rate been extended beyond the first decimal point, and it is realized that this practice creates a slight disadvantage for the extremely large cities which now have but a few deaths from typhoid, especially New York and Chicago, with only 2 deaths each, and Detroit, with only a single death and that among nonresidents.

Table 2.—*Death Rates of Eighteen Cities in Middle Atlantic States from Typhoid per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Yonkers........	0.0	0.0	0.0	0.0	0.3	0.7	0.5	1.7	4.8	5.0	10.3
Erie.............	0.0	0.0	0.0	0.0	0.7*	1.2	0.9	2.3	6.9	49.0	46.6
Albany..........	0.0	0.0	0.0	0.0	1.2*	1.2	1.8	5.6	8.0	18.6	17.4
Trenton.........	0.0	0.0	0.0	0.0	1.4*	1.1	2.1	8.2	8.6	22.3	28.1
Jersey City.....	0.0	0.0	0.0	0.1*	0.6	0.3	0.9	2.7	4.5	7.2	12.6
Paterson.......	0.0	0.0	0.0	0.1†	0.7*	0.9	1.0	3.3	4.1	9.1	19.3
Buffalo.........	0.0	0.0	0.0	0.2	0.1	0.6	2.7	3.9	8.1	15.4	22.8
Reading........	0.0	0.0	0.0	0.2	0.5	0.4	1.6	6.0	10.0	31.9	42.0
Syracuse.......	0.0	0.0	0.0	0.3*	0.3†	0.8	0.8	2.3	7.7	12.3	15.6
Elizabeth.......	0.0	0.0	0.0	0.1	0.5	0.9	1.6	2.4	3.3	8.0	16.6
Newark.........	0.0	0.0	0.5	0.1	0.3	0.4	0.9	2.3	3.3	6.8	14.6
Camden........	0.0	0.0	1.7*	0.5*	1.1*	2.7	4.4	5.9	4.9	4.5	4.0
Pittsburgh.....	0.0	0.1†	0.4	0.3	0.7	0.9	2.4	3.9	7.7	15.9	65.0
Rochester......	0.0	0.3	0.0	0.1	0.3*	0.4	1.7	2.1	2.9	9.6	12.8
Scranton.......	0.0	0.7	0.0	0.0	0.3	1.4	1.8	2.4	3.8	9.3	31.5
Utica...........	0.0	1.0	0.0	0.4*	0.2†	0.2	1.1	3.9‡	...	....	....
New York.......	0.1	0.1	0.1	0.1	0.3	0.8	1.3	2.6	3.2	8.0	13.5
Philadelphia....	0.2	0.1	0.6	0.3	0.8	0.9	1.1	2.2	4.9	11.2	41.7

* One third or more of the reported typhoid deaths were stated to be in nonresidents.
† All typhoid deaths were stated to be in nonresidents.
‡ Incomplete data.

Table 3.—*Death Rates of Ten Cities in South Atlantic States from Typhoid per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-191
Charlotte.......	0.0	0.0	0.0	0.6*	1.6*	2.5	...	...	...	....	....
Jacksonville....	0.0	0.0	0.6	0.8	2.3	1.6	4.4	...	...	....	....
Washington....	0.0	0.9†	0.3‡	0.4*‡	1.1	2.2	2.8	5.4	9.5	17.2	26.7
Wilmington....	0.0	0.9	0.9§	0.2§	0.5	1.5	3.1	4.7	25.8‖	23.2‖	33.0
Norfolk.........	0.0	1.4§	0.7‡	0.3‡	1.1*	3.3	2.2	2.8	8.8	21.7	42.1
Tampa..........	0.0	1.8	1.8	1.8	0.6*	3.4	3.8	19.1	43.9‖	....	....
Baltimore......	0.3§	0.1	0.2*	0.3*	0.9*	1.4	3.2	4.0	11.8	23.7	35.1
Richmond......	0.5¶	0.0	2.1*¶	1.3*¶	2.5*	2.4	1.9	5.7	9.7	15.7	34.0
Atlanta.........	0.7*	0.0	1.0*	0.5*	2.1*	7.3	11.1	14.5	14.2	31.4	58.4
Miami..........	2.2	0.0	0.6	0.6	2.4	2.0	3.5	...	...	....	....

* One third or more of the reported deaths from typhoid were stated to be in nonresidents.
† Special census for 1946 gives rate of 0.7 for 1946 for Washington.
‡ Special census for 1944 gives rate of 0.2 for 1945 and 0.3 for 1941-1945 for Washington and rate of 0.4 for 1945 and 0.2 for 1941-1945 for Norfolk.
§ All deaths from typhoid were stated to be in nonresidents.
‖ Incomplete data.
¶ Special census for 1943 gives rate of 1.8 for 1945 and 0.4 for 1947 and 1.2 for 1941-1945 for Richmond.

Paratyphoid has again been excluded. Special note has been made of cities in which all deaths occurred among nonresidents. In addition to the sixty-eight enumerated on the honor roll in table 10, nine cities (Baltimore, Detroit, Fall River, Fort Worth, Hartford, Memphis, Salt Lake City, San Antonio and San Diego) are deserving of special recognition, since there were

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The preceding articles in this series were published in The Journal May 31, 1913, p. 1702; May 9, 1914, p. 1473; May 17, 1915, p. 1322; April 22, 1916, p. 1305; March 17, 1917, p. 845; March 16, 1918, p. 777; April 5, 1919, p. 997; March 6, 1920, p. 672; March 26, 1921, p. 860; March 25, 1922, p. 890; March 10, 1923, p. 691; Feb. 2, 1924, p. 389; March 14, 1925, p. 813; March 27, 1926, p. 948; April 9, 1927, p. 1148; May 19, 1928, p. 1624; May 18, 1929, p. 1674; May 17, 1930, p. 1574; May 9, 1931, p. 1576; April 30, 1932, p. 1550; May 13, 1933, p. 1491; May 19, 1934, p. 1677; June 8, 1935, p. 2093; June 6, 1936, p. 1983; June 19, 1937, p. 2118; July 30, 1938, p. 414; May 13, 1939, p. 1941; May 25, 1940, p. 2103; Jan. 17, 1942, p. 222; Aug. 8, 1942, p. 1188; Aug. 21, 1943, p. 1181; July 6, 1946, p. 817, and July 26, 1947, p. 1086.

no deaths among the residents. In four other cities (Atlanta, Ga., Kansas City, Mo., New Orleans and St. Louis) more than one third of the reported deaths were stated to have been among nonresidents. While in 1946 there was no city with a death rate in excess of 2.0, in 1947 there was one such city (Miami). Among cities with more than 1,000,000 inhabitants only Detroit records no death among residents.

The number of cities with no deaths due to typhoid during the past two or more years has increased from twenty-five in 1941 and forty-one in 1945 to a high of forty-nine in 1946 and again in 1947. Fort Wayne, Ind., continues to head the list, with no death in thirteen years. Two cities (Cambridge and Lynn, Mass) also record no deaths in ten or more years. Duluth, Minn., Springfield, Mass., and Yonkers, N. Y., have clear records for nine years; Canton, Ohio, Erie, Pa., Grand Rapids, Mich., and Tulsa, Okla., for eight years. South Bend, Ind., reports no death due to typhoid among residents for twelve years, Fall River, Mass., none for eleven years and Hartford, Conn., none for nine years.

TABLE 4.—*Death Rates of Nineteen Cities in East North Central States from Typhoid per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Fort Wayne....	0.0	0.0	0.0	0.0	0.0	2.1	4.2	12.9	7.3	....	...
Canton........	0.0	0.0	0.0	0.0	0.4*	0.8	1.4	3.3	8.9	....	....
Grand Rapids..	0.0	0.0	0.0	0.0	0.5*	0.2	1.0	1.9	9.1	25.5	29.7
Gary....	0.0	0.0	0.0	0.0	1.1	0.8	...	...	...	....	...
Evansville......	0.0	0.0	0.0	0.0	1.2*	1.8	6.2	5.0	17.5	32.0	35.0
Milwaukee......	0.0	0.0	0.0	0.1	0.1	0.2	0.8	1.6	6.5	13.6	27.0
Akron..........	0.0	0.0	0.0	0.1†	0.6*	0.9	1.5	2.4	10.6	21.0	27.7‡
South Bend.....	0.0	0.0	0.0	0.2†	0.0	0.8	...	...	...	....	....
Cleveland.......	0.0	0.0	0.0	0.2	0.6	1.1	1.0	2.0	4.0	10.0	15.7
Flint..........	0.0	0.0	0.0	0.2	1.3*	0.8	1.6	4.6	22.7	18.8	46.9
Peoria..........	0.0	0.0	0.0	0.6*	1.3*	0.9	0.2	3.7	5.7	16.1	15.7‡
Toledo..........	0.0	0.0	0.0	1.1	1.6*	1.2	3.0	5.8	10.6	31.4	37.5
Columbus......	0.0	0.0	0.3†	0.4*	1.4*	1.9	2.1	3.5	7.1	15.5	40.0
Cincinnati......	0.0	0.2	0.1*	0.3*	1.1*	1.4	2.5	3.2	3.4	7.8	30.1
Dayton.........	0.0	0.5	0.5	0.3*	1.4	0.8	1.9	3.3	9.3	14.8	22.5
Youngstown....	0.0	0.6	0.0	0.1†	0.7	1.2	1.1	7.2	19.2	29.5	35.1
Chicago.	0.1	0.1	0.1	0.1	0.3	0.4	0.6	1.4	2.4	8.2	15.8
Detroit.........	0.1†	0.2	0.1†	0.1	0.4	0.7	1.3	4.1	8.1	15.4	22.8
Indianapolis.. .	0.3	0.0	0.3†	0.3*	1.2*	1.8	2.7	4.6	10.3	20.5	30.4

* One third or more of the reported deaths from typhoid were stated to be in nonresidents.

† All deaths from typhoid were stated to be in nonresidents.

‡ Incomplete data.

The New England cities (table 1) (population 2,579,152) which set a new all-time record in 1946, with no deaths from typhoid, did not even maintain first place in 1947 and were outranked by the Middle Atlantic and East North Central cities. The rates in the latter two groups were 0.05 each, while the New England group reports a rate of 0.08. Ten of the New England cities record no death in 1947. Fall River and Hartford report 1 death each among nonresidents. In Boston and Providence, R. I., the single death each was among residents. The group as a whole reports 4 deaths, of which one half were among nonresidents. There have been only 7 deaths in the New England cities during the past four years, 2 each in Boston and Providence, 1 each in Fall River, Hartford and New Bedford, Mass. While in 1940 one half of the eighteen cities which recorded no deaths from typhoid during a two year period were to be found among the New England cities, in 1947 only about one fifth (ten among forty-nine) were from this group. The New England cities possess an excellent record, but there is a continued significant trend for other cities to attain the high standards set by this group.

Sixteen of the large Middle Atlantic cities (population 13,129,185) (there were only eight in 1941, thirteen in 1945) report no death from typhoid in 1947 (table 2). *These cities report the lowest group rate for 1947, followed by a fraction when computed to the third decimal, by the cities of the East North Central States.* Albany, N. Y., Buffalo, Elizabeth, N. J., Erie, Pa., Jersey City, N. J., Paterson, N. J., Reading, Pa., Syracuse, N. Y., Trenton, N. J., and Yonkers have maintained their ranking, with no typhoid death for three or more years. No death has occurred in Camden and Newark, N. J., during the past two years. Pittsburgh, Rochester, N. Y., Scranton, Pa., and Utica, N. Y., have been added to the honor roll. New York records a new low mark, with only 2 deaths. The previous low was in 1943, with 4 deaths. In 1946 there were 8 deaths. An interesting report on an outbreak in New York attributes 6 cases to the carelessness of 1 typhoid carrier. The latter had been under observation for fourteen years. She concluded that, since everything had gone well for this long period of time, she was no longer a carrier. She therefore arranged a dinner at her home, to which were invited members of the family. Her own children had been protected against typhoid soon after the discovery of her carrier state, and some of them had been reimmunized since. However, an unprotected son-in-law and daughter-in-law partook of the dinner. Typhoid developed in both within two weeks. The daughter-in-law exposed a sister during her acute illness, and the latter had typhoid about two weeks after exposure. She, in turn, exposed 3 of her children, all of whom became sick with typhoid. Thus, 6 cases were attributable to the carelessness of a carrier. Philadelphia reports 4 deaths, 3 among residents. All 6 deaths recorded in

TABLE 5.—*Death Rates of Six Cities in East South Central States from Typhoid per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Chattanooga...	0.0	0.0	0.0	0.2	0.9	5.8	8.0	18.0	27.2	35.8*	....
Nashville.......	0.0	0.0	0.6†	0.5†	3.4‡	5.7	18.2	17.8	20.7	40.2	61.2
Birmingham....	0.0	0.7†	1.9‡	0.9‡	2.5‡	4.1	8.0	10.8	31.5	41.3	41.7
Knoxville.......	0.0	1.8‡	0.9†	1.2†	3.8	6.0	10.7	20.8	25.3*	....	....
Louisville.......	0.3	0.6	0.6‡	0.5‡	0.9	2.8	3.7	4.9	9.7	19.7	52.7
Memphis.....	0.7†	0.3	0.6	0.3‡	4.6‡	7.5	9.3	18.9	27.7	42.5	35.3

* Incomplete data.

† All deaths from typhoid were stated to be in nonresidents.

‡ One third or more of the reported deaths from typhoid were stated to be in nonresidents.

TABLE 6.—*Death Rates of Nine Cities in West North Central States from Typhoid per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Duluth..........	0.0	0.0	0.0	0.0	0.2	1.0	1.1	1.7	4.4	19.8	45.5
Minneapolis....	0.0	0.0	0.0	0.1	0.2	0.8	0.8	1.9	5.0	10.6	32.1
Wichita.........	0.0	0.0	0.0	0.2	0.4	1.1	1.2	6.3	...	....	....
Kansas City, Kan..........	0.0	0.0	0.0	0.8*	1.0	1.0	1.7	5.0	9.4	31.1	74.5†
St. Paul........	0.0	0.0	0.3	0.1	0.3	0.7	1.4	3.4	3.1	9.2	12.8
Omaha.........	0.0	0.4	0.4	0.1	0.6	0.9	1.3	3.3	5.7	14.9	40.7
St. Louis.......	0.4*	0.1‡	0.1	0.2*	0.7	1.6	2.1	3.9	6.5	12.1	14.7
Des Moines.....	0.6	0.0	0.0	0.0	1.3	2.5	2.4	2.2	6.4	15.9	23.7
Kansas City, Mo............	0.7*	0.0	0.0	0.1*	0.9*	1.6	2.8	5.7	10.6	16.2	35.6

* One third or more of the reported typhoid deaths were stated to be in nonresidents.

† Incomplete data.

‡ All typhoid deaths were stated to be in nonresidents.

this group of cities occurred in the two largest cities, New York and Philadelphia.

The rate (0.37) for the South Atlantic cities (table 3) (population 2,727,985) is higher than the low rate for 1944 (0.22), but is lower than the rate for 1946 (0.44) and that for 1945 (0.62). In these cities there occurred 10 deaths in 1947 (6 among residents) and 12 in 1946 (9 among residents). Six cities (Charlotte, Jacksonville, Fla., Norfolk, Tampa, Washington and Wilmington, Del., are on the honor roll, and it is stated that the 3 deaths in Baltimore occurred among nonresidents. Charlotte has been included in the group for the sixth time; however, for the purposes of adequate comparison, the figures for this city have been omitted in calculating rates for the group as a whole. Washington reports no death in 1947, in comparison with 6 in 1946, 5 among residents (there were 2 deaths in 1945, 4 in 1944, 1 in 1943). Richmond, with no death in 1946, reports 1 among residents in 1947. Five cases occurred in a single household, the first case being that of the father, who worked for the city as a sewer cleaner. Atlanta, with no death in 1946, records 2 in 1947, 1 among residents. Miami, with no death in 1946, reports 4 in 1947, all among residents.

Table 7.—*Death Rates of Eight Cities in West South Central States from Typhoid per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Tulsa	0.0	0.0	0.0	0.0	0.4	1.1	8.3	16.2*	...	....	....
Oklahoma City	0.0	0.0	0.0	0.1	2.6	4.3	7.4*	...	...	....	....
El Paso	0.0	0.0	0.0	2.7	4.5	5.2	9.1	10.8	30.7	42.8	....
Dallas	0.0	0.7	0.3	0.9†	2.7†	5.1	7.3	11.2	17.2	....	....
Houston	0.3	0.5†	0.8†	1.1	2.3	3.2	4.8	7.6	14.2	38.1	49.5*
San Antonio	0.4‡	0.4	0.4	0.3	2.9	4.3	4.6	9.3	23.3	29.5	35.9
Fort Worth	0.6‡	0.6	0.6	0.4†	2.1	4.5	5.9	6.1	16.3*	11.9	27.8
New Orleans	1.0†	0.4†	1.2‡§	1.4†§	5.0†	9.6	9.9	11.6	17.5	20.9	35.6

* Incomplete data.

† One third or more of the reported deaths due to typhoid were stated to be in nonresidents.

‡ All deaths from typhoid were stated to be in nonresidents.

§ Special census of 1943 gives rate of 1.1‡ for 1945 and 1.3† for 1941-1945 for New Orleans.

Table 8.—*Death Rates of Twelve Cities in Mountain and Pacific States from Typhoid per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1936-1940	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910
Long Beach	0.0	0.0	0.0	0.1	0.5	0.5	1.1	2.1*	...	....	....
Oakland	0.0	0.0	0.0	0.2	0.5†	1.2	1.2	2.0	3.8	8.7	21.5
Denver	0.0	0.3	0.0	0.3†	1.4	1.7	2.6	5.1	5.8	12.0	37.5
Spokane	0.0	0.8‡	0.0	0.6†	1.2	1.0	2.2	1.4	4.9	17.1	50.3
Sacramento	0.0	0.9	0.9	0.4†	1.5‡	6.3	...	...	...	....	....
Tacoma	0.0	1.8†	0.0	0.5†	0.5	0.9	1.8	3.7	2.9	10.4	19.0
Seattle	0.3	0.0	0.3	0.1	0.2	0.7	2.2	2.6	2.9	5.7	25.2
Portland	0.3	0.7	0.0	0.1‡	0.3	0.8	2.3	3.5	4.5	10.8	23.2
San Diego	0.5‡§	0.0	0.0	0.2†‖	0.8	1.3	1.0	1.6	7.9	17.0	10.8
San Francisco	0.5¶	0.3	0.2‡¶	0.1†	0.4	0.8	2.0	2.8	4.6	13.6	26.3
Los Angeles	0.5†§	0.3†	0.3	0.3	0.7†	0.8	1.5	3.0	3.6	10.7	19.0
Salt Lake City	0.7‡	0.0	0.0	0.1‡	0.3‡	0.7	1.9	6.0	9.3	13.2	41.1

* Incomplete data.

† One third or more of the reported deaths due to typhoid were stated to be in nonresidents.

‡ All deaths from typhoid were stated to be in nonresidents.

§ Special census for 1946 gives rate of 0.3‡ for 1947 for San Diego and 0.4† for Los Angeles.

‖ Special census for 1944 gives rate of 0.1† for 1941-1945 for San Diego.

¶ Special census for 1945 gives rate of 0.1‡ for 1945 and 0.4 for 1947 for San Francisco.

The East North Central cities (population 9,386,378) are in virtual tie with the Middle Atlantic cities for first place (rate 0.05). They held first place in 1945 and back in 1941 and 1938. Sixteen (fifteen exclusive of Gary) of the cities in this group (Akron, Canton, Cincinnati, Cleveland, Columbus, Dayton, Ohio, Evansville, Ind., Flint, Mich., Fort Wayne and Gary, Ind., Grand Rapids, Mich., Milwaukee, Peoria, Ill., South Bend and Toledo and Youngstown, Ohio) report no death from typhoid in 1947 (table 4). Gary was added to this group in 1940, but figures for this city have been omitted in determining rates for the group as a whole. The number of deaths due to typhoid decreased from 6 in 1946 (33 in 1940) to 5 in 1947, a new low (the rate from 0.35 in 1940 and 0.06 in 1946 to 0.05 in 1947). Thirteen cities record no death from typhoid during 1946 and 1947 (table 9), Fort Wayne none for thirteen years (the longest honor record of any city), Canton and Grand Rapids none for eight years and Evansville and Gary none for seven years. Cleveland has been on the honor roll for three years. Detroit records no death among residents, 1 among nonresidents. Chicago and Indianapolis report 2 deaths each all among residents.

The six cities (table 5) in the East South Central group (population 1,286,747) show a decrease in the death rate (0.23 in 1947, 0.54 in 1946 and 0.70 in 1945). This marks a new low record for these cities, the previous low being 0.31 in 1944. This group, which held the highest group rates in 1946 and 1945, is in fourth place in 1947. Of 3 deaths, 2 are stated to have occurred among nonresidents. Thus, the 1 death from typhoid in Louisville, Ky., is the only death among residents in these six cities. The 2 remaining deaths (both in Memphis, Tenn.) were among nonresidents. Four cities (Birmingham, Ala., Chattanooga, Knoxville and Nashville, Tenn.) report no deaths among either residents or nonresidents and appear on the honor roll. Chattanooga has no data regarding deaths among nonresidents, and the state health department reports that it will be several months before such information is ready for release. With this uncertainty regarding data, it is stated that there has been no death in Chattanooga for six years.

Table 9.—*Forty-Nine Cities with No Deaths from Typhoid in 1946 and 1947* *

Akron (3)†
Albany (7)†
Bridgeport (6)†
Buffalo (3)†
Camden
Cambridge (10)†
Canton (8)†
Charlotte (3)†
Chattanooga (6)†
Cleveland (3)†
Columbus
Duluth (9)†
Elizabeth (3)†
El Paso (3)†
Erie (8)†
Evansville (7)†
Flint (3)†
Fort Wayne (13)†
Gary (7)†
Grand Rapids (8)†
Jacksonville
Jersey City (5)†
Kansas City, Kan. (4)†
Long Beach (4)†
Lowell (4)†
Lynn (11)†
Milwaukee (4)†
Minneapolis (6)†
Nashville
Newark
New Bedford
New Haven (4)†
Oakland (4)†
Oklahoma City (3)†
Paterson (6)†
Peoria (4)†
Reading (6)†
Somerville (7)†
South Bend (3)†
Springfield (9)†
St. Paul
Syracuse (3)†
Toledo (4)†
Trenton (7)†
Tulsa (8)†
Waterbury (4)†
Wichita (5)†
Worcester (6)†
Yonkers (9)†

* Forty-seven without Charlotte and Gary.

† Number of years with no deaths due to typhoid.

The West North Central cities (population 2,716,484) show an increase in the number of deaths, from 2 in 1946 to 7 in 1947 (table 6); 5 of the 7 were among residents. The death rate increased from 0.07 in 1946 (it was 0.11 in 1943, 1944 and 1945) to 0.26 in 1947. This group of cities is now in fifth place. Six cities (Duluth, Kansas City, Kan., Minneapolis, Omaha, St. Paul and Wichita, Kan.) record no death. Omaha reports only 2 deaths (1 each in 1945 and 1946) in seven years. There has occurred no death from typhoid in Duluth for the past nine years (table 9), none in Minneapolis for six years and none in Wichita for five years. After a period of seven years without a death, Des Moines records 1 among residents in 1947. After a period of five years with no death among residents, Kansas City, Mo., reports 2 among residents and 1 among nonresidents in 1947. St. Louis records `3 deaths, 2 among residents.

TABLE 10.—*Death Rates from Typhoid in 1947*

Honor Roll: No Deaths from Typhoid (Sixty-Eight Cities)*

Akron
Albany
Birmingham
Bridgeport
Buffalo
Camden
Cambridge
Canton
Charlotte
Chattanooga
Cincinnati
Cleveland
Columbus
Dallas
Dayton
Denver
Duluth
Elizabeth
El Paso
Erie
Evansville
Flint
Fort Wayne
Gary
Grand Rapids
Jacksonville
Jersey City
Kansas City, Kan.
Knoxville
Long Beach
Lowell
Lynn
Milwaukee
Minneapolis
Nashville
Newark
New Bedford
New Haven
Norfolk
Oakland
Oklahoma City
Omaha
Paterson
Peoria
Pittsburgh
Reading
Rochester
Sacramento
Scranton
Somerville
South Bend
Spokane
Springfield
St. Paul
Syracuse
Tacoma
Tampa
Toledo
Trenton
Tulsa
Utica
Washington
Waterbury
Wichita
Wilmington
Worcester
Yonkers
Youngstown

First Rank: From 0.1 to 1.9 Deaths per Hundred Thousand (Twenty-Seven Cities)

Boston	0.1	Seattle	0.3	Des Moines	0.6
Chicago	0.1	Providence	0.4	Fort Worth	0.6†
Detroit	0.1†	San Antonio	0.4†	Hartford	0.6†
New York	0.1	St. Louis	0.4‡	Atlanta	0.7‡
Philadelphia	0.2	Indianapolis	0.5	Kansas City, Mo.	0.7‡
Baltimore	0.3†	Richmond	0.5§	Memphis	0.7†
Houston	0.3	San Diego	0.5†‖	Salt Lake City	0.7†
Louisville	0.3	San Francisco	0.5¶	Fall River	0.9†
Portland	0.3	Los Angeles	0.5‡‖	New Orleans	1.0‡

Second Rank: From 2.0 to 2.3 (one city)

Miami	2.3

* Sixty-five without Charlotte, Gary and Sacramento.
† All deaths from typhoid are stated to be in nonresidents.
‡ One third or more of the reported deaths due to typhoid were stated to be in nonresidents.
§ Special census for 1943 gives rate of 0.4 for Richmond.
‖ Special census for 1946 gives rate of 0.3† for San Diego and 0.4‡ for Los Angeles.
¶ Special census for 1945 gives rate of 0.4 for San Francisco.

TABLE 11.—*Number of Cities with Various Typhoid Death Rates*

	No. of Cities	10.0 and Over	5.0 to 9.9	2.0 to 4.9	1.0 to 1.9	0.1 to 0.9	0.0
1906-1910	77	75	2	0	0	0	0
1911-1915	79	58	19	2	0	0	0
1916-1920	84	22	32	30	0	0	0
1921-1925	89	12	17	48	12	0	0
1926-1930	92	3	10	30	37	12	0
1931-1935	93	0	6	17	28	42	0
1930	93	2	6	30	23	22	10
1931	93	2	6	23	28	22	12
1932	93	1	7	13	29	29	14
1933	93	0	7	18	19	33	16
1934	93	0	9	11	27	23	23
1935	93	0	7	15	18	29	24
1936	93	0	3	15	21	36	18
1937	93	0	1	13	26	26	27
1938	93	0	3	13	14	34	29
1939	93	0	3	7	17	32	34
1940*	93	0	0	12	12	30	39
1941*	93	0	0	4	7	46	36
1942*	93	0	1	3	5	34	50
1945*	93	0	0	1	5	31	56
1946*	93	0	0	0	5	28	60
1947*	93	0	0	1	1	26	65

* Charlotte, Gary and Sacramento omitted.

The eight cities of the West South Central group (table 7) (population 2,048,692) report the same number of deaths (8) as for 1946. The rate of 0.39 in 1947 is in contrast to the rate of 2.00 in 1940. Notwithstanding this continued reduction, the rate for this group of cities is the highest for all groups (followed closely by the South Atlantic cities with a rate of 0.37). Of the 8 deaths in the West South Central cities, 5 were among nonresidents (2 of 8 in 1946). The 3 deaths among residents represents a new low, the previous low of 4 deaths having occurred in 1945. Four cities (Dallas and El Paso, Texas, and Oklahoma City and Tulsa, Okla.) record no death in 1947. Tulsa reports no death for eight years. Fort Worth and San Antonio record 1 death each among nonresidents. It is stated that of the 5 deaths in New Orleans, 3 were among nonresidents. Houston, Texas, reports 1 death among residents.

TABLE 12.—*Total Typhoid Rate for Seventy-Eight Cities, 1910-1947* *

	Population	Deaths from Typhoid	Typhoid Death Rate per 100,000
1910	22,573,135	4,637	20.54
1911	23,211,341	3,950	17.02
1912	23,835,390	3,132	13.14
1913	24,457,989	3,285	13.43
1914	25,091,112	2,781	11.08
1915	25,713,318	2,434	9.47
1916	26,257,550	2,191	8.34
1917	26,865,108	2,016	7.50
1918	27,086,696†	1,824†	6.73
1919	27,735,683†	1,151†	4.15
1920	28,244,878	1,088	3.85
1921	28,859,062	1,141	3.95
1922	29,473,246	963	3.26
1923	30,087,430	950	3.16
1924	30,701,614	943	3.07
1925	31,315,598	1,079	3.44
1926	31,929,782	907	2.84
1927	32,543,966	648	1.99
1928	33,158,150	628	1.89
1929	33,772,334	537	1.59
1930	34,410,235	554	1.61
1931	34,508,750	563	1.63
1932	34,607,505	442	1.28
1933	34,708,945	423	1.22
1934	34,833,650	413	1.19
1935	35,005,351	348	0.99
1936	35,196,325	337	0.96
1937	35,386,380	289	0.82
1938	35,578,011	257	0.72
1939	35,767,022	232	0.65
1940	35,895,638	172	0.48
1941	35,895,638‡	123	0.34
1942	35,895,638‡	83	0.23
1943	35,895,638‡	78	0.22
1944	35,895,638‡	66	0.18
1945	35,895,638‡	80	0.22
1946	35,895,638‡	54	0.15
1947	35,895,638‡	53	0.15
Rates for Ninety-Three Cities			
1935	37,025,179	385	1.04
1936	37,241,414	366	0.98
1937	37,459,339	324	0 86
1938	37,680,155	298	0.79
1939	37,900,354	259	0.68
1940	38,060,662	190	0.50
1941	38,060,662‡	141	0.37
1942	38,060,662‡	95	0.25
1943	38,060,662‡	85	0.22
1944	38,060,662‡	73	0.19
1945	38,060,662‡	87	0.23
1946	38,060,662‡	62	0.16
1947	38,060,662‡	57	0.15

* The following fifteen cities are omitted from this table because data for the full period are not available: Canton, Chattanooga, Dallas, Fort Wayne, Jacksonville, Knoxville, Long Beach, Miami, Oklahoma City, South Bend, Tampa, Tulsa, Utica, Wichita and Wilmington.
† Data for Fort Worth lacking.
‡ Census figures for 1940 were used.

The eleven cities (excluding Sacramento, Calif.) in the Mountain and Pacific states (table 8) (population 4,186,039) report an increase of 1 death (13 in 1946 and 14 in 1947). There were only 5 deaths in 1944. The rate has increased from 0.17 in 1945 to 0.31 in 1946 and to 0.33 in 1947. Sacramento has again been omitted in calculating the total number of deaths and the rates. Six of the Mountain and Pacific cities (Denver, Long Beach, Oakland, Sacramento, Spokane and Tacoma) report no death from typhoid in 1947. There were *nine cities on the honor roll in 1944*, eight in 1945 and five in 1946. Long Beach and Oakland have reported no death in four years. Salt Lake City records no death among residents for six years and San Diego *none* for five years. Each of these two cities reported 1 death among nonresidents in 1947. San Francisco reports 3 deaths among residents and Portland and Seattle 1 each. Of 7 deaths in Los Angeles, it is stated that 3 occurred among nonresidents. It is also stated that in 2 of the 4 deaths among residents, the source of infection was outside the city. In 1946 there were 5 deaths in Los Angeles, 4 among residents.

THE HONOR ROLL

The number of cities with no death from typhoid has increased from sixty to sixty-five (table 11). Charlotte, Gary and Sacramento, not included in the group of ninety-three cities, also report no death. This is by far the best showing, and there remain only two cities with a rate of 1.0 or more. Forty-seven cities (forty-nine with Charlotte and Gary) record no death from typhoid in 1946 and 1947 (table 9). It is again emphasized that nine cities (Baltimore, Detroit, Fall River, Fort Worth, Hartford, Memphis, Salt Lake City, San Antonio and San Diego) in the first rank would appear in the honor roll were they not charged with deaths among nonresidents.

TABLE 13.—*Total Typhoid Death Rate per Hundred Thousand of Population for Ninety-Three Cities According to Geographic Divisions*

		Deaths from Typhoid		Typhoid Death Rates				
	Population*	1947	1946	1947	1946	1941-1945	1936-1940	1931-1935
New England...........	2,579,152	4	0	0.08†	0.00	0.14	0.39	0.70
Middle Atlantic.........	13,129,185	6	14	0.05	0.11	0.17	0.43	0.80
South Atlantic..........	2,727,985	10	12	0.37†	0.41	0.54	1.14	2.70
East North Central....	9,386,378	5	6	0.05	0.06	0.16	0.53	0.75
East South Central....	1,286,747	3	7	0.23†	0.54	0.57	2.54	4.81
West North Central....	2,716,484	7	2	0.26	0.07	0.16	0.60	1.24
West South Central....	2,048,692	8	8	0.39†	0.39	0.89	3.09	5.36
Mountain and Pacific..	4,186,039	14	13	0.33†	0.31	0.23	0.60	0.88

* Census figures for 1940 were used.

† One third or more of the reported typhoid deaths were stated to be in nonresidents.

For the seventy-eight cities (table 12) for which data are available since 1910 there occurred 53 deaths from typhoid in 1947 (54 in 1946, 80 in 1945 and 66 in 1944). The rate of 0.15 (to second decimal) remains the same as that of 1946. For the ninety-three cities the number of deaths in 1947 is 57 (62 in 1946 and 87 in 1945). The rate of 0.15 marks a new all-time low.

Table 13 shows the number of deaths for each of the past two years in each group of cities. It also shows the rates for 1946 and 1947, the quinquennium 1941 to 1945 and the two preceding five year periods. The continued reduction in rates for all groups is impressive. Unfortunately, this may be influenced slightly by the effort of some communities to unload the deaths which occur within the area on neighboring cities or states or other countries. For 1947 the health officers report no significant outbreaks. Improvement remains general throughout the country, and typhoid as a cause of death in these cities is fast approaching the vanishing point.

CANCER OF THE HEAD AND NECK

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This article is the fourteenth of a series to be published by the American Medical Association in cooperation with the American Cancer Society. The series is designed to aid in the early diagnosis of cancer and thereby to gain more effective results in treatment.

I. CANCER OF THE MOUTH

The term cancer of the mouth is commonly used to define those malignant tumors which arise in the mucous membranes of the oral cavity beginning anteriorly at the mucocutaneous junction of the lips and extending posteriorly to the level of the free edge of the soft palate, the tonsil and the base of the tongue. Cancer of the mouth may be divided into several varieties based on the anatomic site of the origin of the tumor; namely, lip, cheek, gum, floor of mouth, tongue, palate and tonsil. From the practical point of view growths arising in these different areas present distinct clinical problems especially with regard to treatment, and in the evaluation of an individual case it is essential that the primary site of origin of the tumor be definitely determined.

ETIOLOGY

Cancer of the mouth comprises about 4 per cent of all human cancer, and about 70 per cent of all cancer in the upper respiratory and alimentary tracts. Males are affected about five times as frequently as females (cancer of the lip and floor of the mouth, 98 per cent in males; cancer of the tongue, gum, tonsil, palate and cheek, 80 to 90 per cent in males). Intraoral cancer is mainly a disease of middle and old age, although it may occur in the young and even in infants.

Causative Factors.—The actual cause of cancer in any part of the body has not been established, but several forms of chronic irritation are known to be important contributing factors in the causation of cancer of the mouth. The form of chronic irritant is of less importance than its chronicity.

In cancer of the lower lip overexposure to sunshine over a period of many years is a significant etiologic factor, and the disease is found most often among outdoor workers such as farmers and sailors. A frequent source of chronic irritation within the mouth is syphilitic glossitis. About one third of all male patients with cancer of the tongue have chronic syphilis, as contrasted with about 4 per cent of syphilis in males of similar age groups without cancer of the tongue. Chronic glossitis and stomatitis may also be due to nutritional deficiencies (avitaminosis B).

Tobacco, especially smoking, can be demonstrated statistically to be an important causative factor. The incidence, especially of excessive smoking, is higher in persons with cancer of the mouth than in the normal. The so-called pipe smoker's cancer of the lip is not as frequently seen now as formerly, when clay pipes were in common use. Leukoplakia of the oral mucous membranes occurs as a response of the tissue to chronic irritation and is ofter found to precede or to be associated with cancer. These two conditions have a common etiology so far as chronic irritation is concerned. The etiologic significance of chronic irritation from sharp or broken teeth and ill-fitting dentures has undoubtedly been greatly overemphasized.

PATHOLOGY

The most frequent histologic type of cancer of the mouth is epidermoid carcinoma (about 90 per cent). This is to be expected, since malignant tumors of the oral cavity for the most part arise from mucous membrane of the squamous variety. Adenocarcinoma is occasionally found in this portion of the upper part of the alimentary tract and is most often seen in the palate; such a morphologic type of cancer has its origin either from minor salivary glands or from mucous gland tissue. Melanoma, spindle cell sarcoma, malignant mucoepidermoid tumors and malignant lymphoma occur, though rarely, in the mouth.

About 75 per cent of oral cancer is well differentiated (grades 1 and 2) and the more malignant (less differentiated) varieties of epidermoid carcinoma are more frequently found in the posterior part of the oral cavity (tonsil and base of tongue). Other highly malignant cancers, such as anaplastic and transitional cell carcinoma, also have an affinity for structures in the posterior oral cavity, particularly in the tonsillar region.

SYMPTOMS, MORBID ANATOMY AND CLINICAL COURSE

The first or early subjective symptoms of cancer of the mouth vary according to the location of the primary lesion. When this disease occurs on the lower lip, the first symptom noted by the patient is always the presence of the growth, since this portion of the anatomy is under daily self observation (fig. 1). Within the oral cavity, especially in the anterior portions of the tongue, floor of the mouth or the cheeks, the cancer is usually discovered by the tactile sense of the tongue, or less frequently there is pain or tenderness in the ulcer which has become slightly inflamed.

Further back in the oral cavity (tonsil, base of tongue and palate), where tactile and pain sensations are less acute, the primary lesion rarely produces any symptoms in its early stages and the growth usually reaches the size of 2 to 3 cm. before subjective manifestations arise. At this stage of the disease the lesion becomes infected, so that the first symptom of the local growth is slight pain on swallowing or speaking. In this locality, moreover, the tumor may remain silent, and in such cases the first symptom will be the discovery by the patient of an enlarged (metastatic) lymph node in the neck.

Early cancer of the mouth is characterized objectively by the appearance of an indurated plaque or ulcer which infiltrates the mucous membrane for a varying distance. On examination, the primary lesion of cancer of the mouth may appear as a small, smoothly granular ulcer, 2 to 3 mm. in diameter; a fissured patch of leukoplakia; a slightly ulcerated, papillary tumor; an excavated ulcer with indurated edges, or a necrotic ulcer covered with slough. The most common and characteristic picture is a coarsely granular ulcer with indurated, raised, rolled edges (figs. 2 and 3). Although the lesion is usually slightly tender, this characteristic is obviously not as pronounced as is found in benign inflammatory ulcers of similar size.

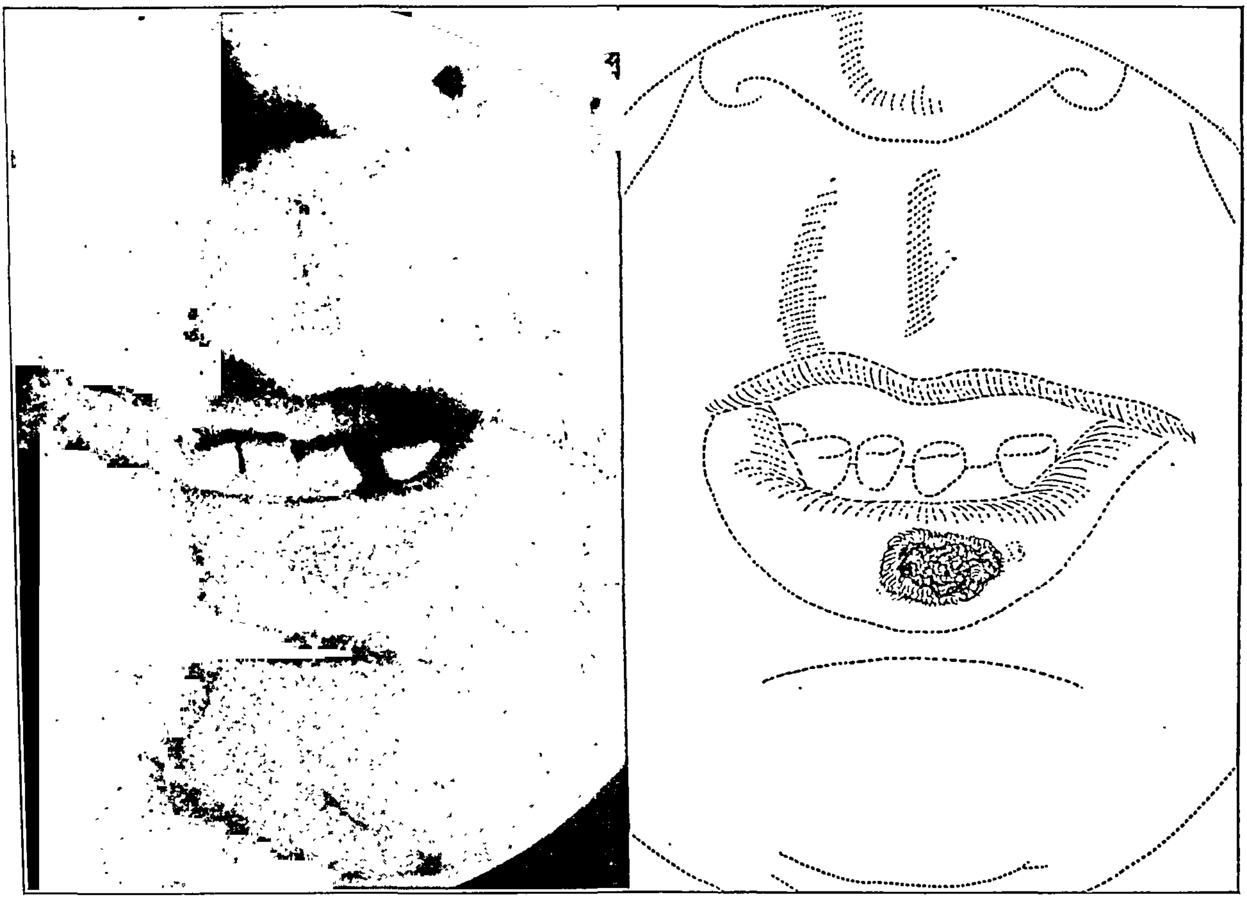

Fig. 1.—Cancer of the lip. Cancer of the lip in a moderately early stage presenting as an indolent, granular, indurated ulcer with raised, rolled edges. It is neither tender nor painful. In such cases the patient has been aware of the lesion since its inception.

As cancer of the mouth progresses, ulceration and deep infiltration become more apparent, accompanied by extensive secondary infection, and only at this time do pain and disability become marked. The later stages are characterized by steadily increasing infiltration of the tongue, the cheeks, the floor of the mouth, the tonsil and the palate, and often, depending on the site of origin of the primary growth, invasion and erosion of the mandible and maxilla occur. As the normal structures are invaded and destroyed by the growth, the movements of the tongue and jaws are restricted (trismus) and speech becomes less distinct. The swallowing of food and drink is often both difficult and painful, and in some cases the patient may not even be able to swallow his saliva, which must then be spat out (salivation). In other cases, the expanding growth and edema may encroach on the lumen of the pharynx or larynx to cause both dysphagia and dyspnea. Repeated hemorrhages may result from the erosion by cancer of large blood vessels. Death in uncontrolled cancer of the mouth usually occurs from one or more of the following complications: sepsis, malnutrition and dehydration, pain, hemorrhage, respiratory obstruction and metastasis.

Metastasis.—The cervical lymph nodes may be involved by metastasis early in the course of the disease, while the primary lesion is only a few millimeters in diameter, but such spread almost invariably takes place during the advanced stages. At first there is barely discernible enlargement of one or more lymph nodes, but as the disease progresses, the metastatic cervical mass, sometimes multiple and bilateral, may reach a size of 10 to 15 cm. in diameter. Such cancerous lymph nodes frequently become infected, producing bulky, fluctuating, liquefied abscesses. If the malignant growth in the mouth and in the neck is not controlled and if the patient survives long enough, metastasis almost invariably occurs to some viscus below the clavicle, such as the lungs or the liver, or to the bones.

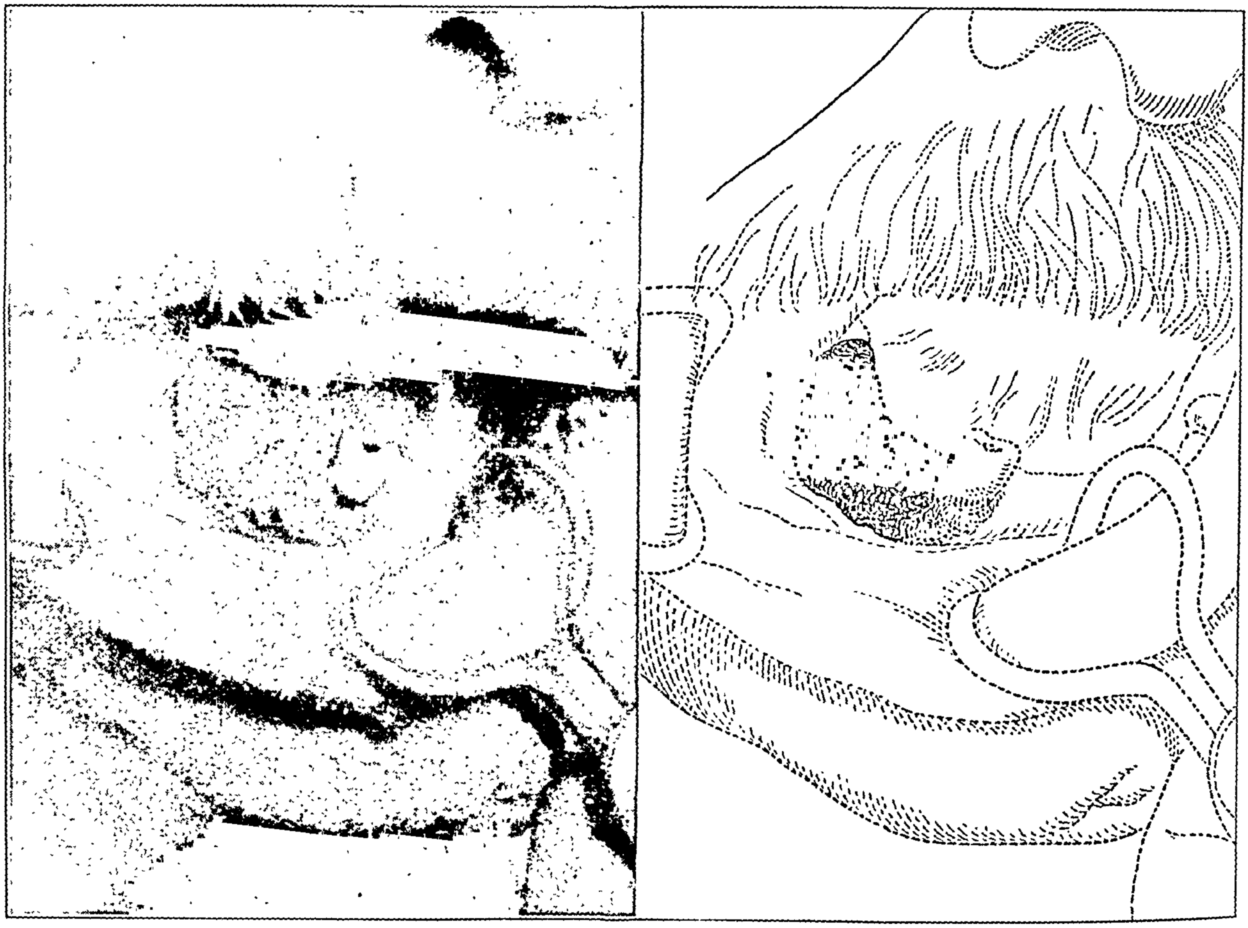

Fig. 2.—Cancer of the gum. The growth is a fungating, coarsely granular tumor of the right lower gum. The presence of the single tooth in the edge of the lesion suggested to the patient that the growth was due to some dental disorder, and he first consulted his dentist.

DIAGNOSIS

It can be stated without any hesitancy that cancer of the mouth is more serious and more important to the patient than any other condition with which it might be confused. Therefore, in any suspicious lesion of the mouth, the physician should consider cancer first, and should rule out such a possibility before waiting "to see what happens" or proceeding with treatment on the basis of a benign diagnosis. If the possibility of a malignant growth is considered at the beginning, few harmful errors in diagnosis will be made.

One significant fact to establish in the history of patients with suspected cancer of the mouth is that the lesion is chronic and progressive. If the patient can recall that the abnormality has been present for several weeks or months and is steadily increasing in extent, this fact alone suggests a diagnosis of malignant tumor. Nevertheless, failure to establish a history of long duration of symptoms is of negative value only, for it is not uncommon that a patient suffering from a cancerous growth several centimeters in diameter will consult a physician insisting that his symptoms appeared only a day or two previously. It is curious that many persons are so unobservant of purely objective symptoms.

Adequate examination of the mouth cavity is not difficult provided the physician has proper illumination, a finger cot or rubber glove, and a tongue depressor. Palpation of the buccal vestibule, the floor of the mouth, and the tongue should be made in all cases. The only region of the oral cavity not accessible to direct vision is the base of the tongue. This area is readily palpable, however, and if the symptoms seem localized to this region, confirmation of the presence of a lesion may require visualization with a throat mirror.

Differential Diagnosis.—Cancer of the mouth is often mistakenly diagnosed as one of the following benign lesions: Vincent's ulcer (trench mouth), herpes, trauma (biting the tongue or cheek) and gumma. If a diagnosis of an acute inflammatory or traumatic condition is made, such a benign diagnosis should not be persisted in for more than two weeks before a biopsy is made. All these benign lesions should respond to simple measures within that period. Smears and cultures do not rule out the possibility of cancer.

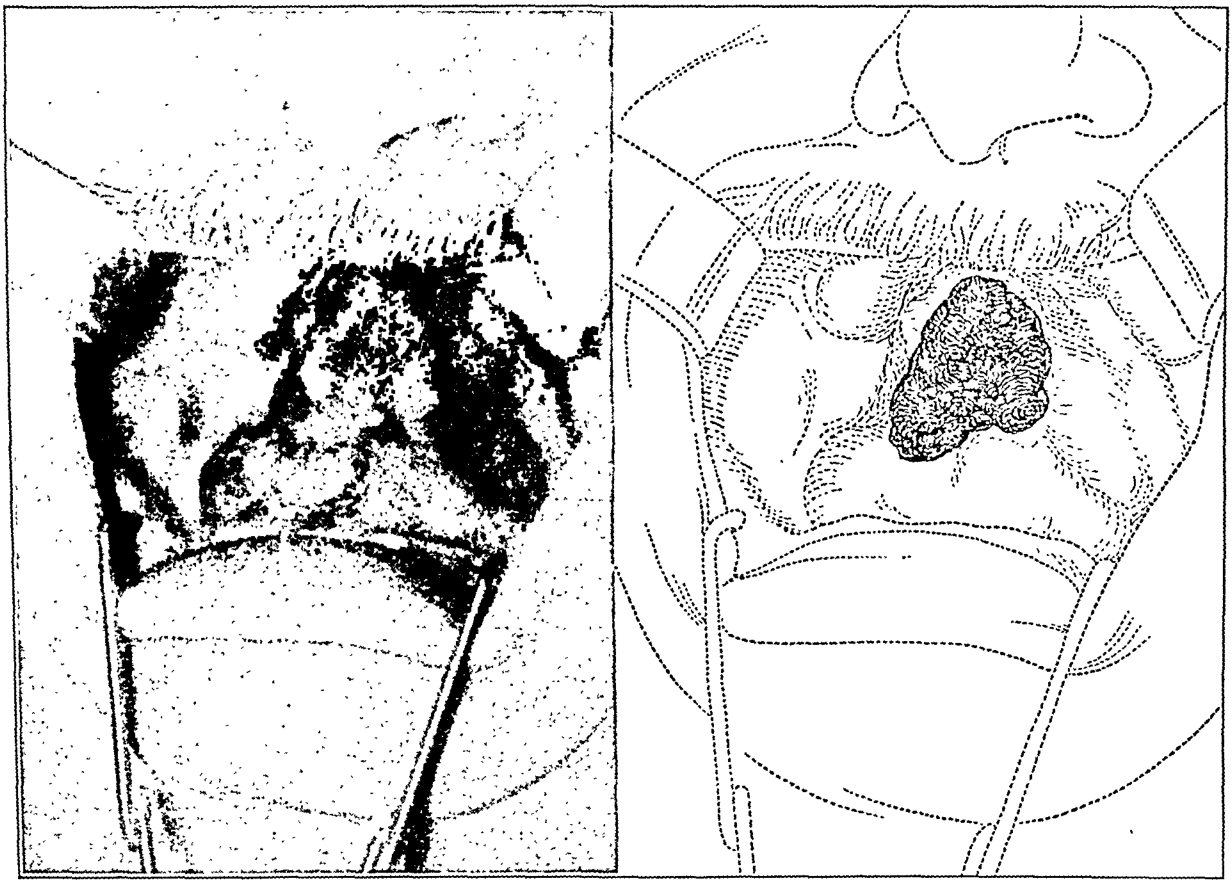

Fig. 3.—Cancer of the floor of the mouth. The lesion is an ulcerated, granular ulcer beginning in the floor of the mouth and extending up onto the undersurface of the tongue. The patient was an elderly dentist who had worn complete upper and lower dentures for many years. He believed the ulcer to be due to an irritation from his lower dental plate and spent several months adjusting the fit of the plate before consulting a physician, who made a diagnosis of cancer.

A gumma or other ulcerated syphilitic lesions are exceedingly rare as compared with cancer of the mouth. A chronic syphilitic ulcer cannot be clinically distinguished from cancer of the mouth, but cancer of the mouth is between three and four hundred times as frequent as a syphilitic ulcer or gumma of the mouth. In cancer of the tongue in males, about 1 in 3 patients will be found to have syphilis, and therefore a positive serologic reaction for syphilis should never be depended on to exclude the presence of cancer. Tuberculous ulcers of the oral mucous membranes are much more frequent than syphilis, but, nevertheless, are rare as compared with cancer.

Biopsy.—An unqualified diagnosis of cancer even in advanced cases can be made only by the pathologist. Lacking microscopic examination of tissue, a diagnosis can be no more than "tentative" or "clinical." It is the responsibility of the examining physician to determine whether the lesion clinically looks enough like cancer to warrant the taking of a specimen for biopsy.

TREATMENT

In the treatment of cancer of the mouth the same methods are employed as for malignant neoplastic disease anywhere about the body; namely, surgical treatment and roentgen radiation or radium therapy—either alone or in combination. These methods should be considered as complementary rather than competitive.

In some anatomic varieties of cancer of the mouth, such as cancer of the lip and gum, surgery alone is preferable in most cases as the primary form of treatment, although supplementary radiation therapy is often indicated should there be postoperative recurrence. In cancer of the mucosa of the cheek, anterior portion of the tongue, floor of the mouth or palate (figs. 4, 5 and 6) the selection of either method alone or in combination depends on the particular features in the individual case. For cancer of the tonsil and base of the tongue (fig. 7) a combination of roentgen therapy and interstitial radiation rather than surgical treatment is indicated.

In the treatment of metastasis to cervical nodes, neck dissection is the method of choice in all operable cases. In those situations where cervical metastases are inoperable, or in others where operation cannot be performed because of the presence of an inoperable primary lesion, a program of radiation therapy should be employed. Radiation therapy is often successful in the treatment of inoperable cervical metastatic cancer or in postoperative recurrences.

PROGNOSIS AND END RESULTS

Frequently the treatment of early cancer of the mouth is delayed because the physician or the patient or his family believes the disease to be incurable. A

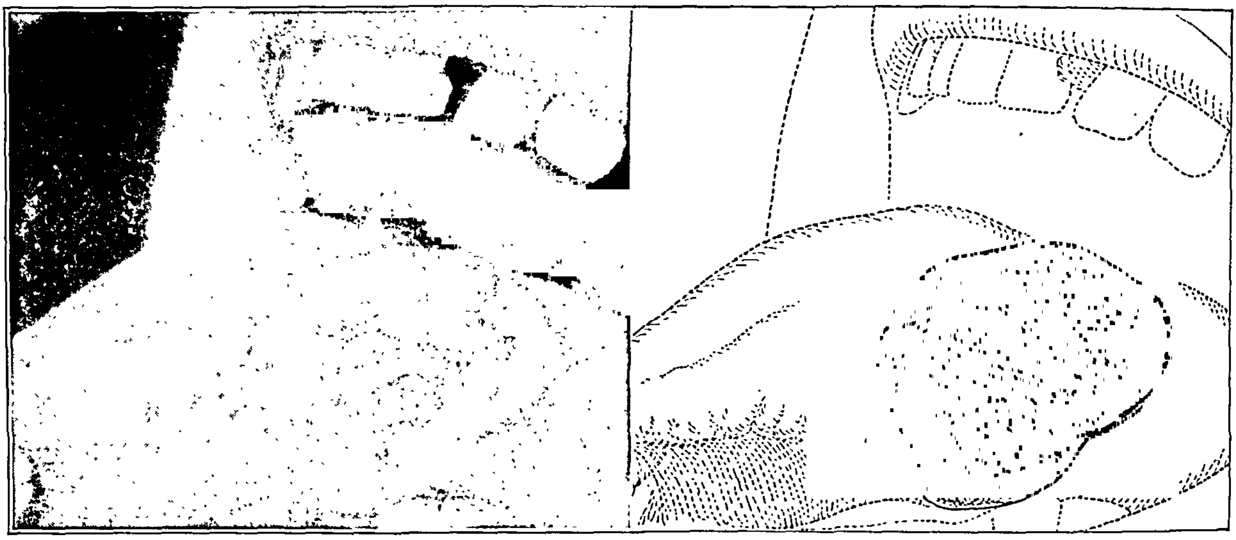

Fig. 4.—Cancer of the tongue. The growth arises in the middle of the left edge of the tongue and presents as a raised, granular, indurated ulcer. At the edge the nonulcerated mucous membrane is raised and rolled.

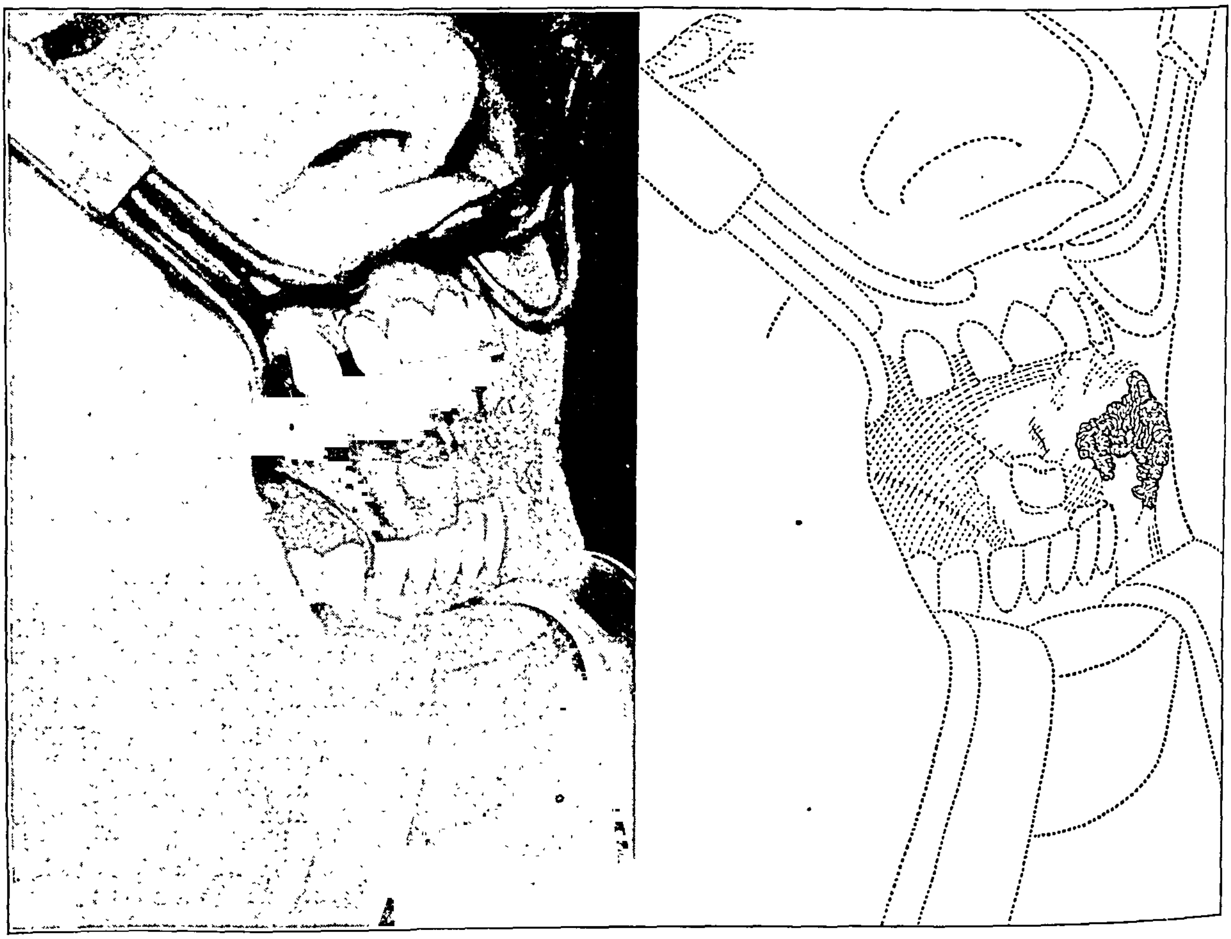

Fig. 5.—Cancer of the mucosa of the cheek. Just back of the labial commissure on the left, there is a flat, granular, nodular, indurated ulcer. The patient has been aware of the roughness of the cheek for several months. The lesion is neither tender nor painful.

Gallup poll taken in 1945 revealed that one United States citizen in four thinks that cancer is incurable. Strangely enough, some physicians hold almost as gloomy an opinion concerning the curability of this disease. Cancer of the mouth is among the more favorable varieties of malignant neoplastic disease from the standpoint of treatment and cure. Growths in this area can be discovered in their early stages. Even in the advanced stages, the disease frequently remains localized to accessible areas in the mouth or cervical lymph nodes, and cures can be accomplished in a fair percentage of these cases.

As with all serious diseases, the prognosis for cure depends more than anything else on early diagnosis and prompt treatment. In table 1 are listed a few recently calculated five year cure rates for the various anatomic forms of cancer of the mouth obtained at one hospital. It will be noted that when the primary lesions are less than 2 cm. in diameter, the chance of cure is almost double that which can be obtained in all comers when the more advanced cases are included.

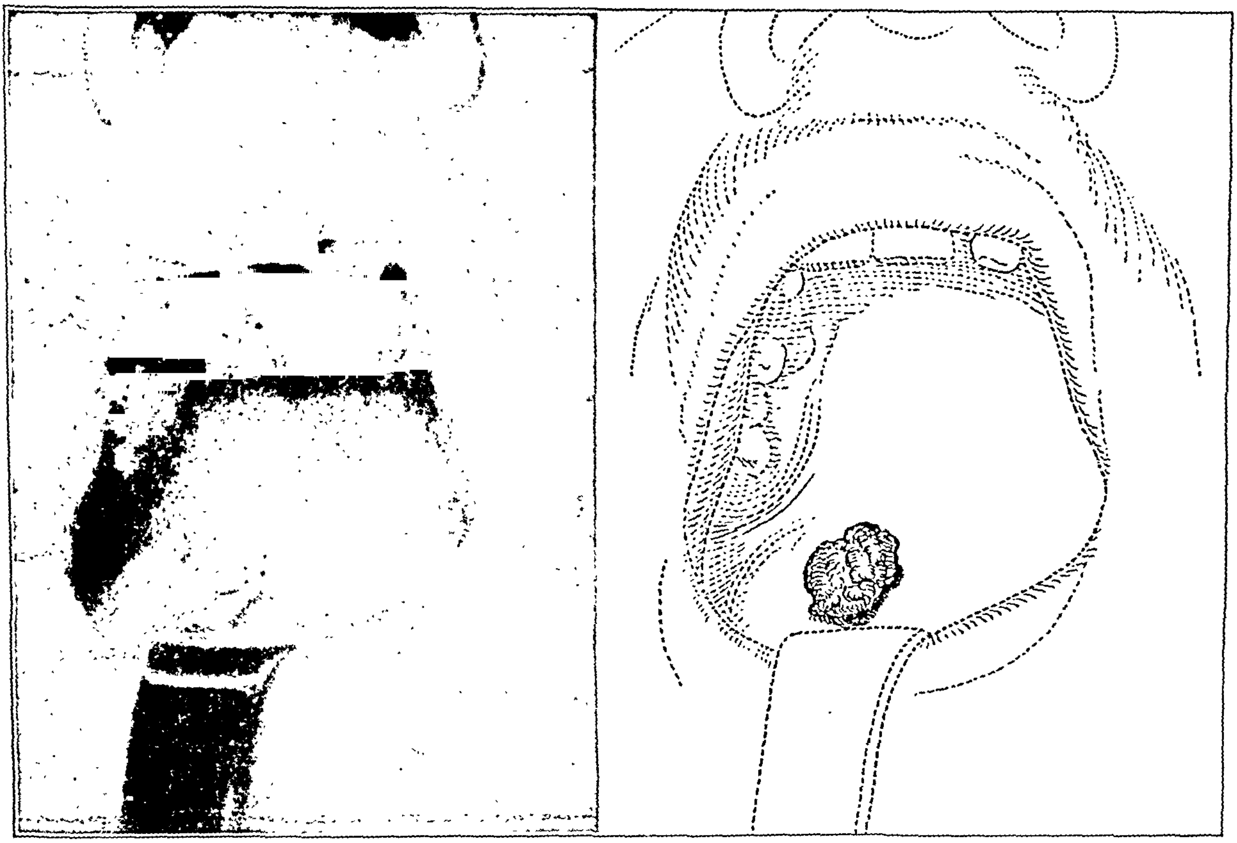

Fig. 6.—Cancer of the palate. On the right soft palate there is a raised, papillary, slightly pedunculated lesion.

Table 1.—*Five Year Cure Rates in Cancer of the Mouth* *

Site of Primary Lesion of Cancer	Five Year Cure Rate in All Cases (All-Comers, Both Early and Advanced)	Five Year Cure Rate in Early Cases (Primary Lesions Less than 2 Cm.)
Lip	70	86
Tongue	28	55
Floor of mouth	25	50
Mucosa of cheek	29	60
Palate (hard and soft)	31	57
Gums	26	38
Tonsil	18	40

* Head and Neck Service, Memorial Hospital.

II. CANCER OF THE NASOPHARYNX AND PHARYNGEAL WALL

Anatomically the pharynx is a funnel-shaped, hollow tube which extends from the base of the skull to the level of the lower border of the cricoid cartilage. Malignant tumors which arise in the walls of this structure above the level of the soft palate (and posterior to the nasal cavity) are properly classified as cancer of the nasopharynx. Growths which arise in the pharyngeal mucosa below the level of the soft palate but above the lower border of the cricoid cartilage (excluding the palatine tonsil, base of the tongue, and the extrinsic larynx) may be classified as cancer of the pharyngeal wall (fig. 8). Since the symptoms, morbid anatomy, clinical response to treatment, and complications of nasopharyngeal cancer differ markedly from those of pharyngeal wall cancer, growths in these two localities are best described under separate headings.

CANCER OF THE NASOPHARYNX

Cancer of the nasopharynx, although not the most frequent, is one of the most malignant growths of the upper respiratory and alimentary tracts. The symptoms are deceptive—that is, the primary growth in the nasopharynx often remains silent and the disease first appears in the form of metastasis to the cervical lymph nodes; in other cases, the symptoms of the disease in the nasopharynx are referred only to the ear and the attention of the examiner may be drawn to the external auditory meatus. Occasionally, the symptoms of the primary growth may be so overshadowed by metastases that many of the patients undoubtedly die of widely disseminated cancer with the actual site of the primary lesion in the nasopharynx unsuspected.

ETIOLOGY OF CANCER OF THE NASOPHARYNX

Nasopharyngeal cancer makes up about 0.2 per cent of all malignant growths and a little more than 3 per cent of all cancers of the upper alimentary and respiratory tracts. The disease sometimes occurs in children and more often at ages below 30 than any other malignant tumor in the head and neck. This anatomic variety of cancer is encountered more frequently in males (80 per cent) than in females.

Cancer of the nasopharynx is somewhat unique in that there is a distinct racial susceptibility of Orientals (especially the Chinese) to the disease. This susceptibility is even found in Orientals born in the United States, which suggests that the tendency is one which is racially inherited rather than due to environmental factors.

PATHOLOGY OF CANCER OF THE NASOPHARYNX

Since cancer of the nasopharynx arises most commonly at the site of the pharyngeal tonsil, it is natural that highly anaplastic epidermoid carcinoma and lymphosarcoma should make up a large proportion of growths in this region. Malignant tumors originating in a minor salivary gland are occasionally encountered in the nasopharynx; chondrosarcoma, myxosarcoma and chordoma occur but rarely in this locality. Although numerous reports have appeared dealing with lymphoepithelioma, its actual existence as a distinct morphologic entity is highly disputed. Some observers even feel that there is no justification for the term.

SYMPTOMS, MORBID ANATOMY AND CLINICAL COURSE OF NASOPHARYNGEAL CANCER

It is characteristic of this disease that the primary lesion in the nasopharynx causes relatively few if any symptoms in the early stages. The nasopharynx is a cavity with rigid walls and is wider than the combined lumens of the two nasal cavities, so that obstruction to breathing will not occur until the tumor has become bulky. If the growth arises at the orifice of the eustachian tube, the local symptoms are referred only to the ear.

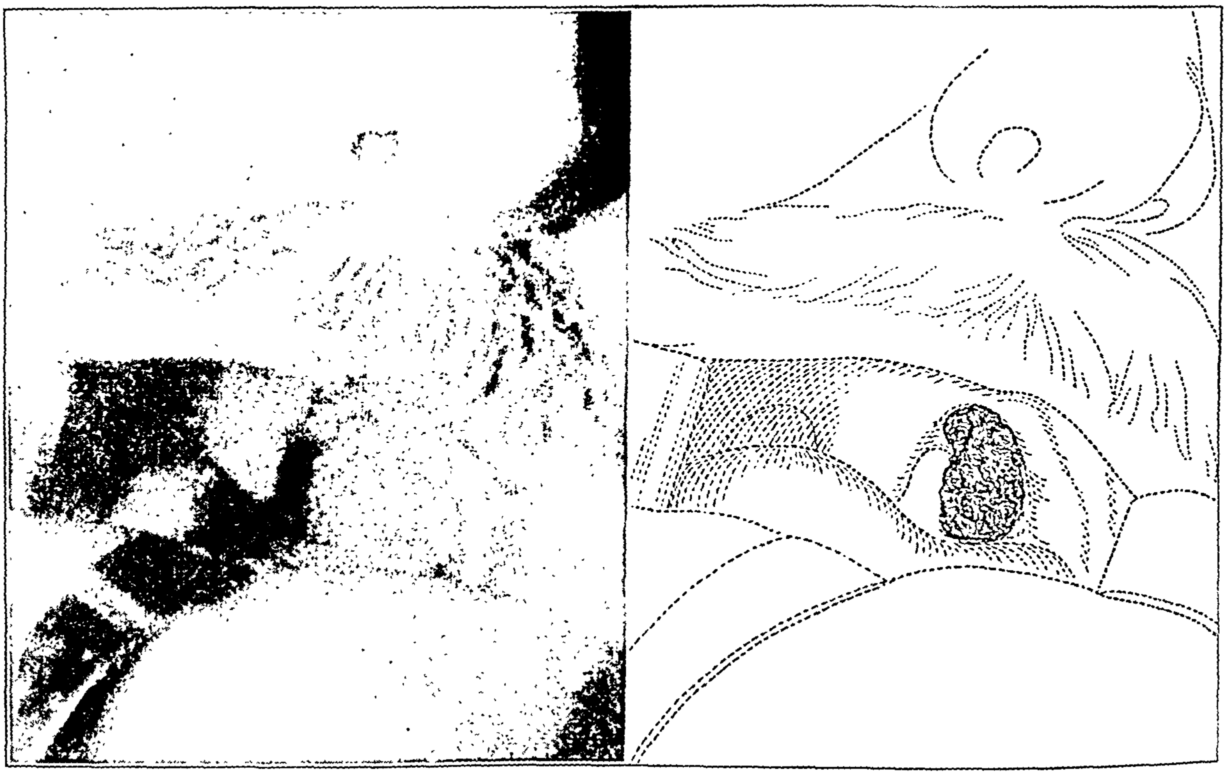

Fig. 7.—Cancer of the tonsil. The left tonsil has been partly eroded by a slowly growing ulcerated cancer.

In order of their frequency the first symptoms complained of in nasopharyngeal cancer are cervical metastasis (referred to by the patient as a "lump" in the neck) and unilateral deafness or tinnitus ("stuffiness in one ear"). In about 4 out of 5 cases cervical metastases are present on admission and may be either the only symptom or associated with symptoms referable to the ear. As the disease progresses, the growth in the nasopharynx tends to erode the base of the skull in the region of the foramen lacerum, encroaching on or invading the course of the sixth cranial nerve to produce paralysis of the external rectus muscle of the eye. Consequently some patients are first seen by the ophthalmologist because of diplopia and others are referred to the neurologist. Later in the course of the disease the local tumor may invade the orbit and produce exophthalmos or extend through the eustachian tube into the middle ear to perforate the tympanic membrane.

Since growths in the nasopharynx tend to be highly anaplastic, systemic metastases are frequent and dissemination of the disease below the level of the clavicle is present in about one third of the cases on admission.

DIAGNOSIS OF NASOPHARYNGEAL CANCER

Nasopharyngeal cancer should be suspected in any one of the following situations: (1) unilateral or bilateral enlargement of cervical lymph nodes not accompanied by any localized symptoms of a primary lesion elsewhere; (2) a complaint of unilateral deafness and tinnitus either with or without enlargement of cervical lymph nodes, and (3) unilateral external rectus paralysis or diplopia. The failure to diagnose nasopharyngeal cancer early is due both to the fact that a growth in this locality is unsuspected and the fact that the nasopharynx is not easily accessible to inspection by the casual examiner (fig. 9). If a physician does not possess the necessary training and skill to examine this region, he should refer the patient to some one who is so qualified.

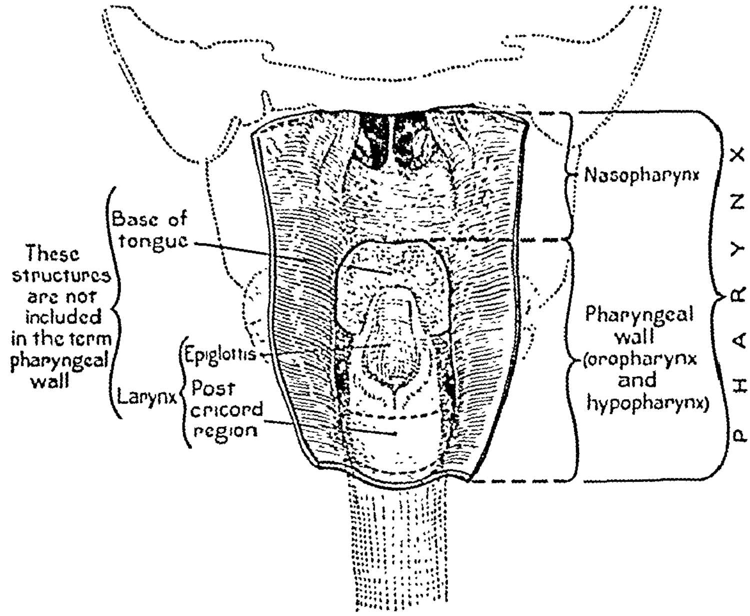
Nasopharynx
Base of tongue
These structures are not included in the term pharyngeal wall
Epiglottis
Larynx
Post cricord region
Pharyngeal wall (oropharynx and hypopharynx)

Fig. 8.—Anatomy of the pharyngeal wall. In an anatomic classification of cancer, it is essential that the limits of each structure be clearly defined. Cancer of the nasopharynx is an entirely different disease from cancer of the walls of the oropharynx and hypopharynx. It is important to distinguish growths of the base of the tongue and of the extrinsic part of the larynx from those of the pharyngeal wall proper.

The most effective method of examining the nasopharynx is by the use of a headlight, depressing the tongue with a wooden or metal blade and viewing the image of the nasopharynx in a throat mirror which is inserted to a point just beyond the free edge of the soft palate (topical anesthesia). During the examination the patient is asked to breathe through the mouth and the nose at the same time. By this means the entire region can be visualized. The nasopharynx cannot be so efficiently demonstrated by endoscopy (nasopharyngoscope) as by simple examination with a mirror.

TREATMENT OF NASOPHARYNGEAL CANCER

Malignant tumors of the nasopharynx are not suitable for surgical removal, both because of the relative inaccessibility of the region to the surgeon and because the growths from the beginning tend to invade the posterolateral bony walls which cannot be safely excised. On the other hand, malignant neoplasms in this region are usually highly anaplastic and, in general, radiosensitive. The nasopharynx tolerates heavy doses of radiation fairly well. For these reasons, most nasopharyngeal cancers are best treated by a combination of fractionated doses of roentgen therapy supplemented by intracavitary radium or radon.

Since cervical metastasis occurs in more than 80 per cent of all cases at some time during the course of the disease, their successful treatment is one of the most important factors in the prognosis of nasopharyngeal cancer. Because involvement of the cervical lymph nodes is so often widespread and present at the time of admission, the best results are obtained by radiation therapy rather than by neck dissection. Exceptions to such a method of treatment are made when cervical metastasis appears at an interval (six months or more) after apparent control of the primary lesion in the nasopharynx by radiation therapy; in such cases neck dissection is indicated if there is no evidence of remote metastasis.

PROGNOSIS AND END RESULTS IN NASOPHARYNGEAL CANCER

Despite the absence of localizing symptoms in many cases of early or even moderately advanced nasopharyngeal cancer and despite the frequent occurrence of diffuse and bilateral cervical metastasis, this disease is by no means a hopeless one if properly treated by aggressive radiation therapy. In contrast with growths of the mouth and larynx, the presence of cervical metastasis in nasopharyngeal cancer does not appreciably after the prognosis and can be attributed to the anaplastic and highly radiosensitive character of the lesion.

As a matter of fact, the prognosis in cancer of the nasopharynx is about the same as for that of cancer of the tongue in all stages of the disease. A five year cure rate of 20 per cent has been obtained in a relatively large series of cases (table 2).

CANCER OF THE PHARYNGEAL WALL

The term pharyngeal wall, as considered in this report, refers to the lower or broadest portion of the pharyngeal tube, that is, the posterior and lateral walls, and does not include the base of the tongue and the extrinsic larynx (fig. 8). This portion of the pharynx consists of smooth walls with no functionally important structures, so that cancer in this locality produces no dysfunction until the growth is relatively well advanced or has invaded a contiguous area such as the palatine tonsil, the base of the tongue or the extrinsic larynx.

Table 2.—*Five Year Cure Rates in Cancer of the Pharynx and Larynx* *

Anatomic Site	Number of Cases	Percentage of Five-Year Cures
Nasopharynx	87	20
Pharyngeal wall	108	5
Larynx	351	
Intrinsic	164	31
Extrinsic	187	10

* Head and Neck Service, Memorial Hospital.

ETIOLOGY OF CANCER OF THE PHARYNGEAL WALL

Cancer of the pharyngeal wall, as defined, is relatively uncommon in the United States, comprising about 0.5 per cent of all human cancer and about 3 per cent of all cancer in the upper respiratory and alimentary tracts. In America this disease occurs more frequently in males (85 per cent of the cases), but in Scandinavian countries the disease is more commonly encountered in females (over 60 per cent). This susceptibility of females in Scandinavian countries can be attributed to the frequent occurrence of Plummer-Vinson's disease, in which, among other manifestations, there is a chronic inflammation of the hypopharynx. This inflammation constitutes the irritative factor so often found as a contributing cause in malignant growths of surface epithelium.

PATHOLOGY OF CANCER OF THE PHARYNGEAL WALL

As in other anatomic varieties of cancer in the upper respiratory and alimentary tracts, epidermoid or squamous carcinoma is the predominant morphologic type found in the pharyngeal wall (90 per cent). About one half of the malignant tumors in this region are poorly differentiated cancers (grade 3), and such a degree of anaplasia is most frequently encountered the nearer the location of the growth to the extrinsic larynx. Cancer in the lowermost portion of the pharyngeal wall (hypopharynx), therefore, is more highly malignant and in this way simulates growths of the peripheral portions of the extrinsic larynx. Other morphologic types of cancer which are encountered but rarely in the pharyngeal wall are spindle cell sarcoma and adenocarcinoma originating in a minor salivary gland.

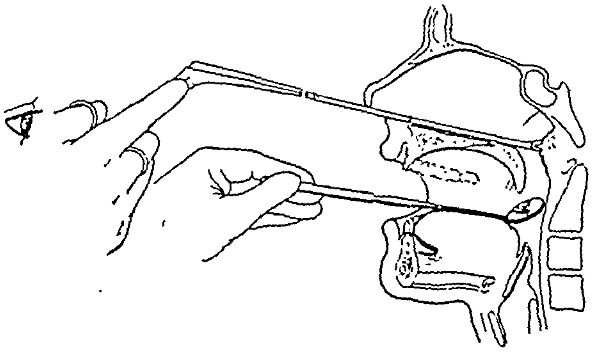

Fig. 9.—Biopsy from nasopharynx guided by mirror. One of the simplest methods of obtaining a biopsy from the nasopharynx is by inserting an instrument through the nasal cavity and guiding its manipulations by a mirror inserted through the mouth.

SYMPTOMS, MORBID ANATOMY AND CLINICAL COURSE OF CANCER OF THE PHARYNGEAL WALL

From the standpoint of early symptoms cancer of the pharyngeal wall is one of the more deceptive neoplasms occurring in the head and neck. Since the smooth walls of the pharynx contain no functionally important structures, the growth in all cases reaches a fairly large size before the patient becomes aware subjectively of any abnormality.

The chief early symptom complained of by the patient with this disease is some form of discomfort in the throat, such as slight pain on swallowing or a feeling of irritation in the throat. At times the complaint referred to in this region may be so vague and indefinite that the history resembles that of globus hystericus or anxiety neurosis. In the later stages, there may be frank dysphagia. Lesions which arise primarily in the piriform sinus or close to the peripheral portions of the extrinsic larynx give rise to dysphagia earlier in the course of the disease than growths which originate at higher levels on the posterior or lateral pharyngeal walls.

The second most frequent symptom is the appearance of cervical metastasis (usually referred to by the patient as a "lump" in the neck). At the time of the first examination such metastases are found in over 60 per cent of the patients. Occasionally, cervical metastasis occurs as the first symptom with no complaints referable to the throat (silent primary).

As the disease progresses, the dysphagia increases, and there may be considerable loss of weight, and with extension of the growth to the structures of the larynx hoarseness occurs. In the terminal stages, the tonsil may be invaded, resulting in intractable pain referred to the ear, or the tumor may extend forward and upward along the lateral walls into the base of the tongue. If the cancer is not controlled, death may occur either from extensive metastasis or local sepsis and malnutrition.

On physical examination the primary lesion presents as a bulky mass arising in the lateral or posterior wall (or both), or as a *flat, indurated, granular ulcer.* In most cases the growth, when first seen, will have reached the size of at least 2 to 3 cm., with ulceration and infection in both the tumor and the surrounding tissues. The lateral wall of the pharynx is the site of cancer more than twice as often as the posterior wall, and when the posterolateral wall is involved the tumor is usually far advanced.

DIAGNOSIS OF CANCER OF THE PHARYNGEAL WALL

In the diagnosis of cancer of the pharyngeal wall there are two important points for the physician to keep in mind. The first is that chronic sore throat or dysphagia indicates the possibility of a growth in this region, and the second that the presence of enlarged cervical lymph nodes in the absence of any other symptom suggests metastasis from a silent primary lesion somewhere in the oral cavity or pharynx.

From the standpoint of accurate diagnosis and as a requisite to properly planned treatment, it is essential to distinguish tumors of the pharyngeal wall from those of other structures adjacent to the pharynx, such as the extrinsic larynx (postcricoid region), the base of tongue and the tonsil. Growths in the latter regions are distinct clinical entities and often call for methods of treatment differing from those given for malignant neoplasms of the pharyngeal wall itself.

It is always difficult to distinguish between a growth arising in the postcricoid portion of the extrinsic larynx and one in the posterior pharyngeal wall at this same level, since by indirect laryngoscopy all that can be seen is a granular mass protruding slightly from the postarytenoid region. A proper plan of treatment can be outlined only after the findings have been evaluated by endoscopy and the anatomic differentiation definitely established.

Biopsy.—The clinical diagnosis of cancer of the pharyngeal wall, which can be made without difficulty in most cases, should be promptly confirmed histologically by biopsy. Removal of a specimen of tissue from this area can be performed either with a straight biopsy forceps under direct vision (oropharynx) or by use of a curved biopsy forceps and a throat mirror if the lesion is located in the lower portion of the pharyngeal tube (hypopharynx).

TREATMENT OF CANCER OF THE PHARYNGEAL WALL

Until recently the posterior and lateral walls of the pharynx have not been considered readily accessible from the surgical standpoint. For growths of the piriform sinus, surgical excision hitherto has appeared to be contraindicated because of the necessity of an associated total laryngectomy and the difficulty in the subsequent reestablishment of a satisfactory channel from the pharynx into the esophagus. Moreover, since malignant tumors in such continguous areas as the palatine tonsil and the base of the tongue have responded reasonably well to radiation therapy, it was formerly thought that a similar result might be logically expected in the adjacent pharyngeal wall. For these reasons, therefore, cancer of the pharyngeal wall has been treated previously almost exclusively by radiation therapy.

More recently the attitude toward cancer of the pharyngeal wall has undergone some modification. In the first place, a survey of all cases (both early and advanced) in one cancer clinic has revealed that the net cure rate by radiation therapy is only about 5 per cent—hardly a satisfactory salvage in any disease. On the other hand, modern surgical aids such as chemotherapy, antibiotics, blood transfusion, new technics of anesthesia along with improved preoperative and postoperative care have made it possible to extend the range of surgery to include the region of the pharynx. It has been found possible, therefore, to approach growths of the lateral and posterior pharyngeal walls by pharyngotomy. Many lesions situated in this area may be widely excised and the wound primarily closed. For growths of the piriform sinus and the posterior pharyngeal wall just above the cricopharyngeus a choice must be made between the discouragingly low rate of cure by radiation therapy on one hand and the disability and morbidity following total laryngectomy and partial pharyngectomy with reconstruction of the esophagus on the other. Despite these surgical advances, however, the majority of cases will be found too advanced for excision. For the latter, fractionated radiation therapy, sometimes supplemented by interstitial radium or radon for cervical metastasis, is the only treatment available at present and in a small percentage will result in a permanent cure.

PROGNOSIS AND END RESULTS IN CANCER OF THE PHARYNGEAL WALL

The local lesion in the pharyngeal wall, especially when situated near the piriform sinus, tends to be less radiosensitive than similar growths in the extrinsic larynx. In some cases, although the visible portions of the tumor in the pharynx may apparently respond favorably to radiation, the symptoms recur nevertheless after a period of twelve to eighteen months and investigation will reveal that the neoplasm has extended into the upper portion of the esophagus. In addition, the complication of radionecrosis in this locality is serious since it tends to be accompanied by mediastinitis and pronounced dysphagia.

The presence of cervical metastasis in the beginning or at any stage during the course of the disease lowers the chances of cure. In a large series of cases in one head and neck clinic the five year cure rate following radiation therapy for cancer of the pharyngeal wall is about 5 per cent when all patients (in all stages of the disease) are included (table 2). It is too early to ascertain whether the use of radical surgery (pharyngotomy and partial pharyngectomy with total laryngectomy) in operable cases will improve this rate of cure, but the short term results following such a method of treatment suggest further efforts in this direction.

(To be Continued)

Clinical Notes, Suggestions and New Instruments

SUBACUTE BACTERIAL ENDOCARDITIS DUE TO HEMOPHILUS PARAINFLUENZAE

Report of a Case with Recovery Following the Combined Use of Penicillin and Sulfamerazine

CHAS. J. McGEE, M.D.
and
WALTER S. PRIEST, M.D.
with the technical assistance of
DOLORES KENNEY, M.T.
Chicago

This case is presented because of its unusual etiologic organism and successful outcome and to emphasize the possibility of almost complete recovery from the effects of cerebral embolism occurring during the course of bacterial endocarditis. Hemophilus parainfluenzae is a member of a group of organisms classified as follows: [1]

Class A:	Require X factor and V factor:	Hemophilus influenzae
B.	Require V factor:	Hemophilus parainfluenzae
C:	Require X factor:	Hemophilus hemoglobinophilus canis
D:	Require neither:	Hemophilus pertussis

Of these, H. influenzae and H. parainfluenzae are known to cause endocarditis.[2] H. parainfluenzae has also been known to cause leukopenia, cutaneous rash [3] and bacteremia.[4] Khairat [5] reported endocarditis caused by a Hemophilus the cultural and morphologic characters of which were different from those of H. parainfluenzae. An atypical H. influenzae is reported as the etiologic organism in infection of a patent ductus arteriosus.[6] In 1938, Miles and Gray [2b] collected 34 cases of subacute bacterial endocarditis caused by Hemophilus organisms. Seven of these were proved to be H. parainfluenzae, and the authors expressed the opinion that most of the others were probably H. parainfluenzae, though not proved by growth requirements for X and V factors. Bloom [2c] reported 1 case; Craven, Poston and Orgain [1] 2 cases of endocarditis due to H. parainfluenzae, confirmed by autopsy; Rose [2d] 1 case of H. influenzae type A endocarditis.

H. parainfluenzae is a small pleomorphic, nonmotile, nonsporing, Gram-negative, non-acid-fast coccobacillus. It has no capsule. It is hemophilic but nonhemolytic. It can synthesize X factor but not V factor. Certain strains produce acid but not gas in certain of the saccharides, but not all observers have been in agreement as to which. H. influenzae never produces acid in lactose and mannitol.[7] Litmus milk is unchanged by H. parainfluenzae; indole and hydrogen sulfide are not produced [7]; nitrates are reduced. Mild satellism (limited production of V factor) is shown with Staphylococcus aureus. It is not pathogenic for mice, rabbits or guinea pigs.

There has been some controversy as to the nature of the growth requirements (X and V factors) and what may be used for substitutes. Zinsser [8] pointed out that X and V factors must be present in blood and expressed the doubt that V factor is vitamin C. Lwoff and Lwoff [9] maintained that

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From Wesley Memorial Hospital.

1. Craven, E. B.; Poston, M. A., and Orgain, E. S.: Hemophilus Parainfluenzae Endocarditis, Am. Heart J. **19:** 434-452, 1940.
2. (*a*) Craven, Poston and Orgain.[1] (*b*) Miles, A. A., and Gray, J.: Haemophilus Parainfluenzae Endocarditis, J. Path. & Bact. **47:** 257-277, 1938. (*c*) Bloom, N.: Subacute Bacterial (Parainfluenzae) Endocarditis, Am. Heart J. **20:** 769-772, 1940. (*d*) Rose, H. M.: Hemophilus Influenzae Type A Endocarditis, Am. J. M. Sc. **202:** 187-198, 1941.
3. Florman, A. L.: An Acute Febrile Illness with Rash and Leukopenia Due to Hemophilus Parainfluenzae, J. Pediat. **22:** 202-204, 1943.
4. Keefer, C. S., and Rammelkamp, C. H.: Hemophilus Influenzae Bacteremia: Report of Two Cases Recovering Following Sulfathiazole and Sulfapyridine, Ann. Int. Med. **16:** 1221-1227, 1942.
5. Khairat, O.: Endocarditis Due to a New Species of Haemophilus, J. Path. & Bact. **50:** 497-505, 1940.
6. Bourne, G.; Keele, K. D.; Tubbs, O. S., and Swain, R. H. A.: Ligation and Chemotherapy for Infection of Patent Ductus Arteriousus, Lancet **2:** 444-446, 1941.
7. Bergey, D. H., and others: Bergey's Manual of Determinative Bacteriology, ed. 5, Baltimore, Williams & Wilkins Company, 1939, p. 306 and 307.
8. Zinsser, H., and Bayne-Jones, S.: A Textbook of Bacteriology, ed. 8, New York, D. Appleton-Century Company, Inc., 1939, p. 357.
9. Lwoff, A., and Lwoff, M., cited by Rose.[2d]

in males (85 per cent of the cases), but in Scandinavian countries the disease is more commonly encountered in females (over 60 per cent). This susceptibility of females in Scandinavian countries can be attributed to the frequent occurrence of Plummer-Vinson's disease, in which, among other manifestations, there is a chronic inflammation of the hypopharynx. This inflammation constitutes the irritative factor so often found as a contributing cause in malignant growths of surface epithelium.

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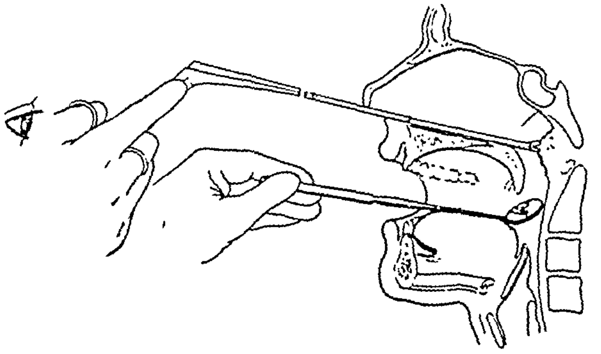

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Until recently the posterior and lateral walls of the pharynx have not been considered readily accessible from the surgical standpoint. For growths of the pirientered Wesley Memorial Hospital acutely and chronically ill, and showed many manifestations of his disease before recovery was accomplished. In attempting to explain why the combination of penicillin and sulfamerazine effected a cure when sulfamerazine alone did not, it appears most logical to assume that penicillin, which has now been proved to penetrate fibrin,[13] in some manner was able to carry sulfamerazine to the bacteria beneath the fibrin of the valvar vegetations or to alter the diffusion characteristics of the fibrin toward sulfonamide compounds. Since H. influenzae and parainfluenzae organisms are sensitive to streptomycin, this would be the choice of therapeutic agents today.

Undoubtedly this boy had an embolus to the brain the consequences of which appeared rather serious at the time of its occurrence. However, two years later there is practically no sequela therefrom. It behooves us, especially in view of similar experiences which we have had,[14] to realize that in subacute bacterial endocarditis such complications are not necessarily of gloomy significance.

SUMMARY

A case of recovery from subacute bacterial endocarditis due to Hemophilus parainfluenzae is presented. So far as we could find this is the first such recovery to be reported.

The literature was reviewed; 39 previous cases of subacute bacterial (Hemophilus) endocarditis and 1 case of an infected patent ductus arteriosus due to atypical H. influenzae were found. All these terminated fatally.

The bacteriology of H. parainfluenzae is reviewed.

Cerebrovascular accidents occurring during the course of subacute bacterial endocarditis do not necessarily produce significant permanent sequelae.

The ability of penicillin to render fibrin permeable to sulfonamide drugs or to carry sulfonamide drugs past a fibrin barrier is demonstrated clinically.

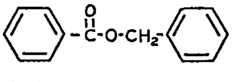
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for Admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

Austin Smith, M.D., *Secretary.*

BENZYL BENZOATE, U.S.P.—$C_{14}H_{12}O_2$—A clear, colorless oily liquid with slight aromatic odor employed externally in various emulsions containing 25 to 30 per cent. The structural formula of benzyl benzoate may be represented as follows:



For standards, see U.S. Pharmacopeia under Benzyl Benzoate and Benzyl Benzoate Lotion.

Actions and Uses.—Benzyl benzoate applied externally in the form of a 25 to 30 per cent emulsion or lotion has been found to be an effective scabicide. Although, reported to be somewhat effective also as a pediculicide, its use for pediculosis uncomplicated by scabies is not recommended. Application is occasionally followed by a slight, transitory burning sensation. Rarely, severe skin irritation may occur in patients with particularly sensitive skins. It should never be allowed to come in contact with the eyes.

Dosage.—A 25 to 30 per cent lotion or emulsion of benzyl benzoate is applied with a swab or brush over the entire body surface (*except the face*) while the skin is still damp immediately following scrubbing of the lesions in a 10 minute soap-warm water bath. Care should be taken to insure application to and around the nails. The first application is allowed to dry and a second application made to the most involved areas. Children ordinarily require 60 cc. to 90 cc. and adults 120 cc. to 180 cc. for a single treatment. Adequate sterilization of bed and body clothing is essential. Twenty-four hours later, clean clothing is put on after a warm soaking bath. A second or third treatment following the same routine should be carried out if necessary to eradicate the parasite. Secondary pyogenic infections do not contraindicate treatment, but should receive appropriate measures.

George A. Breon and Company, Kansas City, Mo.

Lotion Benylate: 120 cc., 480 cc. and 3,840 cc. bottles. An oil in water emulsion containing 25 per cent of benzyl benzoate and approximately 2 per cent of triethanolamine stearate. The product is required to be labeled as Modified Benzyl Benzoate Lotion because it differs from the official benzyl benzoate lotion, U.S.P. essentially by the emulsifying agent used in its preparation.

CARBOL-FUCHSIN PAINT. — Carfusin-Rorer. — A solution containing boric acid 1%, phenol 4.5%, resorcinol 10%, fuchsin 0.3%, acetone 5% in water, q.s.

The boric acid, phenol, resorcinol, fuchsin and acetone used in the preparation of this particular preparation meet the requirements of the U. S. Pharmacopeia or The National Formulary.

Actions and Uses.—Carbol-Fuchsin paint is a stabilized preparation of the original basic fuchsin formula known as Castellani's paint that is widely employed for topical application to superficial fungus infections of the skin. Its use should be restricted to subacute or chronic dermatophytoses; it has been found to be of value for epidermophytosis interdigitalis pedum ("athlete's foot"), other intertriginous lesions of fungus origin, tinea trichophytina (ringworm) and tinea imbricata.

Carbol-fuchsin paint has the advantage over the original and subsequently modified preparations in that it is stable, but it should be protected against evaporation. It shares with other triphenylmethane dyes the disadvantage that it will stain clothing with which it comes in contact. It should never be applied to large areas of the body or to patients with particularly sensitive skins. A test application of a 1 : 3 dilution should be made to a single small lesion before beginning treatment with the full strength paint. It should be properly guarded against accidental ingestion because of the poisonous character of the ingredients.

Dosage.—Carbol-fuchsin paint is applied full strength directly to the surface of the skin lesions. Thorough topical application once or twice daily is indicated in subacute phases; three times daily in chronic or particularly stubborn lesions. Interim use of a foot powder and twice daily change of hosiery is recommended in the treatment of epidermophytosis pedis. In cases associated with excessive drying of the skin, application of the paint may be continued in conjunction with applications of either boric acid ointment containing 2 to 5 per cent of ammoniated mercury or an ointment of petrolatum containing 1 per cent each of sulfur and salicylic acid and 25 per cent each of zinc oxide and talc.

William H. Rorer, Inc., Philadelphia

Carfusin: 30 cc. and 120 cc. bottles. A solution of boric acid 1%, phenol 4.5%, resorcinol 10%, fuchsin 0.3%, acetone 5% in water, q.s.

U. S. trademark applied for.

RABIES VACCINE (ULTRAVIOLET IRRADIATION KILLED).—Brains of rabbits paralyzed by infection with fixed rabies virus are harvested, emulsified and brought to a 10 per cent by weight suspension of tissue in isotonic solution of sodium chloride and filtered through sterile bolting silk. Following filtration, the tissue suspension in a continuously flowing thin film is exposed to the germicidal rays of ultraviolet lamp. Preserved with sodium ethyl mercuri thiosalicylate 1 : 10,000.

Actions and Uses.—Rabies Vaccine (Ultraviolet Irradiation Killed) is employed for the prophylaxis of rabies.

Dosage.—1 cc. subcutaneously, daily for 14 to 21 days. For severe exposure-bites on face or adjacent to central nervous system, 21 doses, two daily for the first three to seven days and then one dose daily.

Pitman-Moore Company, Indianapolis

Rabies Vaccine (Ultraviolet Irradiation Killed): 1 cc. vials packaged in units of seven vials. Preserved with sodium ethyl mercuri thiosalicylate 1 : 10,000.

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[13] Nathanson, M. H., and Liebhold, R. A.: Diffusion of Sulfonamides and Penicillin into Fibrin, Proc. Soc. Exper. Biol. & Med. **62**: 83-86, 1946.

[14] Priest, W. S.; Smith, J. M., and McGee, C. J.: Penicillin Therapy of Subacute Bacterial Endocarditis, Arch. Int. Med. **79**: 333-359 (March) 1947.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 7, 1948

EDITORIAL ANNOUNCEMENT

The compositors returned to work on Monday, June 28. This issue of The Journal has been prepared in part by the use of Vari-Typer machines.

MEDICAL SERVICE WITH THE ARMED FORCES

Now that the disorder associated with demobilization of the armed forces following World War II has begun to recede into history, physicians concerned with the services of medical men in time of war have begun to give serious attention to the supply of doctors for the Army under the new Selective Service Act and also in times of crisis or war. Right now the surgeons general of the Army and the Navy and the Air Surgeon are in constant communication over the critical situation that confronts these services in securing enough physicians to take care of men who will be called into duty under the Selective Service Act. At the same time, the Council on National Emergency Medical Service, under Dr. James C. Sargent, chairman, is giving careful consideration to the relationship of the American Medical Association to military needs; representatives of the Association are conferring with other governmental agencies—the public health services, the Veterans Administration and all of the other federal activities that have a need for doctors—regarding the supply of physicians for civilian defense.

Many men who served during World War II are bitter in their recriminations as to faults which they observed in utilization of the medical profession. Some of these faults were so obvious that military leaders have already taken steps to bring about correction. One of the main objections related to the employment of doctors and dentists in work that was administrative rather than professional. The Office of the Surgeon General of the Army now gives assurance that every doctor and dentist has been removed from every administrative position that does not require a professionally trained man. The Inspector General's department has made a worldwide survey of professionally trained men in the armed forces and has aided in this action. The study continues; medical service corps officers will be used wherever possible to replace physicians and dentists in nonprofessional positions.

Another objection, particularly from the young men associated with the armed forces, was the lack of continuous graduate training and the opportunity to advance in a medical specialty while rendering service in the Army. The Army Medical Department has recognized the inestimable value to that department of civilian professional consultants. These are now used not only in the graduate education program but also in maintaining the highest medical standards in the care of military personnel. Every effort is being made to extend the usefulness of these consultants during the present crisis. However, a new difficulty arises in relationship to the Selective Service Act, because training camps for selectees will be placed in areas removed from centers of population. Because of the difficulty of reaching these training centers, few civilian consultants are in a position to provide twenty-four hour coverage as consultants to Army hospitals.

During World War II, one of the most serious complaints related to wastage of physicians by maintaining in close contact installations of the Army, the Navy and the Air Forces with complete staffs of specialists who, in many instances, did not have enough actual work to occupy their time. Now a detailed study has been, and is continuing to be, made to determine where it is possible to combine certain medical activities and to eliminate others and thus to abolish waste of professional personnel. The committee headed by General Hawley has completed its study of the situation in Panama, and combinations are to be made there which will bring about a vast saving in medical personnel. No doubt similar action will be taken in other areas in which multiple installations might be combined.

The suggestion has frequently been made that civilian physicians be employed on a part or full time basis by the armed forces and remunerated as contract physicians for the aid that they can give as physicians in the care of military personnel. Unfortunately the remuneration offered to civilian physicians to render services to military installations compares so unfavorably with that obtainable from private practice that few physicians volunteer for this service. The Army is not optimistic about this source of professional help. However, physicians who wish to participate and to whom the income is not the significant factor might well communicate with the Surgeon General, U. S. Army or Navy, Washington, D. C., as to the possibility of offering their services.

The Army, Navy and Air Force are cooperating in an endeavor to economize in personnel by using air evacuation as a replacement for ship evacuation of the wounded. If hospital ships, with their attending medical personnel, can be eliminated in whole or in part, a saving may be obtained. Among other possibilities the utilization of hospitals of other federal agencies, the shortening of the stay of patients in hospitals so as to expedite their return to duty, the elimination of dependent care and the curtailment of the graduate education program are being considered. Any of these actions might seriously affect the morale of the men who serve and might also bring about a deterioration in the attitude of physicians and other medical personnel toward military service.

The procurement programs of the Army and Navy have fallen far short of producing the required professional personnel. Unless the Congress provides additional incentives to make such services appeal more definitely to physicians, medical technicians, nurses and other medical personnel, a real crisis will develop. The committees which have been considering these problems believe that thought must be given to increase in remuneration, since the pay of physicians and other personnel in the armed forces is not comparable to that in civilian life. While some security is provided for medical officers, government agencies do not offer security for the families of military personnel. Most serious, however, has been the complaint as to the provision of adequate and respectable housing. Medical officers dislike particularly the separation from their families for many months, which seems to be an unfavorable accompaniment of service with the armed forces. Men are constantly moved, and apparently far too frequently, from place to place. The schooling of children is interrupted. Unless a medical officer is a professional expert in the field of real estate, he may incur a considerable monetary loss in buying, selling and leasing residences as he changes from one assignment to another. Over these difficulties the Surgeon General has little, if any, control. The Surgeon General can of course encourage the development of high professional standards, give opportunity for attendance of military personnel at professional meetings, improve working conditions in the hospital and develop a more efficient method of support and guidance from senior medical officers among those in the lower ranks.

The situation today in all of the armed forces is, as has here been emphasized again and again, exceedingly critical. The exact number of physicians needed during the coming year may well approach 6,000, of whom the majority would be for the Army and Air Force and the rest for the Navy. The supply of professional personnel now apparent is deficient. Unless the rate of procurement of officers is rapidly—and substantially—increased and maintained, the ability to provide medical care under the Selective Service Act is jeopardized. The Congress did not include in the Selective Service Act a specific draft of doctors; but President Truman has recalled the Congress and conceivably may again insist on such a draft if the needs of the armed forces are not met by voluntary offers of service from the medical profession.

Most of the young men who have given military service are not inclined to volunteer. There are, however, thousands of young men who were educated at government expense in the ASTP and the V-12 programs and who did not render actual military service. They owe an obligation to the government and to the people of the United States. They are representatives of the medical profession to whom the people look for the proper care of our armed forces.

In their procurement programs for regular officers, the medical departments of the armed forces, by cooperation with the specialty training boards, are able to provide assistant residencies and residencies in both military and civilian installations, which will be accredited by the certifying boards following satisfactory completion of the service. These positions should appeal particularly to the young men who have graduated in recent years, since they offer opportunity for training in a specialty with an adequate income, housing and maintenance not available through any other source.

The Council on National Emergency Medical Service, the Board of Trustees of the American Medical Association and all its officials are doing their utmost to aid the armed forces in this crisis. Every physician should give thought to the extent to which he individually can help in this time of need.

Current Comment

NINTH INTERNATIONAL CONGRESS ON INDUSTRIAL MEDICINE

After a lapse of ten years, the International Congresses on Industrial Medicine are being resumed. The ninth of this series will take place in Caxton Hall, Westminster, London, Sept. 13 to 17, 1948. The sponsoring agency is the Commission Internationale Permanente pour la Médecine du Travail, having headquarters at Geneva. The imposing list of patrons includes the King and Queen, Cabinet heads, and the presidents of the Royal Colleges. Six section programs are listed in the preliminary announcement, including social aspects, environmental industrial medicine, industrial nursing, clinical problems, administrative practices, and a special section which deals with legislation, education and technical problems not classified under other main headings. Each section has a chairman and secretary, most of whom are well known in this country as representing industrial medical leadership in England. There are to be ancillary exhibitions and clinics in hospitals, rehabilitation centers and industrial medical departments both in and out of London. This Congress will be the outstanding industrial medical event of the year. Those interested in attending may obtain further information from the organization secretary, in care of the British Medical Association House, Tavistock Square, London, W.C.1.

CANCER OF THE URINARY BLADDER

Shifts in the relative incidence rate of cancers of certain organs during recent years have been attributed to improvements in diagnostic methods, to more complete statistical analyses of necropsy material and death certificates and to definite advancements in the treatment of tumors in accessible organs. The control of accessible cancer may cause a relative increase in the mortality from cancers of inaccessible organs. The enormous growth of modern industry during recent years may have brought about alterations in the exogenous part of the carcinogenic spectrum. The discovery of an ever increasing number and variety of occupational, medicinal and environmental cancers during the last fifty years supports this concept. Changes in the composition of external carcinogenic environment may have contributed to fluctuations in the rates of cancer of various organs. In addition to cancer of the lung and leukemia, cancer of the urinary bladder displayed a significant increase since the early part of this century. As 3 per cent of the cancer deaths are caused by cancer of the bladder, approximately 90,000 persons have died from this tumor in the United States during the last twenty years. Seventy thousand of these were males. The mortality rate from cancer of the bladder some fifty years ago was 1.3 to 1.5 per cent of the total death rate from cancer. In about 200 of the 70,000 cases of cancer of the urinary bladder in males an occupational exposure to 2-naphthylamine or benzidine was established (0.3 per cent) as the causative factor. However, the actual number of cases of cancer of the bladder of this origin is doubtlessly higher. Physicians, as a rule, do not ascertain the entire occupational history of their cancer patients and thereby miss the pertinent data on carcinogenic occupational exposures which may have taken place some five to twenty years before the cancers became manifest. Observations by Kennaway and Kennaway in England suggest, moreover, that occupational contact not only with aromatic amines but possibly also with tar, pitch and mineral oil seems to produce an increased liability not only to cancer of the skin but also to cancer of the bladder. Experimental results indicate further that several aromatic compounds, such as amino-2,3'-azotoluene, ortho-toluidine, and 2-acetylaminofluorene, produce cancer of the bladder in animals on a deficient diet. Recent observations in experimental animals and man support the point of view that carcinogenic substances excreted in the urine are responsible for the development of certain cancers in the bladder. Strombeck[1] showed in rats fed 2,3'-azotoluene that papillomatous tumors do not arise in a piece of bladder mucosa explanted in the liver, while they develop in the bladder stump. Steele Koch and Steiner[2] reported the presence of a carcinogenic factor in the butyl alcohol extract of human urine, and Ekman and Strömbeck[3] isolated from the urine of rats, fed azotoluene, meta-toluidine and ortho-toluidine, which they showed to be blastogenic to the vesical mucosa of rats. These investigators obtained from the urine of patients with nonoccupational cancer of the bladder not inconsiderable amounts of primary aromatic amines, some of which might even be present in oxidized form. These observations are of definite significance to warrant extensive investigations about these lines and to stimulate a detailed analysis of the occupational and environmental background of all patients with cancer.

TIME DISTORTION IN HYPNOSIS

Time perception is subject to wide variation. Events occupying days and months may in a dream be compressed into a few minutes. A person facing a terrifying experience such as an execution may see his entire life pass before his mental eye as in a flash. Cooper[1] reports interesting experiments on deliberately distorting time sense in a hypnotized person. A person placed in a hypnotic trance was asked to count cows for a suggested thirty minute period. The signal to stop counting was given three seconds later. The number of cows counted was 137. In similar experiments the hypnotized person counted 112 soldiers in three seconds, and 862 cotton bolls in three seconds. In another test the hypnotized person was told that a band was playing and that she was to listen to it. She was interrupted after thirty seconds and reported that she had been listening for nine minutes. Cooper states that there is no explanation for the state of mind which enables one while in the hypnotic trance to perform the amazing stunt of counting 862 cotton bolls in three seconds. The experiments raise the question of whether or not persons in a hypnotic trance may not make judgments

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1. Strömbeck, J. P.: Azotoluene Bladder Tumours in Rats, J. Path. & Bact. 58: 275 (April) 1946.

2. Steele, R.; Koch, F. C., and Steiner, P. E.: The Extraction of a Carcinogenic Fraction from Human Urine, Cancer Research 1: 614 (Aug.) 1941.

3. Ekman, B., and Strömbeck, J. P.: Demonstration of Tumorigenic Decomposition Products of 2, 3'-Azotoluene, Acta physiol. Scandinav. 14: 43, 1947.

1. Cooper, L. F.; Time Distortion in Hypnosis, Bull. Georgetown Univ. M. 1:214 (April--May) 1949.

in a mere fraction of the time ordinarily required.

ATRIAL APPENDECTOMY

Formation of a thrombus in the left atrial appendage and subsequent embolism are frequent sequelae of rheumatic mitral stenosis. Surgical excision of the thrombus-containing appendage suggests itself as a possible therapeutic measure. As a preliminary step to such an operation, tests were made by Hellerstein and his associates of the Cardiovascular Department, Michael Reese Hospital, Chicago, on the effects of amputation of one or both atrial appendages in dogs. The heart was exposed through an incision in the left fifth or sixth intercostal space, and the atrial appendage isolated by special clamps. The base of each appendage was ligated proximal to the clamp and finally amputated. Thus far, eight animals have been used, 5 undergoing left, 2 right and 1 bilateral atrial appendectomy. The first animal experienced respiratory difficulty and died fifteen minutes after closure of the chest. The remaining 7 animals made uneventful recoveries. Serial electrocardiograms before and after the operation failed to reveal any abnormal atrial rhythm or evidence of atrial injury except in 1 dog in which transient intra-atrial block developed. In all cases, necropsy performed four to twelve weeks after the operation revealed complete endothelialization at the site of the atrial scar. Subjacent mural thrombi were not found. Pericardial and pleurocardial adhesions occurred in most cases. The conclusion was drawn that excision of one or both atrial appendages is a feasible operation in dogs.

IDENTIFICATION OF DISEASE IN MEDICAL PROGRESS

In an address at the hundredth meeting of the Medical Society of Virginia Shryock,[1] medical historian, discussed modern medical progress. More advance, he emphasized, has been made in preventing and curing disease in the last fifty to one hundred years than in all previous time. The medical treatment of the previous century with its bleeding and purging was not only futile but dangerous. In less than a century the average life expectancy doubled. How did this marvelous progress come about? The usual answer has credited the discoveries about 1880 of the bacterial causes of many infectious diseases. Shryock, in his answer, places more emphasis on the identification of diseases by pathologists and clinicians from 1800 to 1850. He traces the growth of the concept of the specificness, the individuality, in disease from the early recognition of symptomatic patterns and the correlation of symptoms with definite structural changes by Morgagni in 1758 to the descriptions of definite diseases by Louis, Laennec, Bright, Rokitansky, Gerhard and others in the first half of the last century. One should not overlook the significance of the discoveries even earlier of vaccination against smallpox, the cure of malaria by cinchona bark, and the value mercury in syphilis before the causes of these diseases were understood. The concept of specificness of disease was strengtnened by the responses of these diseases to special methods. Identification of diseases led to specific prevention and treatment and in surgerv to new fields and technics as antisepsis and asepsis were introduced. Before recognition of definite diseases physicians were trying to control diseases which were not understood. Anthrax tuberculosis, pneumonia, typhoid and other infections could not be worked out fully as entities "until their individuality had been discovered and defined." "Pathology led to the search for causes." Pasteur and Koch reaped where clinicians and pathologists had sown. But the conditions under which they worked do not in any way lessen the importance of their achievements. Shryock has advanced the explanation of modern medical progress by calling attention to the underlying importance in this progress of the understanding of specificness of disease. At the same time medical philosophers should not overlook the great gains made by medicine through discoveries in the basic sciences which were utilized in medicine and the benefits of adaptation to medicine of technologic discoveries such as magnification, electric light, roentgen ray and amplification.

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[1] 1. Shryock, R. H.: Medical Progress During the Past Century, Virginia M. Monthly 74: 543 (Dec.) 1947.

INEFFECTIVENESS OF TRYPANOSOMA CRUZI ENDOTOXIN (KR) IN THE TREATMENT OF MOUSE CANCERS

Unpromising results are reported[1] in the treatment of mouse cancers with Trypanosoma cruzi. Previous comment in THE JOURNAL[2] drew attention to reports of preliminary favorable results from treatment with endotoxins of this protozoan. Hauschka and Goodwin[1] tested eight different strains of T. cruzi against five varieties of spontaneous and transplanted carcinoma and sarcoma in mice. Some inhibition of tumor growth was observed during the period of active infection by the protozoa, but normal growth was resumed when the infection was treated. The authors regarded the inhibition as not caused by specific toxins but by competition for essential dietary factors and to general depletion of the host system by the infection. Several preparations from killed T. cruzi cultures and concentrates of the organisms from mouse plasma likewise were without striking effect. Sufficient experimental evidence is not yet available to warrant this form of treatment in cancer in human beings.

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1. Hauschka, T. S., and Goodwin, M. B.: Trypanosoma Cruzi Endotoxin (KR) in the Treatment of Malignant Mouse Tumors, Science **107**: 600-602 (June 4) 1948.

2. Cancer Treatments from Russia, editorial, J. A. M. A. **133**: 111 (Jan. 11) 1947.

ORGANIZATION SECTION

Official Note

A. M. A. OFFICIALS TO VISIT JAPAN

At the invitation of General MacArthur, five officers of the American Medical Association left August 1 for Tokyo, where they will confer with a group of medical consultants on various phases of the proposed Japanese Social Security System, including sickness insurance. The American Medical Association group will consist of President R. L. Sensenich of South Bend, Ind.; President-Elect Ernest E. Irons, Chicago; Dr. Elmer L. Henderson, Louisville, Ky., chairman of the Board of Trustees, and Drs. E. J. McCormick, Toledo, Ohio, and John H. Fitzgibbon, Portland, Ore., members of the Board of Trustees. The party took off in an Army plane from Fairfield airport near San Francisco. On arrival, the American doctors will confer with Brig. Gen. Crawford W. Sams, chief of the medical branch of the Civil Affairs Division in Tokyo. They will return to the United States within three weeks.

FIRST NATIONAL MEDICAL PUBLIC RELATIONS CONFERENCE

A national medical public relations conference, first of its kind, which will tackle six common objectives facing the medical profession will be held in St. Louis, November 27.

Public relations directors, executive secretaries charged with public relations duties and public relations committee chairmen from each of the forty-eight state medical societies will be invited to participate.

Featured for luncheon and dinner talks will be noted and qualified speakers on the following topics: "The Public Speaks on Health," "What Public Relations Did for Us" and "Yes, the Profession Needs PR."

At the workshop session which will be run in the afternoon from 2 to 5 o'clock, carefully selected discussion leaders from the state societies will grapple with these six major social issues facing the medical profession: selling the need of public relations to state medical society members, encouraging wider use of medical prepayment plans, setting up workable systems for handling night calls, the rebate problem, developing good will with labor, farm, industrial and cooperative groups, and cooperating with health agencies.

The conference will immediately precede the annual secretaries-editors meeting, which is being held in conjunction with the annual Interim Session of the American Medical Association, November 28 to December 3.

The planning and guiding of the conference will be handled by Lawrence W. Rember, William Doscher and John Bach of the Association's public relations staff.

Washington Letter

(From a Special Correspondent)

Aug. 4, 1948.

Medicine Prominent in Centennial Program

A pre-release copy of the scientific program for the American Association for the Advancement of Science centennial meeting in Washington September 14-16 discloses that medical and public health topics will be prominently featured. Participants in a symposium on world health problems will include Drs. Ernest C. Faust (Tulane), Stafford L. Warren (University of California at Los Angeles) and Leonard A. Scheele, Surgeon General of U. S. Public Health Service, as principle speakers and the following discussants: Drs. Fred L. Soper and Wilbur A. Sawyer. Dr. Thomas Parran will preside. One of the evening sessions will be on medical research, with Dr. Andrew C. Ivy (University of Illinois) as principal speaker and Dr. Lewis H. Weed, National Research Council, as chairman. Another evening meeting, devoted to psychiatry, will include an address by Dr. Kenneth E. Appel (University of Pennsylvania). Dr. Robert H. Felix, mental hygiene director of U. S. Public Health Service, will preside.

Conference of Quarantine Officers September 20-24

The most intensive conference on quarantine problems ever conducted under U. S. Public Health Service auspices is scheduled to be held in Washington September 20-24. Quarantine officers stationed at air fields where international traffic is heavy, as well as those on duty at all major ports, are being summoned here for the special meeting. The notice that has been sent to them states: "All regulatory material and technical procedures are to be reviewed in the light of the most recent advances in preventive medicine and the allied sciences. Consideration will be given to all revisions that are in the interest of the practical application of established principles of preventive medicine. The guiding purpose of the conference will be to adopt any new procedure that will give the maximum protection to our national health with a minimum restriction to the international movement of people and their goods."

Report on Health and Welfare Study Made for General MacArthur

Secretary of the Army Kenneth C. Royall has made public a one hundred and sixty-four page report evaluating current health and social security measures in Japan. It is based on an investigation, initiated at the request of General Douglass MacArthur, conducted last year by consultants from the Federal Security Agency and Federal Public Housing Authority. Charges that the mission was a vehicle of propaganda for "socialized medicine" were laid before the health subcommittee of the Senate Committee on Labor and Public Welfare in the course of its hearings last spring on the Murray-Wagner-Dingell and Taft national health bills. One of the report's major recommendations is that, for wage-earning groups now covered by various compulsory social security plans, a single system should provide for medical care as well as old age, sickness, survivors' and temporary wage loss benefits. For those groups which are not subject to an obligatory social security system, participation in voluntary prepayment plans (for medical care) should be strengthened so as to gain maximum coverage, the report states. It indorses: recognition of the public service character of hospitals, development of a nationwide system of hospitals with one over-all plan; support by public funds of the capital cost and maintenance expenses of the hospital expansion, "but as much local autonomy as possible should be permitted to encourage development of institutions suited to local needs," elevation of professional and hospital standards, adequate allocations of food to hospitals and gradual development of a midwifery service as a public function.

Examinations for Appointment in Public Health Service

Competitive examinations will be held in October for appointment in the Regular Corps of the U. S. Public Health Service in grades of assistant surgeon (first lieutenant) and senior assistant surgeon (captain). Written and oral examinations will be given. They may be taken by physicians who began internships in July of this year, on completion of which successful applicants will be placed on active duty. Application forms are obtainable from Public Health Service hospitals, district offices or by writing to: Surgeon General, U. S. Public Health Service, Washington 25, D. C.

Orientation Course on Hospital Expansion

A three week orientation course on technical aspects of compliance with the Hill-Burton Hospital Survey and Construction Act was scheduled to be concluded on July 30. Conducted by Division of Hospital Facilities, U. S. Public Health Service, the seminar was attended by architects, engineers and administrators from most of the States now participating in the federally subsidized hospital expansion program.

GOVERNMENT SERVICES

ARMY

ACUTE NEED FOR NURSES

The Army and the Air Force are acutely in need of nurses to administer to the health heeds of the 947,000 man Army and the 502,000 man Air Force authorized under the Selective Service Act by the 80th Congress. The estimated nurse strength needed by June 30, 1949 for the minimum requirements is 7,000, of which only 4,200 nurses are now on duty at stations around the world. Since the Department of the Army announced the need for nurses previously this year, 7,421 have joined the Army Nurse Reserve Corps and the Surgeon General's Office is mailing questionnaires to all of them asking whether they would accept active duty. The shortage of nurses in the Army is further shown by the 800 vacancies in the Regular Army Nurse Corps yet to be filled.

ORAL PATHOLOGY

One of the first undertakings of the recently reorganized American Registry of Pathology of the National Research Council is the fourth edition of the "Atlas of Dental and Oral Pathology" which has just been completed. The authors are Lieut. Col. Joseph L. Bernier and Col. J. E. Ash, retired, and all materials in the atlas are from files of the Institute and the Registry of Dental and Oral Pathology. The case method of presentation used in previous editions has been supplemented by a formal text which is better adapted for widespread use as a teaching medium. Sections on histology and embryology and atom bomb effects have been added.

HIGHER DEGREES FOR ARMY OFFICERS

The Department of the Army has announced that two hundred and eighty-one officers will receive academic degrees from graduate schools of civilian educational institutions in the school year now ending. These officers will receive master's degrees, or the equivalent, in their respective fields of study in institutions of higher learning throughout the country. Among the fifteen who are members of the Medical Department, seven will receive the degree of Master of Public Health, five Master of Science, one Master of Hospital Administration, one Ph.D. (Psychology) and one Master of Business Administration. Seventy-three officers of the combat arms will receive master's degrees in various fields; also one hundred and fifty engineer officers. Such advance training enables qualified personnel to keep pace with developments in medicine, engineering, business administration, personnel management and the sciences as military requirements dictate.

At the same time the Medical Department announced that nine medical officers have been certified since April by the American Boards as specialists. These officers are: Cols. Daniel J. Sheehan and James O. Gillespie, Lieut. Col. Wilbur C. Berry, and Major John D. Ashley Jr., all in internal medicine; Cols. Clinton S. Lyter and Sam F. Seeley and Lieut. Col. David Gold, all in general surgery; Cols. Frank Pinger and Edgar L. Olson in otorhinolaryngology.

PERSONAL

Major Gen. Albert W. Kenner, formerly chief medical officer at Supreme Headquarters, American European Forces, has been named president of the Army Personnel Board to succeed Major Gen. Robert S. Beightler, who becomes commanding general of the 5th Armored Division in Arkansas.

Lieut. Col. L. A. Bilotta, who entered the service as a first lieutenant in 1939, has resigned from the Medical Corps.

GRADUATE TRAINING FOR KOREAN NURSES

The Surgeon, United States Army Forces in Korea, Colonel C. P. Ward, has instituted graduate training courses for Korean nurses and doctors to promote a better understanding between organized medicine in Korea and the American occupation medical forces. On June 30 at a ceremony at the 34th General Hospital in Korea certificates were presented to twenty-one nurses from various Korean hospitals, comprising the first class to finish the postgraduate training courses. The class was addressed by General John B. Coulter, deputy commander of the United States forces in Korea.

NAVY

NAVAL AIR RESERVE NEEDS DOCTORS

Doctors who served in the Navy during the past war and who still hold reserve commissions are requested to apply for two weeks annual training duty or up to five months extended duty at Naval Air Stations, Rear Admiral Richard F. Whitehead, Chief of Naval Air Reserve Training announces.

Naval Reserve medical officers who can possibly spare the time are urged to apply for this duty to help alleviate the load at stations which are undermanned. Applications are made via the commanding officer of the air station to the commandant of the naval district concerned. The naval air stations at the following locations need assistance: Akron, Ohio; Atlanta, Ga.; Columbus, Ohio; Dallas, Texas; Denver; Glenview, Ill.; Grosse Ile, Mich.; Los Alamitos, Calif.; Memphis; Miami; Minneapolis; New Orleans; New York; Oakland; Olathe; Squantum, Mass.; St. Louis; Willow Grove, Pa.; Anacostia, D. C.; Jacksonville, Fla.; Norfolk, Va.; Seattle, and Lakehurst, N. J. Medical officers who request active duty for one year or more are eligible for additional pay of $100 per month over and above regular pay. Officers qualified in aviation medicine are especially desired. However, medical officers on active duty can apply for the five month course at the School of Aviation Medicine at Pensacola, Fla., eventually leading to the designation Naval Flight Surgeon. Quarters are available at some stations and medical officers in the Naval Air Reserve cannot be transferred without consent.

OFFICERS REQUEST POSTGRADUATE TRAINING

The Advisory Board of the Bureau of Medicine and Surgery recently approved the following Naval Medical Officers for postgraduate training:

Comdr. John G. Feder, Electrocardiography at Emory University School of Medicine, Atlanta, Ga.

Comdr. Robert A. Freyling, Residency in Orthopedic Surgery, Naval Hospital, San Diego, Calif.

Comdr. William J. James, course of instruction in Neurosurgery, Yale University Postgraduate School, New Haven, Conn.

Comdr. Roger D. Sherman, Residency in Psychiatry, Naval Hospital, Philadelphia.

Comdr. Robert B. Simons, course of instruction in Dermatology and Syphilology, Harvard Medical School.

Lieutenant Commander Harold R. Scanlon, Residency in Surgery, Naval Hospital, Long Beach, Calif.

Lieut. Comdr. William A. Wulfman, Fellowship in Radiology, New York Hospital, New York.

Lieut. Robert F. Meeko, Residency in Obstetrics and Gynecology at a Naval hospital.

Lieut. (jg) Edward G. Haskell, Residency in Surgery, Naval Hospital, Long Beach, Calif.

Lieut. (jg) Vincent C. Lowery, Residency in Psychiatry, Naval Hospital, Bethesda, Md.

RETIRED CAPTAINS VOLUNTEER

Four captains in the Navy Medical Corps on the retired list have voluntarily requested recall to active duty to aid in relieving the shortage of medical officers. They are Captains James F. Terrell, Tucson, Ariz.; Francis D. Walker, Brunswick, Maine; Arthur J. White, Toledo, Ohio, and John R. White, Lynn, Mass. Captain Terrell has been nominated for duty at the Naval Supply Depot, Long Beach, Calif., Captain Walker to the Naval Station, San Diego, Calif., Captain Arthur White to the Naval Hospital, Bethesda, Md., and Captain John White to the Sixth Naval District, Charleston, S. C., for duty as assistant district medical officer.

PERSONAL

Capt. Frederick L. McDaniel, now on duty at the Bureau of Medicine and Surgery, has been designated by the Secretary of State as a delegate to the Internation Congress on Mental Health to be held in London, England, August 11-21.

Capt. Vernal G. Backman, MCR, of Seattle, Wash., is returning to active duty with the Navy from inactive reserve status and will report for duty at the Shipyard, Bremerton, Wash.

Rear Admiral Dallas G. Sutton (MC), Retired, has been associated with the American Hospital Association, Chicago, since his retirement from the service.

Lieut. (jg) Frederick W. George III, U.S.N.R., of Buryetts-town, Pa., has been assigned to active duty at the Naval Hospital, San Diego, Calif., and Lieut. (jg) Winton R. Boyd, U.S.N.R., has been assigned to active duty at the Naval Hospital, Oakland, Calif.

NEW REGULAR OFFICERS

The following men have accepted appointments as lieutenants (jg) in the Regular Navy Medical Corps: William L. Hall, Whitesboro, Texas; Warren L. Jones, Portland, Ore.; Michael S. Lazzopina, New York; Richard W. McLean, Portland Ore., and Alfred P. Peretti, Louisville, Ky.

Lieut. Arvin T. Henderson of Ridgeville, Ind., and Lieuts. (jg) Walter F. Hansen of Union City, N. J., and Livius L. Lankford of Cisco, Texas, transferred from an active reserve status to the regular medical corps.

Comdr. F. Gowen of Philadelphia, now on duty with the Air Forces, Atlantic Fleet, has been transferred from the active reserve to the Medical Corps of the Regular Navy.

PUBLIC HEALTH SERVICE

EXAMINATION FOR THE REGULAR CORPS

An examination for appointment in the Regular Corps of the Public Health Service in the grade of assistant surgeon (first lieutenant) and senior assistant surgeon (captain) will be held in October. The written examination will be conducted October 4, 5 and 6 at places convenient to the candidates. The oral examination will be held at various points throughout the country.

Applicants must be at least 21 years of age and citizens of the United States, must present a diploma from a recognized medical school and pass a physical examination performed by Public Health Service officers.

Physicians beginning internship on July 1, 1948, will be admitted to the examination. Successful candidates will be placed on active duty in the Regular Corps on completion of internship on July 1, 1949.

Applicants for the grade of assistant surgeon must have had at least seven years of educational and professional training or experience, exclusive of high school. Applicants for the grade of senior assistant surgeon must have had at least ten years of educational and professional training or experience, exclusive of high school.

Entrance pay for an assistant surgeon with dependents is $5,011 a year and for senior assistant surgeon with dependents $5,551 a year including the additional pay of $1,200 for medical officers, as well as subsistence and rental allowance. Provisions are made for promotions at regular intervals up to and including the grade of senior surgeon (lieutenant colonel) and for selection for promotion to grade of medical director (colonel) at $9,751 a year. Retirement is authorized at either completion of thirty years' service or at the age of 64.

Application forms may be obtained from Public Health Service hospitals, district offices or by writing to the Surgeon General, United States Public Health Service, Washington 25, D. C.

THE 150TH ANNIVERSARY

The United States Public Health Service celebrated its one hundred and fiftieth anniversary July 16. President John Adams in 1798 signed a law which established the marine hospital service, forerunner of the present Public Health Service as it has been known since 1912. From a modest beginning on the Boston waterfront where sick and injured seamen could be rowed from their sailing ships to a small hospital on Castle Island, the service has grown until it now operates 25 hospitals, 115 outpatient clinics, 16 major quarantine stations, a leprosarium, 2 hospitals for drug addicts and a large research center at Bethesda, Md. Public Health Service personnel are now on duty in many of the states and in various parts of the world. The record of the service accounts for some of the most important medical discoveries: Goldberger discovered that pellagra is associated with diet; Alice Evans first identified undulant fever and proved that Bang's disease in cattle is caused by the same organisms; Rolla Dyer discovered that typhus is transmitted by rat fleas. A number of scientists of the Public Health Service have lost their lives in research on such diseases as scrub typhus, yellow fever, meningitis, Rocky Mountain spotted fever and psittacosis. The Public Health Service at present is undertaking the construction of a much larger research center at Bethesda, Md.

MISCELLANEOUS

SUMMER COURSES IN REHABILITATION

The Office of Vocational Rehabilitation, Washington, D. C., announces summer courses in rehabilitation at the following institutions: Michigan State Normal College, Ypsilanti, Mich.; Pennsylvania State College, State College, Pa.; University of Washington, College of Education, Seattle; Hampton Institute, Hampton, Va.; Colorado Agricultural and Mechanical College, Fort Collins. The work in general embraces courses in testing and guidance, educational statistics, advanced adjustment counseling and public relations in vocational education, all designed to meet the needs of personnel in state rehabilitation agencies and state agencies for the blind. Vocational rehabilitation, as provided by the states with the assistance of the federal government, aims to preserve, restore or develop the ability of disabled persons to work for pay and is primarily a service for civilians. While most veterans of the armed services have the benefit of special legislation to help overcome their disabilities, veterans are not excluded from services under the civilian program.

INDUSTRIAL SAFETY CONFERENCE

The President's Industrial Safety Conference will be held in Washington, D. C., September 27-29. The U. S. Department of Labor is in charge of planning for the conference, which will seek a nationwide solution for preventing work injuries and deaths.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CONNECTICUT

General Practitioners.—Permanent officers of the Connecticut chapter, American Academy of General Practice, will be elected at the annual meeting in September during the Connecticut Clinical Congress. The announcement was made recently by Dr. Michael W. Palmieri, New Haven, acting secretary of the group.

Consultants for Tumor Clinics.—The Association of Tumor Clinics, in cooperation with the medical advisory committee of the Connecticut Cancer Society, has undertaken a statewide project to bring medical leaders to regular conferences of individual clinics. The consultant, who may be requested by the clinic, will be at its disposal to help with problems of diagnosis and treatment or for discussion on general principles in the consultant's field. Engagements are being scheduled through Dr. Robert Tennant, Hartford, secretary of the association. Panel constituents, approved by the association's executive committee, are: surgeons: Drs. Samuel C. Harvey, New Haven; Edward J. Ottenheimer, Willimantic; Ashley W. Oughterson, New Haven; Max Taffel, New Haven; John O. Vieta, New York, and N. William Wawro, Hartford; gynecologists: Drs. Carl E. Johnson, New Haven; Louis F. Middlebrook, Hartford, and Arthur H. Morse, New Haven; urologists: Drs. Philip M. Cornwell, Hartford, and Chris H. Neuswanger, Waterbury; radiologists: Drs. Gilbert W. Heublein, Hartford; Arnold H. Janzen, New Haven; Ralph T. Ogden, Hartford; Berkley M. Parmelee, Bridgeport, and Hugh M. Wilson, New Haven.

ILLINOIS

Film on Poliomyelitis.—The National Institute for Infantile Paralysis has awarded a $12,000 grant to the University of Illinois' Division of Services for Crippled Children for making a recording of a film on poliomyelitis. This film, entitled "Nursing Care of Poliomyelitis," was shown publicly for the first time at the First International Congress on Poliomyelitis in New York City on July 12-17.

Clay County Hospital Underway.—Ground-breaking ceremonies, marking the beginning of construction of the Clay County Memorial Hospital, were held at Flora, June 11, with Dr. Roland R. Cross, state director of public health, turning the first spadeful of earth. This is said to be the first hospital in the Middle West to be constructed from start to finish with state and federal aid as provided by the state and federal Hospital Construction Acts. The one story, fireproof building will provide fifty beds. Other speakers at the ceremony were Dr. Joseph W. Mountin, assistant Surgeon General, U. S. Public Health Service, Washington, D. C., and Dr. Norton W. Bowman, Flora, of the Clay County Medical Society.

Chicago

Appoint Director of Atmospheric Institute.—John P. Marbarger, Ph.D., of the University of Vermont College of Medicine, Burlington, Vt., has been appointed associate professor of physiology and director of research for the University of Illinois' new Aero Medical and Atmospheric Institute. Dr. Marbarger was assigned to the U. S. Air Forces' aeromedical laboratory at Wright Field, Dayton, Ohio, from 1943 to 1946. During that period he conducted research on pressure breathing and thermal regulation under extreme environmental stress. Marbarger now serves as assistant professor of physiology at the University of Vermont. He is a graduate of Lebanon Valley College, Annville, Pa., and Johns Hopkins University, Baltimore.

Victor Guillemin Jr., Ph.D., chief of the physics unit of the U. S. Air Forces' aeromedical laboratory at Wright Field, Dayton, Ohio, has been appointed biophysicist at the institute beginning July 1. He is a graduate of the University of Wisconsin, Madison, Harvard University, Cambridge, Mass., and the University of Munich, Germany, and has taught at Wisconsin, Harvard, and Massachusetts Institute of Technology, Cambridge. The institute will be equipped with apparatus for the study of aviation medicine and the study of cold, heat and barometric changes of the body.

Loyola University Appointments.—Thirteen men have been recently appointed to the faculty of the Stritch School of Medicine of Loyola University. Elinar Leifson, Ph.D., formerly on the staffs of Johns Hopkins University School of Medicine, Baltimore, and the University of South Dakota School of Medical Sciences, Vermillion, is now the new chairman of the department of bacteriology, and Martin B. Williamson, Ph.D., who has been engaged in research work at Harvard Medical School, Boston, has been named assistant professor in biochemistry. Additions to the department of anatomy are: Leslie A. Emmert, B.A., and Harold D. Fish, M.S.; new members of the department of urology are Dr. Rocco V. Serritella and Dr. Edward T. Wilson. The department of medicine has added Drs. John M. Dudek, Gould A. Andrews Jr., Albert G. Denten, Charles W. Pfister and Walter J. Kawula. Dr. George T. Stanton and Dr. Frederick R. Schwartz have been appointed to the department of neuropsychiatry and that of dermatology respectively.

Poliomyelitis Team Available for Assistance.—The Northwestern University Medical School's poliomyelitis team, headed by Dr. Emil D. W. Hauser, assistant professor of bone and joint surgery, is on call to aid poliomyelitis-stricken communities anywhere in the United States. The crew is assigned to duty and its expenses paid by the National Foundation for Infantile Paralysis. This is the crew's fourth summer of duty. Last year it served in Boise, Idaho, and before that in Rockford and Peoria, Ill. Its functions include medical consultation to doctors of the community, teaching local hospital nurses bed posture for patients and the administration of hot packs; instruction in physical therapy technics of muscle reeducation, and general functional exercises. The crew is prepared to stay on duty up to six weeks until its work in organization, teaching and medical assistance is completed. After that, the assistant orthopedist in the team remains in the stricken community as long as he is needed. Members of the 1948 team, in addition to Dr. Hauser, are Dr. Arthur F. Abt., associate professor of pediatrics; Dr. Erwin J. Cummins, orthopedist; Miss Meredith Nordschow, instructor in physical medicine; Miss Anne Prochaska, chief physical therapist, and the Misses Bernice Gotaas and Lucille Kurzawa, physical therapists. The other three teams operating under the National Foundation are those at Stanford and Harvard Universities, and the D. T. Watson School of Physical Therapy, Leetsdale, Pa.

LOUISIANA

Personal.—Dr. Charles M. Goss, professor of anatomy, Louisiana State University School of Medicine, New Orleans, has been elected editor-in-chief of the *Anatomical Record.*

Dr. Frye Comes to Tulane.—Dr. William W. Frye, professor and head of the department of preventive medicine and public health at Vanderbilt University School of Medicine, Nashville, Tenn., has been appointed professor of tropical medicine and public health and assistant director of the division of graduate medicine at Tulane University of Louisiana School of Medicine, New Orleans, effective July 1. Dr. Frye has been connected with Vanderbilt since 1931 and has been head of the preventive medicine department since 1945.

MICHIGAN

Examination of School Children.—Medical examination was given almost 40,000 school children, two thirds of all students entering high school, intermediate or elementary school, by private physicians in the joint plan of the Wayne County Medical Society and the Detroit Department of Health. The society reports that there is still need for giving more attention to visual, hearing and dental defects.

Tuberculosis Death Rate.—Tuberculosis dropped from seventh to eighth place among Michigan's ten leading causes of death in 1947, according to provisional figures released by the state department of health. In 1947, deaths from tuberculosis numbered 1,100 among males and 543 among females. More than half of the females who died of tuberculosis were under 35 years of age, while 80 per cent of the males who died were over 35 years of age. Of the 1,643 who died from tuberculosis last year, 45 were children under 5 years of age and of these, 18 were of infants less than 1 year of age.

Report of Children's Fund.—In its annual report for 1947, the Children's Fund of Michigan states that it distributed $752,910.24 for the benefit of children. About three fourths of the disbursements were made by departments created and managed by the fund in the fields of physical and mental health and medical research. The largest outlay was for child health, a total of $269,876.15 for its dental and eye programs and maintenance and service in the Northern Michigan and Central Michigan Children's Clinics, which served 8,062 children. The expenditures of the Division of Research were $140,801 for the study of nutrition, arthritis and virus. The grants-in-aid for child guidance included $4,500 to the Student Aid Foundation of Detroit, $1,000 to the Michigan Society for Mental Hygiene, $2,500 to Atlanta University School of Social Work, $3,000 to Oakland County for treatment of delinquent children in boarding homes and $2,500 to the Edith Thomas Book Project at the University of Michigan Library. Gifts to recreational agencies totaled $55,100. Children's Fund was established on May 1, 1929, by the late U. S. Senator, James Couzens, with gifts of $12,000,000, all of which must have been used for the benefit of children at the end of twenty-five years. The total assets of the fund at the close of its nineteenth year were $4,779,162.

MINNESOTA

Personal.—Dr. Wesley W. Spink, professor of medicine, University of Minnesota Medical School, Minneapolis, has been invited to address a meeting of Central and South American physicians at Cordoba, Argentina, late in November on the treatment of brucellosis recently developed in the university's medical laboratories. Dr. Spink is chairman of the subcommittee on public health aspects of brucellosis, National Research Council.——Dr. Philip K. Arzt, St. Paul, assistant clinical professor of neuropsychiatry, University of Minnesota Medical School, Minneapolis, has been appointed senior consultant in electroencephalography.

MISSISSIPPI

State Society Honors Dr. Little.—Dr. William L. Little, Wesson, a practitioner in Copiah County since 1888, was selected as the outstanding general practitioner of Mississippi by the council and house of delegates of the Mississippi State Medical Association at its meeting in May. He is a past president of the Mississippi State Medical Association, the organizer and for fifteen years director of the Copiah County Health Department, a member for four years of the state board of health and physician and surgeon for the Illinois Central Railroad for more than fifty years.

Research at the University.—Grants totaling $29,590 have been awarded to three University of Mississippi, University, faculty members in the school of medicine. Dr. Arthur C. Guyton, chairman, department of experimental medicine, received $16,000 from the Chemical Corps of the Department of the Army for a study of dust particles in the air and $4,000 from the National Foundation for Infantile Paralysis for a study of the basic physiology of pain in poliomyelitis. Sigwin B. Raska, Ph.D., assistant professor of pharmacology, was given $3,990 by the American Life Insurance Medical Research Fund for research on "Metabolism of the Kidney in Renal Hypertension." The Cancer Control Branch of the National Advisory Cancer Council awarded Dr. John D. Reese, chairman of the department of pathology, $5,000 as a cancer teaching service grant for coordination and improvement of instruction in the field of neoplastic disease.

NEW JERSEY

Hunterdon County Hospital-Health Center.—Plans have been made for a Hunterdon County hospital-health center under the auspices of an approved Eastern medical school. A hundred bed hospital is contemplated, as well as the usual health center facilities and a nurses' training school. Under the Hill-Burton act, the federal government will probably contribute one third of the funds. A recent survey showed that Hunterdon is the only county in the state without a general hospital; it has no medical or surgical specialists, and 85 per cent of the medical practitioners have no hospital connections.

Prudential Appoints Associate Medical Director.—Dr. Ronald F. Buchan, clinical director, Yale University School of Medicine Institute of Occupational Medicine and Hygiene, New Haven, Conn., has been appointed associate director of the Prudential Insurance Co. to succeed Dr. Joseph F. Sadusk Jr., Newark, who resigned to become executive director of the committee on medical sciences, Research and Development Board, Washington, D. C. Dr. Buchan, a graduate of McGill University Faculty of Medicine, Montreal, 1942, entered the U. S. Public Health Service in 1943, where he was for a time assigned to the Office of the Surgeon General of the Army as a specialist in industrial toxicology and dermatology. He also served as chief of the medical unit of the Bureau of Industrial Hygiene of Connecticut. At New Haven he was also associate physician at Grace-New Haven Community Hospital-University Service.

NEW YORK

Personal.—Dr. Amos O. Squire, Ossining, retired May 31 as medical examiner of Westchester County, a position which he has held since the office was created in 1925.—Dr. Clyde L. Randall, Buffalo, was recently appointed to membership on the New York State Board of Medical Examiners, succeeding Dr. James K. Quigley, Rochester, who has resigned after a long tenure.—Dr. James H. Lade, Albany, has been appointed director of the Bureau of Venereal Disease Control of the New York State Department of Health. Dr. Lade, a graduate of Syracuse University College of Medicine, 1934, joined the health department in 1938.

Arthritis Research in Buffalo.—The Weed Foundation has contributed $10,000 for research to Dr. L. Maxwell Lockie, professor of therapeutics, University of Buffalo School of Medicine; the fund will be used by him, Dr. John H. Talbott, professor of medicine, and other members of the Arthritis Clinic of the Buffalo General Hospital. The Weed Foundation was established in 1942 by Shelton Weed, president of Weed & Company, primarily for the care of sick and needy employees. Under the grant a research fellowship will be held by Dr. Bernard M. Norcross, a member of the staff of the Arthritis Clinic for eight years. Drs. Harold M. Robins and Clyde W. George, also members of the Arthritis Clinic, and Drs. Warren R. Montgomery, George E. Miller and Charles W. Bishop will participate in the studies under the grant. The hospital's recently completed research laboratory will provide extensive biochemical and physiologic facilities for the studies. Dr. Talbott said that the project will tie in closely with the recent grant of the National Institute of Health to the medical school for the study of gout and related problems of uric acid metabolism.

New York City

Appointed to Toxicology Laboratory.—Edward D. Palmes, Ph.D., has been appointed assistant professor of preventive medicine, New York University College of Medicine, and assigned to the laboratory of industrial toxicology, initial unit of the Institute of Industrial Medicine. Dr. Palmes was formerly with the National Institute of Health, Division of Industrial Hygiene, Bethesda, Md., where he conducted research in the toxicology of beryllium and tungsten. During World War II he was with the Armored Medical Research Laboratory at Fort Knox, Ky. He will work with Norton Nelson, Ph.D., associate professor of preventive medicine in charge of the laboratory, which is the first of three to be established by the institute, as an integral part of the New York University-Bellevue Medical Center.

Industry to Help Abate the Smoke Nuisance.—Dr. Harry S. Mustard, commissioner of health, has reported that local industry has promised to spend $30,000,000 in the next four years to abate the smoke nuisance. At a meeting of the Smoke Prevention Association of America, June 7, he cited the city's three way attack against smoke: (1) the health department's inspector service that seeks to spot and correct improper methods creating the smoke nuisance; (2) long-range program of education and correction as to present equipment; (3) research by the health department. He reported that the city will spend $61,000 next year on smoke correction work and will add five to the present eleven inspectors, a civil engineer and a mechanical engineer. New York consumes 7,500,000 tons of anthracite coal, 11,000,000 tons of bituminous coal and over 1,000,000,000 gallons of oil in one year. During the last fifteen years, use of anthracite coal has decreased 28 per cent, that of bituminous has increased 46 per cent and oil users have increased 90 per cent.

NORTH CAROLINA

Hanover County Symposium.—The New Hanover County Medical Society will have its second annual Medical Symposium at Wrightsville Beach, August 20. Following are the speakers: Drs. George Crile Jr., Cleveland; Edward G. Waters, New York; John S. L. Browne, Montreal, Canada, and Harry Walker, Richmond, Va. All interested are invited.

OREGON

Course in Allergy.—The American College of Allergists will present an intensive fall instructional course in allergy at the University of Oregon Medical School, Portland, November 8-12, under the direction of Dr. J. Warrick Thomas, Richmond, Va. Clinical and didactic instruction for physicians will be presented by instructors from Oregon and elsewhere. The fee for the course is $75.

SOUTH CAROLINA

Dr. Knisely to Head Department of Anatomy.—Melvin H. Knisely, Ph.D., associate professor of anatomy at the University of Chicago School of Medicine, became head of the department of anatomy at the Medical College of the State of South Carolina, Charleston, July 1. He succeeds Dr. Arthur M. Lassek, professor of anatomy since 1933, who left to go to the Boston University School of Medicine to continue research on the brain. Dr. Knisely received his Ph.D. degree from the University of Chicago, 1936, and was a Rockefeller Foundation fellow at the Universities of Chicago and Copenhagen, Denmark.

TENNESSEE

Dr. Wilson Honored.—Dr. Owen H. Wilson, Nashville, was guest of honor at a dinner given June 3 by the Nashville Pediatric Society and attended by more than two hundred from Nashville and Middle Tennessee. Dr. Wilson was presented with a bronze plaque commemorating his long medical service, together with a testimonial volume, and a commission as an honorary colonel on the staff of Governor McCord. Among the guests were Dr. Olin West, Nashville, representing the American Medical Association, Dr. Samuel F. Ravenel, Greensboro, N. C., dean of the Southern Pediatric Seminar at Saluda, N. C., and Vice-Chancellor C. Madison Sarratt of Vanderbilt University, Nashville.

TEXAS

Foundation Receives Million Dollar Property.—The Southwestern Medical Foundation, Dallas, has been presented the $1,000,000 Halliburton Department Store building in Oklahoma City by the Southwestern Medical Corporation, formed April 29 for the specific purpose of buying the building. Directors of the corporation are: Dr. Edward H. Cary, president, Southwestern Medical Foundation; Fred F. Florence, member, board of trustees of the foundation; Harold B. Sanders, trustee of the foundation, and Fred M. Lange, vice president and managing director of the foundation. Before turning over the title to the foundation, the corporation leased the store back to Federated Stores, Inc., for thirty years. It is expected that revenue from the lease will be used to pay back the loan.

WEST VIRGINIA

Campaign for Four Year Medical School.—A campaign for a four year medical school in West Virginia has been launched by the state medical association. A subcommittee of two association groups which is at work comprises Drs. Thomas F. E. Bess, Keyser, president of the state medical association; Wade St. Clair, Bluefield, chairman of the council; Thomas G. Reed, Charleston, president-elect; D. A. MacGregor, Wheeling, chairman of the fact finding committee, and Frank V. Langfitt, Clarksburg, chairman of the legislative committee.

Sectional Surgical Congress.—The annual meeting of the West Virginia Section of the Southeastern Surgical Congress will be held September 3-4 at the Hotel Prichard, Huntington. A general invitation to attend the meeting is extended to physicians in West Virginia, Kentucky and Ohio. Dr. Gilbert F. Douglas, Birmingham, Ala., president of the Southeastern Surgical Congress, is among the speakers. Subjects to be discussed include: surgery of the sympathetic system, pericardectomy for chronic cardiac compression, the cross-eyed child, carcinoma of the breast, and postoperative pulmonary complications. Dr. Lucien A. LeDoux, New Orleans, president of the Southern Medical Association, will be the luncheon speaker, September 3, at 12:30 p. m. At the banquet Friday evening, Dr. Herbert Acuff, Knoxville, Tenn., past president, Southeastern Surgical Congress, and president-elect, International College of Surgeons, will be the speaker.

ALASKA

Program for Research in Arctic Health.—The Federal Security Administrator has announced the establishment by the U. S. Public Health Service of a field station in Anchorage, which will assist in strengthening basic health services in Alaska and initiate a program for research in Arctic health. The program is implemented by an appropriation from Congress of $1,115,000. Dr. Jack C. Haldeman will be medical officer in charge of the Anchorage station, which should be in full operation by October 1. About $715,000 of the special Alaska funds will be made available to the Territory in the form of grants-in-aid. Additional assistance will be provided by personnel recruited by the Public Health Service and assigned to the Territorial Department of Health. Plans for the future include an Arctic Institute of Health recommended by a survey group of the American Medical Association in 1947 (The Journal, Oct. 23, 1947, p. 500). The Board of Regents of the University of Alaska has offered to provide a site on its campus for the institute, which would concentrate on a study of the Arctic region and its effects on various phases of health.

GENERAL

Spanish Edition of U. S. P. XIII.—The U. S. Pharmacopeia XIII has been translated into Spanish by Dr. A. A. Moll, formerly of the Pan American Sanitary Bureau, and the manuscript is now being set into type and distributed to a selected group for proof reading. Publication is expected within about six months. This latest edition will be distributed by La Prensa Medica Mexicana, Zacatecas 21-5, México, D. F., and the retail price of the book will be $11.

Johns Hopkins Medical Association.—At a medical alumni banquet of Johns Hopkins University, honoring Drs. Helen Taussig and Alfred Blalock, Baltimore, a National Johns Hopkins Medical Association was organized with Dr. George H. Gardner, Chicago, president, and Dr. Francis H. Redewill, San Francisco, secretary-treasurer. This new organization will take active part in social meetings of the medical alumni as well as tie in with the university's activity of developing substantial funds for new buildings.

Death of Fairleigh Dickinson.—Fairleigh S. Dickinson, president of Becton, Dickinson and Company, Rutherford, N. J., died June 23 at his home. Colonel Dickinson, known for his work in the two World Wars, invented, among other things, the Yale B-D Lok and the Yale B-D Lok-Syringes. He built his company from a small beginning in 1897 to one of the largest factories making surgical instruments. His son, who served as lieutenant commander in the Navy in the South Pacific Theater during the recent war, is now in charge of the company.

WHO Headquarters.—Geneva, Switzerland, has been unanimously selected as the permanent headquarters for the World Health Organization. Regional offices were also recommended for the following areas: Eastern Mediterranean, Western Pacific, Southeast Asia (the Alexandria Health Bureau will be incorporated in WHO), Europe and Africa. The European headquarters, which would serve the war-ravaged countries, would be discontinued as soon as a satisfactory level of health had been reached. No regional office for the Americas was recommended because of negotiations to integrate the Pan American Sanitary Bureau with the World Health Organization.

Dr. McCoy Goes to Tokyo.—Dr. Oliver R. McCoy, Rochester, N. Y., has arrived in Tokyo to serve as consultant for the Japanese Institute of Public Health. The building housing the Institute of Public Health in Tokyo was constructed from a grant of $1,000,000 from the Rockefeller Foundation ten years ago. Previously Dr. McCoy was stationed in Paris as a field staff member of the Rockefeller Foundation. During the war he was chief of the Tropical Disease Control Division, Office of the Surgeon General, in Washington, D. C., during which time he served also with the National Research Council as a member of the Board for the Coordination of Malaria Studies.

Award to Pharmaceutical Manufacturer.—The Surgeon General, U. S. Navy, on July 15 awarded a certificate of achievement to the Winthrop Chemical Company, manufacturers of pharmaceutical products, in recognition of "outstanding services rendered to the Navy's Medical Department." The award was presented to Dr. Theodore G. Klumpp, president of the company, by Rear Admiral Albert H. Dearing, District Medical Officer, during a ceremony in New York City. During the war Winthrop Chemical Company was engaged in the production of antimalarials and other drugs used in the treatment of various tropical diseases. Early in the war the firm discovered a method of producing quinacrine on a commercial scale and developed another antimalarial which was considered more potent than quinacrine or quinine.

Society Elections.—At the fiftieth anniversary meeting of the Medical Library Association in Philadelphia, May 28-30, Miss Janet Doe, New York Academy of Medicine Library, was elected president; Miss Mildred R. Crowe, Medical College of Alabama Library, Birmingham, Ala., secretary, and Mrs. Edith Dernehl, Marquette University School of Medicine Library, Milwaukee, treasurer.—At the annual meeting of the Nicholas Andre Orthopedic Society in Schenectady, N. Y., Dr. Martin Dobelle, Pittsfield, Mass., was elected president, and Dr. William T. Shields Jr., Troy, N. Y., secretary.—At the fourth annual meeting of the American College of Allergists in New York the following officers were elected for 1948-1949: Dr. George E. Rockwell, Milford, Ohio, president; Dr. Jonathan Forman, Columbus, Ohio, president-elect and Dr. Fred W. Wittich, Minneapolis, secretary-treasurer.

CORRECTION

Dr. J. Edward Berk's Discussion.—The discussion by Dr. Edward Berk in the July 3 issue of The Journal, page 848, is misplaced. Dr. Berk's discussion pertains to a paper on "Carcinoma of the Pancreas" by Dashiell and Palmer which will be published in *The Archives of Internal Medicine.*

Deaths

Charles Henry Schlichter ⊕ Elizabeth, N. J.; born in Elizabeth, N. J., June 15, 1874; New York College of Pharmacy in 1893; Columbia University College of Physicians and Surgeons, New York, 1896; fellow of the American College of Surgeons and the New York Academy of Medicine; member of the Association of Military Surgeons of the United States; member of the Academy of Medicine of Northern New Jersey which in May 1946 presented him with the Edward J. Ill award; past president of the Society of Surgeons of New Jersey, Clinical Society of Elizabeth General Hospital and Union County Medical Society; served during the Spanish-American War and World War I; later held a commission as colonel in the medical reserve corps of the U. S. Army; during World War II served as chief of emergency medical service of New Jersey Civilian Defense, chairman of the Procurement and Assignment Committee for Physicians and senior surgeon consultant for the U. S. Public Health Service reserve; member of the Commission for the Blind of New Jersey from 1923 to 1926; since 1908 member of the Board of Trustees of the Free Public Library of Elizabeth, serving as president of the board for many years; president of the city board of water commissioners; served on the staffs of the Rahway (N. J.) Memorial Hospital, Newark (N. J.) Eye and Ear Infirmary and the Elizabeth General Hospital; a member of the board of trustees of the Society for the Relief of Widows and Orphans of Medical Men of New Jersey; died April 28, aged 73, of coronary thrombosis.

Josiah Morris Slemons ⊕ Los Angeles; born in Salisbury, Md., Nov. 9, 1876; Johns Hopkins University School of Medicine, Baltimore, 1901; instructor in obstetrics at his alma mater from 1901 to 1909 and associate professor of obstetrics from 1909 to 1913; professor of obstetrics at the University of California Medical School in San Francisco from 1913 to 1915; from 1915 to 1920 professor of obstetrics and gynecology at the Yale University School of Medicine in New Haven, Conn.; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; in 1917 had charge of the survey of obstetrics in France made under the sponsorship of the American Red Cross; during the next two years a major in the medical corps of the U. S. Army, stationed in France; served as chief of the staff of the Hospital of the Good Samaritan and as regional representative for Johns Hopkins and Duke University School of Medicine; an Affiliate Fellow of the American Medical Association; member of the Pacific Coast Society of Obsterics and Gynecology; fellow of the American College of Surgeons; died in the Hospital of the Good Samaritan May 24, aged 71, of tuberculous meningitis.

Gerald Randolph Allaben ⊕ Rockton, Ill.; Rush Medical College, Chicago, 1913; fellow of the American College of Surgeons; served on the staff of St. Anthony's Hospital in Rockford; for many years in charge of the tumor section of the Veterans Administration Hospital, Hines, where he died April 1, aged 58, of carcinoma of the prostate with metastases.

Arleigh Ellsworth Allenbaugh ⊕ Evansville, Ind.; Indiana University School of Medicine, Indianapolis, 1920; affiliated with St. Mary's Hospital, Protestant Deaconess Hospital and Welborn Memorial Baptist Hospital, where he died April 3, aged 52.

Edmond J. Boling, Billings, Okla.; Memphis (Tenn.) Hospital Medical College, 1903; died in Enid March 29, aged 79.

Phares William Calliham ⊕ Harrisonburg, La.; University of Tennessee College of Medicine, Memphis, 1917; also a D.D.S.; served as mayor of Harrisonburg and as county coroner; member of the parish draft board during World War II; died in Shreveport April 13, aged 68, of heart disease.

James E. Campbell, Columbus, Ohio; Starling Medical College, Columbus, 1897; died March 30, aged 71, of coronary thrombosis.

Joseph Sweet Chandler, Muncie, Ind.; University of Louisville School of Medicine, 1947; served an internship at Ball Memorial Hospital, where he died April 3, aged 24.

Carl McLaughlin Clark ⊕ Oakland City, Ind.; Indiana University School of Medicine, Indianapolis, 1927; past president of the Gibson County Medical Society; died in the Mayo Clinic, Rochester, Minn., April 4, aged 48, of Hodgkin's disease.

Bernard Anthony Cody ⊕ San Francisco; Stanford University School of Medicine, San Francisco, 1925; died in St. Luke's Hospital March 24, aged 50, of injuries received in an automobile accident.

Elmer Ledley Cohenour ⊕ Tulsa, Okla.; Northwestern University Medical School, Chicago, 1907; member of the American Urological Association and past president of the South-Central branch; affiliated with Hillcrest Memorial and St. John's hospitals; died April 6, aged 63, of coronary thrombosis.

Edward Davis, Salem, W. Va.; Miami Medical College, Cincinnati, 1908; member of the American Medical Association; for many years member of the county board of education; served overseas during World War I; died April 11, aged 71, of heart disease.

Cornelia B. De Bey, Chicago; the Hahnemann Medical College and Hospital, Chicago, 1895; formerly member of the board of education; died in Grand Rapids, Mich., April 3, aged 82, of cerebral hemorrhage.

Nicholas Dobkin ⊕ Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1897; member of the Association of Military Surgeons of the United States; served during World War I; formerly on the faculty of New York Post-Graduate Medical School and Hospital, Columbia University, New York; on the courtesy staff of the Jewish Hospital, where he died April 21, aged 73, of congestive heart failure and adenoma of the colon.

James Albert Paul Duncan, Lansing, Mich.; Grand Rapids Medical College, 1906; died in Sparrow Hospital April 4, aged 68, of Hodgkin's disease.

John Francis Dunshie, Rita, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1896; died in New Orleans February 21, aged 79, of pulmonary tuberculosis and arteriosclerotic heart disease.

Gordon LeRoy Edwards, Sarasota, Fla.; College of Medical Evangelists, Los Angeles, 1945; certified by the National Board of Medical Examiners; served an internship and residency at the Orange General Hospital in Orlando; died March 29, aged 35.

Robert Lovett Emery, Winchester, Mass.; Boston University School of Medicine, 1908; died March 19, aged 68, of cerebral thrombosis.

Harold William Fay ⊕ Dilley, Texas; Washington University School of Medicine, St. Louis, 1910; died in San Antonio April 1, aged 61, of cardiorenal vascular disease with hypertension.

Charles Franklin Fisler ⊕ Clayton, N. J., Jefferson Medical College of Philadelphia, 1895; served as a member of the board of health and registrar of vital statistics in the borough; died April 12, aged 75, of coronary occlusion.

Martin Luther Flynt Sr., Meridian, Miss.; Memphis (Tenn.) Hospital Medical College, 1908; member of the American Medical Association and of the Southeastern Surgical Congress; fellow of the American College of Surgeons; served as vice president of the Mississippi State Medical Association; chief surgeon at the Riley's Hospital, where he died April 18, aged 68, of pulmonary embolus following a fractured ankle.

Harold C. Fredrickson, Buchanan, Mich.; the Hahnemann Medical College and Hospital, Chicago, 1918; affiliated with the Pawating Hospital in Niles and of St. Joseph's Hospital in South Bend, Ind.; died April 19, aged 61, of coronary thrombosis.

Luke Glenn Garrett, Austell, Ga.; Atlanta College of Physicians and Surgeons, 1902; member of the American Medical Association; past president of the Cobb County Medical Society; served as mayor; past chairman of the Cobb County Board of Commissioners of Roads and Revenue and for fifteen years a member of the board; chairman of the board of education of Austell for twenty years; past president and director of Austell Bank; surgeon of the Southern Railroad; died April 13, aged 67, of cerebral hemorrhage.

John Jacob Gasser ⊕ Loveland, Colo.; University of Illinois College of Medicine, Chicago, 1925; affiliated with the Larimer County Hospital in Fort Collins; died March 18, aged 48, of chronic nephritis, hypertension and bronchopneumonia.

Peter Francis Ghee, Jersey City, N. J.; Leonard Medical School, Raleigh, 1898; died April 6, aged 73, of carcinoma of the prostate.

Oliver Medlar Gilliland, Topeka, Kan.; University of Kansas School of Medicine, Kansas City, 1944; a medical officer in the regular navy during World War II; interned at the Naval Hospital in Pensacola, Fla.; resident physician at the Veterans Administration Hospital in Topeka; died April 26, aged 32.

Joseph Leo Gilmore ⊕ West Haven, Conn.; Yale University School of Medicine, New Haven, 1904; served as a member of the board of police commissioners and as probation officer; died in the Hospital of St. Raphael, New Haven, April 7, aged 75, of coronary occlusion.

Robert Hal Gingles, Chickasha, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1936; member of the American Medical Association; interned at the State University and Crippled Children hospitals in Oklahoma City; served during World War II; formerly director of tuberculosis control, state department of public health; an officer in the U. S. Army at the time of death; died in the Walter Reed General Hospital, Washington, D. C., March 21, aged 42, of hepatic cirrhosis, with massive gastrointestinal hemorrhage.

John F. Guthrie, Vineland, Colo.; Missouri Medical College, St. Louis, 1885; died in a hospital at Pueblo March 30, aged 89, of bronchopneumonia.

Varney Bernard Hamlin ⊕ Clinton, N. Y.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1893; served during World War I; died April 9, aged 78, of coronary occlusion.

Oscar Varnum Hefflon, Jamaica, Vt.; University of Vermont College of Medicine, Burlington, 1903; formerly member of the state legislature; served during World War I; on the staff of the Brattleboro Memorial Hospital, where he died April 21, aged 76, of pancreatitis.

Gerald Leo Higgins ⊕ Jersey City, N. J.; University of Maryland School of Medicine, Baltimore, 1915; served as a member of the city health department; on the staffs of the Bayonne (N. J.) Hospital, Greenville and Fairmount hospitals; died April 10, aged 56, of angina pectoris.

George Holmes ⊕ Gonzales, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1905; served as president of the Gonzales County Medical Society; medical examiner for Selective Service during World War I; chief surgeon at the Holmes Hospital; fellow of the American College of Surgeons; died in a hospital at San Antonio March 24, aged 66, of coronary thrombosis.

John Thomas Hopkins Hogan, Troy, N. Y.; Albany (N. Y.) Medical College, 1914; member of the American Medical Association; died March 30, aged 60, of congestive heart failure and arthritis.

Walter Alexis Hosley, Topsfield, Mass.; Harvard Medical School, Boston, 1904; member of the American Medical Association; died March 25, aged 69, of carcinoma.

Harry W. Housley ⊕ Mendota, Wis.; Milwaukee Medical College, 1912; at one time practiced in Neillsville, where he was county coroner; on the staff of the Mendota State Hospital, where he died April 2, aged 62, of coronary occlusion.

Harry Gass Humphreys ⊕ Lieutenant Colonel, U. S. Army, retired, Overbrook Hills, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1899; Army Medical School, 1905; entered the U. S. Army in 1904 and retired Feb. 4, 1920 for disability in line of duty; died March 7, aged 73.

Rollin Jefferson ⊕ Tampa, Fla.; University of Maryland School of Medicine, Baltimore, 1903; died March 4, aged 69.

Otto Earle Johnson, Paintsville, Ky.; University of Louisville Medical Department, 1904; for many years county coroner; served during World War I; died March 27, aged 65, of heart disease.

Stanley Frederick Johnson, Chicago; Northwestern University Medical School, Chicago, 1925; member of the American Medical Association; on the staff of the Ravenswood Hospital; died in the Passavant Memorial Hospital April 21, aged 50, of cerebral accident.

William Hoye Kunst, Fairmont, W. Va.; Starling Medical College, Columbus, 1891; formerly secretary of the government board of pension examiners; died March 29, aged 82, of cerebral hemorrhage.

Tiffany Lawyer ⊕ Albany, N. Y.; Albany Medical College, 1907; on the staff of the Albany Hospital; died April 12, aged 64, of coronary thrombosis.

Otto Lerch ⊕ New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1894; formerly on the faculty of New Orleans Polyclinic; affiliated with Charity Hospital; author of a book on rational therapy; died April 4, aged 93, of myocarditis.

George Alden Lewis ⊕ Roundup, Mont.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1905; member of the American Academy of Ophthalmology and Otolaryngology; past president of the Montana Academy of Oto-Ophthalmology; past president and secretary of the Musselshell County Medical Society; served during World War I; later colonel in the medical reserve corps; died April 15, aged 68, of coronary thrombosis.

Robert Ernest Lewis, Arcadia, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891; died March 28, aged 78.

Walter E. Looney, Chattanooga, Tenn.; Meharry Medical College, Nashville, Tenn., 1912; member of the staff of the Carver Memorial Hospital; died March 31, aged 57, of heart disease.

James Maxwell Loving ⊕ Austin, Texas; University of Texas School of Medicine, Galveston, 1903; formerly city and county health officer; served during World War I; from 1921 to 1928 surgeon in the U. S. Veterans Bureau; died April 16, aged 68, of coronary thrombosis.

Leslie Clyde Lyon, Runnemede, N. J.; Medico-Chirurgical College of Philadelphia, 1898; died in Camden County Hospital, Blackwood, March 30, aged 74, of arteriosclerosis.

Frank Kane Lyon, Parsons, W. Va.; Western Pennsylvania Medical College, Pittsburgh, 1903; served as county health officer; on the staff of Tucker County Hospital, where he died April 9, aged 71, of coronary disease.

William Case Manchester ⊕ Alliance, Ohio; Western Reserve University Medical Department, Cleveland, 1898; affiliated with the Alliance City Hospital; died April 8, aged 75, of heart disease.

Liva Charles McLain ⊕ Bakersfield, Calif.; Rush Medical College, Chicago, 1915; served during World War I; affiliated with the Mercy Hospital; died April 18, aged 62, of heart disease.

Porter J. Mitchell, Rocheport, Mo.; Missouri Medical College, St. Louis, 1880; died April 21, aged 88, of bronchopneumonia.

Hjalmar Erwin Mortensbak, Great Falls, Mont.; University of Minnesota Medical School, Minneapolis, 1936; member of the American Medical Association; formerly connected with the Nicollet Clinic in Minneapolis, where he served an internship and residency at the Minneapolis General Hospital; died April 10, aged 37, of carcinoma of the small intestine.

Donald A. Nicholson ⊕ Seattle; University of Minnesota College of Medicine and Surgery, Minneapolis, 1897; past president of the Washington State Medical Association, King County Medical Society and the Washington Society for Mental Hygiene; served with the U. S. Public Health Service; died April 10, aged 73, of myocardial failure.

Hugh Gideon Nicholson, Pacific Beach, Calif.; born in Oakville, N. C., Aug. 29, 1871; University College of Medicine, Richmond, 1897; at one time a pharmacist; fellow of the American College of Surgeons; served as treasurer of the West Virginia State Medical Association for many years; at one time superintendent and surgeon in charge of the Sheltering Arms Hospital at Hansford, W. Va.; served during World War I; for many years served with the U. S. Public Health Service; died April 12, aged 76, of angina pectoris.

William Archibald Norval, Paterson, N. J.; Baltimore Medical College, 1897; member of the American Medical Association; died March 26, aged 72, of myocarditis.

Elmer J. Nodurfth ⊕ Wichita, Kan.; University of Kansas School of Medicine, Kansas City, 1919; affiliated with St. Francis Hospital; division surgeon for the Missouri Pacific lines; died April 2, aged 56, of heart disease and nephritis.

Raymond Thomas O'Neill, Minot, N. D.; Creighton University School of Medicine, Omaha, 1928; member of the American Medical Association; died March 9, aged 46.

Patrick Ira O'Rourke, Providence, R. I.; Baltimore Medical College, 1909; member of the American Medical Association; on the examining board of the Rhode Island Employees' Retirement System; a consulting physician in psychiatry to Seton Institute in Baltimore and on the staffs of the Roger Williams General Hospital, Providence, and Pratt Diagnostic Hospital in Boston; affiliated with St. Joseph's Hospital, where he died April 3, aged 67, of anemia.

Rudolph Daniel Orth ⊕ Flushing, N. Y.; Cornell University Medical College, New York, 1909; for many years police surgeon; affiliated with the Community and St. Elizabeth's hospitals in New York; formerly on the staffs of the New York Skin and Cancer Hospital in New York and consultant at the Benedictine Hospital in Kingston; died March 27, aged 60, of heart disease.

Lloyd Hoyt Patterson, San Fernando, Calif.; University of Southern California School of Medicine, Los Angeles, 1938; member of the American Medical Association; in charge of rehabilitation at San Fernando Veterans Administration Hospital; died in St. Vincent's Hospital, Los Angeles, April 5, aged 38, of pheochromocytoma of left adrenal and postoperative shock.

Frank Loren Phillips, Chippewa Falls, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1911; died in St. Joseph's Hospital April 13, aged 65, of cerebral hemorrhage.

Charles Hoover Phillips, Thomasville, N. C.; Baltimore University School of Medicine, 1892; member of the American Medical Association; for many years member of the county board of education, chairman of the county welfare board and one of the founders and for many years director of the First National Bank; affiliated with the City Memorial Hospital; died April 9, aged 77, of uremia.

Ralph Edgar Potter, West Point, Ill.; Bennett Medical College, Chicago, 1913; died April 5, aged 65.

Harry Lockwood Prescott ⊕ Kennebunk Port, Maine; Medical School of Maine, Portland, 1897; past president of the York County Medical Society; died in the Maine General Hospital, Portland, April 13, aged 75, of internal hemorrhage.

Andrew Walter Prout, Columbus, Ohio; Starling-Ohio Medical College, Columbus, 1909; formerly on the faculty of his alma mater; member of the American Medical Association and of the American Laryngological Association; died in Mount Carmel Hospital April 14, aged 63, of coronary thrombosis.

Frank Wendell Putnam, Acton, Mass.; Harvard Medical School, Boston, 1901; formerly on the staff of the Newton-Wellesley Hospital in Newton; died April 13, aged 73, of rheumatic heart disease and bronchopneumonia.

Gerrit Walter Raidt, Cincinnati; University of Cincinnati College of Medicine, 1931; Norwood School physician; served on the staffs of the Bethesda, Children's and Catherine Booth hospitals; died March 18, aged 42, of pulmonary tuberculosis.

Eugene Giles Ribby ⊕ Batavia, N. Y.; State University of Iowa College of Medicine, Iowa City, 1926; past president of the Genesee County Medical Society; affiliated with Genesee Memorial Hospital and St. Jerome's Hospital, where he died April 22, aged 48, of coronary sclerosis.

Edward John Christian Sander, Steubenville, Ohio; Starling Medical College, Columbus, 1902; at one time mayor of the city and served also on the city council; affiliated with the Ohio Valley Hospital; died March 28, aged 76, of heart disease.

Philip Ephraim Schultz, Boston; Creighton University School of Medicine, Omaha, 1933; specialist certified by the American Board of Anesthesiology, Inc.; member of the American Medical Association and of the American Society of Anesthesiologists; served during World War II; died April 3, aged 37.

Raymond Jesse Seymour, Columbus, Ohio; Ohio Medical University, Columbus, 1904; for many years professor of physiology at the Ohio State College of Medicine; died April 8, aged 69, of corpulmonale and pulmonary fibrosis.

Grace W. Sherwood, St. Albans, Vt.; Woman's Medical College of Pennsylvania, Philadelphia, 1904; member of the American Medical Association; owner of the Sherwood Sanitarium; died April 11, aged 69, of carcinoma of the uterus.

Homer Isaac Silvers ⊕ Ventnor, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1903; specialist certified by the American Board of Surgery; member and past president of the American Proctologic Society; fellow of the American College of Surgeons; president of the board of health; on the staff of Atlantic City (N. J.) Hospital; died April 7, aged 67, of coronary occlusion.

Richard Gordon Simmons, Roanoke, Va.; Jefferson Medical College of Philadelphia, 1889; veteran of the Spanish-American War; for many years city coroner; died April 6, aged 83, of uremia.

Sumner Clelland Simpson, Pittsburgh; University of Pennsylvania School of Medicine, Philadelphia, 1912; member of the American Medical Association; served in the British and American armies during World War I; died in the Western Pennsylvania Hospital April 19, aged 58.

Mary Gertrude Slaughter, Chicago; University of Illinois College of Medicine, Chicago, 1920; dispensary physician at the City of Chicago Municipal Tuberculosis Sanitarium; died April 20, aged 68, of acute coronary occlusion and chronic myocarditis.

James Melvin Smith ⊕ Philadelphia; Jefferson Medical College of Philadelphia, 1907; medical director of the Presbyterian Ministers Fund; died in the Presbyterian Hospital April 19, aged 70, of hypertensive cardiovascular disease.

John James Thomas ⊕ Cleveland; born in Cleveland Nov. 18, 1868; Western Reserve University Medical Department, Cleveland, 1893; associate clinical professor of obstetrics emeritus at his alma mater; past president of the Cleveland Academy of Medicine, which in 1941 presented him with its first distinguished service medal; from 1920 to 1940 president of the Cleveland Milk Commission; formerly member of the board of health; affiliated with St. Ann's, Women's and Maternity hospitals; died in Lakeside Hospital April 15, aged 79, of carcinoma.

John Henry Thomas ⊕ Gainesville, Fla.; Jefferson Medical College of Philadelphia, 1935; interned at the James M. Jackson Memorial Hospital in Miami, where he served a residency and where he died April 9, aged 39, of acute pancreatitis.

George Jackson Tobias, Detroit; College of Physicians and Surgeons of Chicago, 1885; in 1895 received a bachelor of laws degree from the Kent College of Law in Chicago, where he served on the faculty; died April 3, aged 88, of chronic myocarditis.

Hugh Simpson Tullos, San Antonio, Texas; Vanderbilt University School of Medicine, Nashville, 1921; served during World War I; member of the American Medical Association; died March 15, aged 49, of coronary occlusion.

William Jarvie Turner, Montclair, N. J.; Long Island College Hospital, Brooklyn, 1886; also a dentist; died April 8, aged 84.

Alfred Theodore Vogler ⊕ St. Louis; St. Louis University School of Medicine, 1904; served as examining physician during World Wars I and II; on the staffs of Deaconess Hospital, Christian Hospital and Missouri Baptist Hospital, where he died April 1, aged 66, of bilateral bronchopneumonia and coronary occlusion.

Charles Henry Voorheis ⊕ Hutsonville, Ill.; Rush Medical College, Chicago, 1893; died in the Brooks Hospital, Robinson, April 16, aged 83, of arteriosclerosis.

Robert More Wallace, Algona, Iowa; Bennett College of Eclectic Medicine and Surgery, Chicago, 1906; member of the American Medical Association; served during World War I; died in a hospital at Rochester, Minn., April 15, aged 70.

Charles Abraham Wallenstein, Newark, N. J.; Columbia University College of Physicians and Surgeons, New York, 1907; associated with the Beth Israel Hospital; died in the East Orange (N. J.) Hospital April 4, aged 62, of acute hemorrhagic pancreatitis.

Frederick Chauncey Warring Sr. ⊕ Baltimore; University of Maryland School of Medicine, Baltimore, 1908; associated with the Western Maryland Railway Company; died March 4, aged 63.

Charles Albert Watkins, West Point, Miss.; Memphis (Tenn.) Hospital Medical College, 1906; died in the Flowers Hospital April 19, aged 68, of carcinoma.

John Anthony Weierbach ⊕ Quakertown, Pa.; Medico-Chirurgical College of Philadelphia, 1910; past president of the Bucks County Medical Society; fellow of the American College of Surgeons; director of the Merchants National Bank; on the staffs of the Quakertown Community Hospital in Quakertown and the Grandview Hospital in Sellersville, where he died April 17, aged 65, of coronary thrombosis.

Wilbur George Weiss, Cleveland; Ohio State University College of Homeopathic Medicine, Columbus, 1916; died April 6, aged 57, of coronary sclerosis and cholelithiasis.

Kensey Scott West, Cleveland; Ohio Medical University, Columbus, 1903; formerly probate court psychiatrist; for many years medical director for the Brotherhood of Railroad Trainmen; served on the staffs of Cleveland City and St. John's hospitals; died April 23, aged 74, of duodenal ulcer.

Clement Skolfield Wilson ⊕ Brunswick, Me.; Yale University School of Medicine, New Haven, 1931; interned at the Mountainside Hospital in Montclair, N. J.; founder of Dr. Wilson's Private Hospital; died in the Maine General Hospital, Portland, April 27, aged 42, of cerebral hemorrhage.

Alfred Maximilian Wise ⊕ Brooklyn; University and Bellevue Hospital Medical College, New York, 1909; specialist certified by the American Board of Pediatrics, Inc.; member of the American Academy of Pediatrics; for many years affiliated with the Brooklyn Jewish Hospital; died April 3, aged 65, of coronary thrombosis.

James Benjamin Woodruff ⊕ Rochester, N. Y.; Syracuse University College of Medicine, 1905; on the staff of the Park Avenue Hospital, where he died April 11, aged 67, of acute coronary infarction.

Ralph A. Woods ⊕ Los Angeles; University of Illinois College of Medicine, Chicago, 1920; served on the staff of the California Lutheran Hospital; died in Mexico City, Mexico, April 29, aged 56, of coronary thrombosis.

Curtis M. Wray, La Fayette, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; member of the American Medical Association; served during World War I; on the staffs of St. Elizabeth Hospital and La Fayette Home Hospital; died March 17, aged 71, of coronary occlusion.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 3, 1948.

The National Health Service

There has come into force in Britain the greatest revolution in the practice of medicine that has ever occurred in the world. Some regard the change as establishing a medical millenium; others, including the majority of physicians, the descent into an abyss. Medicine, like all the activities which have made England great, has for centuries progressed on an individualistic system; now it is placed on a socialistic one, though it will still be possible for those willing and able to pay for what is offered free to do so. Like those who take advantage of the scheme they will be taxed for its maintenance. They are already suffering from the crushing taxation of the war, which has been prolonged and indeed seems likely to be permanent, for the financing of the other forms of socialism due to the labor government.

On the eve of the service the Minister of Health, Mr. Bevan, has published in the medical press a message to the medical profession. He begins by saying that there have been anxieties inevitable in so great and novel an undertaking. There will not be overnight any miraculous removal of our serious shortages of nurses and others and of modern replanned buildings and equipment. On July 5 the doctor-patient relation will be freed from what should be irrelevant to it, the money factor, the collection of fees, an aspect of practice already distasteful to many practitioners. But this will not carry with it either any discouragement of scientific freedom or any unfair worsening of a doctor's livelihood. Mr. Bevan pleads for a truly national effort and for no differentiation between those who use the new arrangements and those who, for any reason of their own, do not. In a broadcast the Prime Minister, Mr. Atlee, claimed that the most comprehensive system of social security ever introduced into any country was about to start. However, he admitted the need for a high standard of production if the money paid out under the system was to maintain a high value. Of the retiring pension he said that the country needs all the help that it could get from old persons still able to work after reaching the pensionable age. By doing so they would qualify for a higher pension. The prime minister also pleaded for caution—not to expect too much at first, as we were suffering from shortages of staff and material due to the war.

Dentists Will Not Take Part in the National Health Service

The representative board of the British Dental Association has decided by an overwhelming majority not to take part in the National Health Service. The members are profoundly dissatisfied at the complete refusal of the Minister of Health to grant any of the association's basic principles in connection with the Health Service, at the hurried and incomplete way in which the remuneration negotiations were carried out and the lack of security in the present position by which a whole-salaried service can be introduced by regulation alone. A letter is to be sent to the members of the association pointing out that although the Acts have been passed, the National Health Service cannot be successful without the willing cooperation of the profession. The council of the association is satisfied that the majority of members will not willingly go into the service. The association represents 8,000 of Britain's 12,000 dentists. But there are two smaller dental societies, which decline to advise their members not to enter the service.

Cooperation of the Clergy With Doctors in the Healing of the Sick

The Council of the British Medical Association has issued a report advocating fuller cooperation between doctors and the clergy in the healing of the sick. Having discussed the subject with representatives of the Churches' Council of Healing, the British Medical Association report states that there is no ethical reason to prevent such cooperation in all cases, and especially in those cases in which the doctor thinks that religious ministrations will conduce to health and peace of mind or lead to recovery. Central liaison has been established by the appointment of representatives of the British Medical Association to attend meetings of the Churches' Council and to serve, ex officio, on its medical advisory committee. "Medicine and the church working together," states the report, "should encourage a dynamic philosophy of health which would enable every citizen to find a way of life based on moral principle and on a sound knowledge of the factors which promote health and well-being. *Health is more than a physical problem, and the patient's* attitude both to illness and to other problems is an important factor in his recovery and adjustment to life. Negative forces such as fear, resentment, jealousy, indulgence and carelessness play no small part in the level of both personal and national health." The report also recommends that the press should be prohibited from reporting the proceedings at an inquest on a person who has committed suicide, except for the name and address of the deceased and a verdict that he died by his own hand.

Russians Refuse Foreign Medical Journals

One of the results of the war was the isolation of European countries from one another which prevented the usual exchange of scientific and medical advances and, indeed, stopped all research over the greater part of the continent during the German occupation. On the other hand, work in Britain went on because she was never occupied. Hence European physicians are pathetically eager to obtain British and American books and journals. But Russia apparently is an exception. The *British Medical Journal* states that to help the diffusion of information the British Embassy in Moscow has been presenting the Central Library with certain medical journals, including the *British Medical Journal.* But recently the Ministry of Foreign Affairs informed the Embassy that the Directorate of the Central Library subscribed to British medical journals and was not interested in receiving additional copies. The receipt of these journals was stated to contravene the decree of the Presidium of the Supreme Soviet of the U.S.S.R. on the procedure to be adopted in relations with foreign states. As with the Lenin Library, the State Central Medical Library in Moscow can now be approached by foreigners only through the Ministry of Foreign Affairs. The *British Medical Journal* describes the ban as completely senseless and another attempt to keep Russian physicians in ignorance of the achievements of a decadent bourgeoisie.

Exhibition of Pediatric Surgery

In connection with a course of postgraduate lectures given at the Royal College of Surgeons on the surgery of childhood a pathologic exhibition has been arranged at the principal hospital for children in this country, the Hospital for Sick Children, Great Ormond St., London. The object is to illustrate by means of specimens, charts, photographs and color transparencies the themes of the lectures. The hospital has an unusual collection of pathologic specimens of congenital abnormalities and diseases of infancy and childhood. Thus, to illustrate Mr. MacNab's lecture on the surgery of the newborn specimens are displayed of Arnold-Chiari malformations of the cerebellum and of hydrocephalus. Another remarkable specimen in this section is of celosomus in a premature infant born in the twenty-eighth week of pregnancy and surviving for one hour. The fissure shown in the specimen extends from the manubrium sterni almost to the umbilicus. Other rare conditions shown are nonrotation of the duodenum in a child of five years, aberrant renal vessels (to illustrate Mr. Twistington Higgins' lecture on the surgery of the upper part of the urinary tract), Wilm's embryoma of the kidney extending into the inferior vena cava. Types of cerebellar tumors in childhood and their relation to the probability of survival after operation are illustrated by a chart. The roentgen appearances of Hirschsprung's disease are shown in connection with a lecture by Mr. Harold Edwards. There are exhibits of historical interest which include a volume of clinical notes by Sir Thomas Barlow and a plaster cast of Cheadle's specimen of a child with advanced rickets.

The Frequency of Premature Babies

In opening a premature babies unit at Manchester, Dr. Alan Moncrieff, professor of child health in the University of London, gave some important statistics of prematurity. At present the number of premature babies who die annually is nearly four times that of children under 15 killed on the roads. Between 5 and 6 per cent of all babies are premature, according to the international standard (below 5½ pounds [2,495 Gm.] at birth) and nearly half of these die in the first twenty-four hours. Of all babies who die in the first four weeks of life nearly half die because they are premature. Some persons asked whether it was worth keeping premature babies alive, but nobody who worked with children had any doubt. The vast majority, even those who started life at 2½ pounds (1,134 Gm.) could grow up into normal citizens. As examples he cited Voltaire, Newton and Winston Churchill. Among 1,000 premature children only 1 or 2 could be found who did not come up to excellent standard later.

The Increasing Senility of the British Population

The organization known as P. E. P. (Political and Economic Planning) has published an important report on the population of Britain. It is anticipated that in the second half of the present century the population in most of the white nations outside the "iron curtain" in Europe, the British Dominions and North America will become stationary. In the Soviet Union and its associated nations and in South America it is expected that population will grow, though tending toward a stationary position. It is held that stationary numbers in Europe afford an opportunity of greatly improving standards of living. In Britain there is no prospect of or need for a population increase. Indeed there is a prospect of a slow decline. But the thing which causes concern is the increasing senility of our population—the steady increase of the elderly and the depletion of the younger and most adaptable working age groups. A factor in the latter is emigration, at present moderate, to the Britsh Dominions. This is counteracted to some extent by immigration of young persons from Europe. But the danger of demographic senility cannot be averted without a somewhat higher birth rate between the wars.

To encourage larger families P. E. P. has a comprehensive program for mitigating the financial and social penalties to which modern life subjects parents. It holds that there should not be inducements or pressure on women to combine employment and motherhood or to choose between the two. The community should assume a larger share of the cost of child rearing which falls on parents.

The First International Students' Clinical Congress

Under the presidency of Professor J. A. Ryle the British Medical Students' Association will hold an International Congress of Clinical Medicine from July 6 to 23 successively at London, Birmingham and Oxford. About two hundred delegates from more than thirty countries are expected. The congress will consist of ward teaching, lectures, demonstrations, medical films and visits to research laboratories. There will also be visits to theaters and other places of interest.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, July 5, 1948.

Potassium and Bacterial Infections

Dr. F. Rocha Lagoa, of the Oswaldo Cruz Institute, Rio de Janeiro, published, in 1945 and 1946, two papers reporting the results of studies on the defensive role of the corticoadrenal gland in infections and on the variation of cellular permeability in immunity. He concluded that the protective function of the cortin hormone is due to its regulating the cellular permeability. Trying to advance this knowledge, he became interested in body potassium. Ability to maintain a great difference between intracellular and extracellular potassium concentration is one characteristic of living cells. If the loss of potassium to the extracellular fluids is too great, as occurs when cellular elements of the tissues are injured, the liberated potassium may cause extensive trouble, as happens in corticoadrenal insufficiency, anaphylactic shock and shock caused by hemorrhage or trauma. In these conditions symptoms similar to those of potassium poisoning are present, so much so that some authors, such as Zwemer and Truszkowsky, consider high blood potassium level as the basal factor in the syndrome of corticoadrenal insufficiency. The increase in blood potassium is followed by the decrease of sodium concentration in the body fluids. The clinical significance of these biochemical data for the diagnosis of corticoadrenal insufficiency and for the control of its treatment was demonstrated in Brazil by the work of Annes Dias and Peregrino.

This knowledge led Dr. Lagoa to infect rabbits with Klebsiella pneumoniae, Pseudomonas aeruginosa and Salmonella enteritidis. He found that during the infection the potassium content of the plasma increases almost immediately after the inoculation and stays high, when the infection is of a serious character, the concentration increasing progressively (25, 50 and even 100 per cent) until the death of the animal. When the infection is mild, the potassium level increases during the septicemic stage (about 50 per cent), but decreases as the animal overcomes the infection, gradually returning to normal. The action of the corticoadrenal hormone was tested by the use of a commercial product. In rabbits inoculated with 300,000,000 K. pneumoniae, a dose that surely would cause death within twenty-four hours, cortin injected intramuscularly or intravenously, one, five and seven hours after the inoculation, was not effective in preventing the continuous increase of the potassium level and a fatal outcome. However, cortin injected several times prevented a high level of potassium in the plasma during the development of an infection produced by injection of 150,000,000 bacteria, an amount that under normal conditions always causes death. But when cortin was discontinued twenty hours after the injection of the germs the infection increased rapidly and the animal died in a short time, with a high level of blood potassium. If cortin is given every hour until the twenty-sixth, instead of only until the twentieth hour, the potassium level in the plasma—extremely high when the hormone is no longer injected—gradually becomes lower and finally returns to normal, and the animal is cured of the infection.

Dr. Lagoa concluded that the determination of the potassium level in the plasma provides a means of ascertaining the resistance of the organism suffering from a bacterial infection, this level increasing when the infection is developing and becoming severer, or getting back to normal if the infection is being overcome. The testing of the potassium level reveals also the action of cortin on the tissues, which is found to control the permeability of the cells to potassium. He further suggests the investigation of the potassium level of the plasma in cases of virus diseases, particularly in influenza, in which the syndrome of corticoadrenal insufficiency is so frequently present.

Bureau of Investigation

SENATOR LANGER ABUSES FRANKING PRIVILEGE BY CIRCULATION OF PROPAGANDA FOR KOCH'S CANCER QUACKERY

In the *Congressional Record* for June 7, 1948, by unanimous consent, appeared an article which had appeared in a so-called Lutheran magazine known as *The Eleventh Hour.* The article bears the title "The Koch Treatment" and begins as follows:

> Fortunately for Canadian farmers in the Province of British Columbia, the Minister of the Department of Agriculture possessed an open mind . . .
>
> Such ailments as Bang's disease, Johne's disease, and other fatal diseases that customarily make devastating demands upon dairy herds, are no longer fatal in British Columbia. Thanks to the integrity and foresight of Canadian physicians, veterinarians, and Government experts who recently completed a series of successful experiments with the Koch system for treating virulent diseases.

A reprint of the extension of remarks of the Honorable William Langer of North Dakota appeared in a leaflet which bore a notation across the top: "(Not printed at Government expense)." The manila envelope in which this leaflet was distributed in the United States mails to an unknown number of Doctors of Medicine bears a notation that it was manufactured in the U. S. Government Printing Office, and the envelope and its contents were sent through the United States mails without the payment of postage. This is not the first time that the taxpayers of the United States have been called on to undergo an expense on behalf of Dr. William F. Koch of Detroit. A criminal prosecution in the federal court at Detroit involved two trials, neither of which, unfortunately, ended decisively. The first trial occurred in 1943, beginning on January 12 of that year and ending on May 28 with a hung jury. A second trial, with the same set of facts, charging the same violation of law, started Feb. 19, 1946. It ended, because of the illness of a juror, on July 24 of that year.

The "open-mindedness" of the Department of Agriculture of the Canadian province mentioned is part of the record of the 1946 trial. Such open mindedness consisted, apparently, of accepting a so-called scientific experiment conducted by a salesman for the Koch Laboratories in Canada, a veterinarian in the employ of that laboratory and a veterinarian in the employ of the Province of British Columbia, who happened, also, to be secretary of the Veterinary Association of that province. The testimony brought forth that "glyoxylide," one of the names Koch uses for his alleged cancer "cure," was administered to a number of selected cows, which showed excellent results in the reduction of fibrosis, even to the extent of the complete disappearance of fibrosis in some of the cows afflicted with mastitis. The report was then submitted to a committee who admittedly had never seen any of the cows, and that committee, acting on the information received from the three persons mentioned, issued a report on the effectiveness of the treatment. The testimony of the three "scientists"—the salesman in the employ of the Koch Laboratories and the claimed disinterested veterinarians—was followed by a member of the committee. He was a professor in veterinary science at the University of British Columbia. He admitted on cross examination that the laboratory findings in mastitis, the only disease condition in which a pretense of laboratory check was made, did not show improvement of the cows beyond the material course of the disease. He testified that the laboratory findings were discarded and clinical findings only were considered. He further admitted, with respect to complete disappearance of fibrosis, that he and other members of the committee had accepted the report of the three "investigators." He also, but rather reluctantly, admitted that if he had been misinformed of the results obtained, his conclusions and opinions expressed would also be wrong.

Would it be too embarrassing to Senator Langer, who has lent his name to this piece of pseudoscientific nonsense, if he could now incorporate in the *Congressional Record* a recital of the facts brought out in a clinical experiment conducted at Ottawa, Canada, under the observation of Dr. R. E. Valin of Ottawa and other qualified medical observers appointed by the Canadian Cancer Commission? Testimony in the trial indicated that the Canadian Cancer Commission filed a report that they had been unsuccessful in their efforts to obtain samples of Koch's glyoxylide for laboratory work but that they did receive some of the material for clinical use. Nine patients with positive results in biopsies for cancer were treated with the drug by Dr. Arnott, Koch's Canadian representative. All 9 patients were dead within a period normally expected for such cases, and in no instance was there any improvement or relief from pain. The report of the commission, which is dated Feb. 7, 1943, concluded with this statement: "A careful review of all of the evidence presented at this date fails utterly, in the opinion of the commission, to support the claim made on behalf of the Koch treatment that it is either a remedy or a cure for cancer."

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Drugs: Downing Solution as Drug or Medicine.—The plaintiffs filed an action to restrain the defendants, California State Board of Pharmacy and others, from molesting or interfering with the plaintiffs in the production and marketing of a preparation known as Downing solution. From the granting of a preliminary injunction, the defendants appealed to the district court of appeal, first district, division 2, California.

The State Board of Public Health caused the arrest of the plaintiffs on a charge of conspiracy to violate the health and safety code, which prohibits "the manufacture, production, preparation, compounding, packing, selling, offering for sale, advertising or keeping for sale within the state of California . . . of any drug or device which is adulterated, mislabeled or misbranded. . . ." The plaintiffs accordingly filed suit for an injunction to restrain the defendants from proceeding with the criminal action, their major contentions being (1) that the Downing solution was not a drug and (2) that it was not adulterated or misbranded.

The term "drug," said the court, includes all medicines for internal or external use. ". . . articles intended for use in the diagnosis, cure, mitigation, treatment or prevention of disease in man or other animals; (3) articles (other than food) intended to affect the structure or any function of the body of man or other animals" are within the scope of the term "drug" (Health and Safety Code, sec. 26200). The use of a substance, therefore, determines its classification and, if it is used for medicinal purposes, it is a drug. In determining the purpose of the manufacture, sale or giving away of Downing solution, the court continued, the evidence introduced must be considered. The complaint alleges that the preparation relieves pain and discomfort in "certain diseases." Affidavits on file set forth that the solution cured "prostate gland" trouble; that a patient took the solution internally for cancer and "had less and less pain"; that a patient was cured of dysentery; that a cancer patient is taking 75 drops a day and has improved in health, whereas another person suffering from cancer has improved with 7 drops three times a day. Several physicians appeared as witnesses, one who had administered the drug internally or externally to patients. Counsel for plaintiffs admit that the solution is in effect a "substitute for narcotics." In spite of the claim that the solution is not a drug, concluded the court, the evidence preponderates that it is used for medicinal purposes.

The plaintiffs also contended that the solution was not misbranded. Section 26244 of the Health and Safety Code provides: "A drug or device shall be deemed to be misbranded unless its labeling bears (1) adequate directions for use; and (2) such adequate warnings against use in those pathological conditions or by children where its use may be dangerous to health, or against unsafe dosage or methods or duration of administration or application, in such manner and form, as are necessary for the protection of users." According to the plaintiffs' evidence the solution has been manufactured, sold or given away and subsequently used for twenty years. However, its only label was "Downing solution." Furthermore there was no showing that the plaintiffs had complied with the legal prerequisites applicable to the selling or giving away of a "new drug." The appellate court accordingly concluded that Downing solution was a drug and that it was misbranded as marketed by the plaintiffs. It therefore reversed the order appealed from and discharged the preliminary injunction. *Downing v. California State Board of Pharmacy, 192 P. (2d) 39 (Calif., 1948)*

Charitable Hospitals: Effect of Indemnity Insurance on Liability for Negligence.—The plaintiff sued for damage for injuries sustained through the alleged negligence of the defendant, an eleemosynary corporation. From a judgment for the defendant, the plaintiff appealed to the Appellate Court of Illinois, first district, second division.

The plaintiff, a boy 5 years of age, was severely injured as the result of a fall from the unguarded roof of a wooden ticket office used as a part of the St. Philip Stadium, which was owned and operated by the defendant, Servite Fathers, an Illinois corporation, organized for religious, educational and charitable purposes. In answer to the complaint, the defendant averred that the stadium and other buildings on the premises did not constitute an attractive nuisance, denied the charges of negligence and contended that because of its eleemosynary character it was not liable to the plaintiff. By way of replication, the plaintiff admitted that the Servite Fathers was a charitable institution but argued that it was nevertheless liable because it had purchased a comprehensive general liability insurance policy wherein the insurer agreed to pay all sums which the defendant should become obligated to pay by reason of liability imposed on it for damages caused by accidents on or about the defendant's premises. Attached to this insurance policy was a special rider providing that the insurer would not use the defense of immunity of the defendant unless requested so to do. The plaintiff insisted that the provisions of this policy created a fund, separate and apart from the trust fund of the eleemosynary institution, to be used as compensation to any person who might be injured by reason of defendant's negligence in the maintenance and operation of its stadium.

The question presented, said the appellate court, is whether immunity should be granted to a charitable corporation which has protected its trust funds by carrying insurance indemnifying it against negligent injuries to others.

The appellate court pointed out that the liability of a charitable institution to respond in damages for the negligence of its servants and employees has been many times before the courts and said that such institutions have claimed exemption not only on the trust fund theory but also on the nonapplicability of the rule of respondeat superior, the waiver theory and the theory of public policy. The reason for immunity given under the trust fund theory is that the trust fund might be wholly destroyed and diverted from the purpose for which it was given, thwarting the donor's intent, as the result of negligence for which he was in nowise responsible. The theory that the doctrine of respondeat superior is not applicable to charitable institutions is founded on the argument that the rule has application only when the master derives some profit or advantage to himself from what his servant does, and since a charitable institution makes no profit from the endeavors of its servants the rule has no application to it, and therefore it is not responsible for their negligent acts. Courts adopting the waiver theory argue that one who becomes a beneficiary of the charity does so on the implied assent or condition that the trust property is not available to him for compensation in the event of his injury through the negligence of the trustees or their servants. Concerning the public policy, those supporting the theory say that it is better for the community and public in general that the individual suffer and bear his loss rather than that the offending charitable institutions should suffer in damages and so impair, theoretically at least, its ability to offer its charity on as wide a scale as possible.

Continuing, the appellate court pointed out that Illinois is listed among the states which grant unqualified immunity to charitable institutions. In the case at bar, however, the Servite Fathers wished to protect those who might be injured through their negligence by taking out a liability insurance policy which expressly stipulated that the insurer should not interpose the defense of immunity unless requested by the insured to do so. There is nothing in the record to indicate that the defendant made any such request. The immunity doctrine, continued the court, was devised for the benefit of the charitable corporation, and if the corporation wishes to waive immunity we know of no principle in law to prevent it from doing so. To hold that the exemption from liability is "absolute" and that a hospital or charitable institution may not protect its beneficiaries as well as itself by insurance because it creates a new liability where none existed is to extend the immunity doctrine beyond the cases previously decided in this state. If such an absolute immunity rule were to prevail it would seem a sheer waste of money for a charitable corporation to purchase insurance protection. We hold, the appellate court concluded, that where insurance exists and provides a fund from which tort liability may be collected so as not to impair the trust fund, the defense of immunity is not available. Accordingly the judgment in favor of the defendant was reversed and the cause was remanded for a new trial.—*Wendt v. Servite Fathers, 76 N. E. (2d) 342 (Ill. 1947).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARD OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in The Journal, July 31, page 1243.

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners: *Parts I & II.* Various centers, Sept. 13-15. Final date for filing application is Aug. 13. Exec. Sec., Mr. Everett S. Elwood, 225 South 15th St., Philadelphia 2. *Part III.* Boston and New York, Autumn. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: *Written.* Various Centers, Jan. 21, 1949. Final date for filing application is Oct. 1. *Oral,* Philadelphia, Oct. 10, Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

American Board of Dermatology & Syphilology: *Written.* Ann Arbor, Sept. 9. Sec., Dr. G. M. Lewis, 66 E. 66th St., New York 21.

American Board of Internal Medicine: *Written.* Oct. 18. Asst. Sec., Dr. W. A. Werrell, 1 W. Main St., Madison 3, Wis.

American Board of Neurological Surgery: *Oral.* Chicago, June 1949. Final date for filing application is Jan. 1949. Sec., Dr. W. J. German, 310 Cedar Street, New Haven, Conn.

American Board of Obstetrics and Gynecology: *Part I.* Various Centers, Feb. 4, 1949. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 1.

American Board of Ophthalmology: *Oral.* Chicago, Oct. 6. *Written.* Various Centers, January 1949. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

American Board of Orthopedic Surgery: *Part II.* Chicago, January 1949. Final date for filing application is August 15. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

American Board of Otolaryngology: *Oral.* Chicago, Oct. 5-8. New York City, Spring, 1949. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

American Board of Pathology: Chicago, Oct. 8-9. Final date for filing application is Oct. 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

American Board of Pediatrics: Seattle, Sept. 10-12. Atlantic City, Nov. 17-19. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines, Iowa.

American Board of Plastic Surgery: Examinations are given in June and November of each year in the hometown of applicants. Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

American Board of Radiology: Nov. Final date for filing application is Sept. 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W. Rochester, Minn.

American Board of Surgery: *Written.* Various Centers, March 1949. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman 225 S. 15th St., Philadelphia.

American Board of Urology: Chicago, Feb. 12-16, 1949. Final date for filing application is Sept. 1. Sec., Dr. Harry Culver, Route #13, Sunnyside Rd., Minneapolis 4.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, New York

38:319-466 (March) 1948. Partial Index

Coordination and Integration of Public Health Program. H.F. Vaughan. -p. 331.
Graduate Training of Engineers in Public Health. J.M. Henderson. -p. 335.
Bacteriologic Studies of Fort Loudoun Reservoir. N.R. Clark and F.W. Kittrell. -p. 342.
Specific Complement-Fixing Diagnostic Antigens for Viral and Rickettsial Diseases. H.R. Cox. -p. 351.
Experience in Appraising Nutritional Status in U. S. Public Health Service. H.R. Sandstead and E.S. Osborne Jr. -p.351.
Appraising Nutritional Status of Mothers and Infants. C.A. Smith and H.C. Stuart. -p. 369.
Schick Survey of 18,000 Naval Recruits. F.S. Cheever. -p. 374.
Experience of Rheumatic Patients Who Served in Armed Forces, 1942-1946. May G. Wilson, J.W. Payson and Rose Lubschez. -p. 393.
Salmonella from Dogs and Possible Relationship to Salmonellosis in Man. A.H. Wolff, N.D. Henderson and Grace L. McCallum. -p. 403.
Problem of Dust Control for Disinfection of Air. C.G. Loosli. -p. 409.

Annals of Surgery, Philadelphia

127:385-576 (March) 1948

*Complete Transposition of Aorta and Pulmonary Artery Experimental Observations on Venous Shunts as Corrective Procedures. C.R. Hanlon and A. Blalock. -p. 385.
Sigmoid as Source of Right-Sided Symptoms. A.S. Lyons. -p. 398.
New Donor Areas in Skin Grafting. D.E. Barker. -p. 410.
Gastroduodenal Ulcer, a Spastic Disease. I. Boerema. -p. 413.
Rationale of Parenteral Glucose Feeding in Postoperative State. M.D. Pareira and M. Somogyi. -p. 417.
*Disasters Following Operation of Ligation and Retrograde Injection of Varicose Veins. J.C. Luke and G.G. Miller. -p. 426.
*Sacrococcygeal Chordoma. F. Gentil and B.L. Coley. -p. 432.
Plasma Silk Suture of Nerves. J.E. Bateman. -p. 456.
Operative Exposure of Blood Vessels in Superior Anterior Mediastinum. H.B. Shumacker Jr. -p. 464.
Bronchiogenic Cysts of the Mediastinum. H.C. Maier. -p. 476.
Mid-Leg Amputations for Gangrene in Diabetic. S. Silbert. -p. 503.
Juvenile Nasopharyngeal Angiofibroma. H. Martin, H.E. Ehrlich and J.C. Abels. -p. 513.
Transperitoneal Approach to Intervertebral Disc in Lumbar Area. J.D. Lane and E.S. Moore Jr. -p. 537.
A Simultaneous Abdominal and Perineal Approach in Operations for Imperforate Anus with Atresia of Rectum and Rectosigmoid. J.E. Rhoads, R.L. Pipes and J.P. Randall. -p. 552.
Acute Pancreatitis. C.J. MacGuire and A.J. Conte. -p. 557.
Bursitis Under Fibular Collateral Ligament. A.F. DePalma. -p. 564.
Traumatic Aneurysm of Subscapular Artery. R.A. Wise. -p. 569.
Cyst of Spleen. Case Report. V.F. Lang, S.A. Morton, J.D. Steele and A.A. Schaefer. -p. 572.

Transposition of the Aorta —According to Hanlon and Blalock, the time of survival in complete transposition of the aorta and the pulmonary artery in man is dependent on the degree of mixing between the greater and lesser circulations. Such mixing may be effected by interatrial or interventricular septal defects, by a patent ductus arteriosus or by entry of pulmonary veins into the transposed right side of the heart. In 123 cases of complete transposition collected from the literature the average duration of life was only nineteen months. Artificial production of pulmonary venous return to the right side of the heart was effected in dogs under anesthesia by anastomosing the pulmonary veins to the right auricle or to the superior vena cava. In 10 instances the pulmonary veins from the upper lobes of the right lung were anastomosed into the right auricle, but the results were usually unsatisfactory; it seems likely that the thick auricular wall, especially in its trabeculated area, is not well suited to vascular anastomosis. The pulmonary veins were anastomosed to the superior vena cava at the azygos opening in 15 animals; in general the results of these anastomoses were excellent, since the anastomosis remained patent in over three fourths of the experiments. Anastomosis of the pulmonary veins to the superior vena cava appears feasible in man and offers one possible approach to the surgical treatment of complete transposition of the great cardiac arteries.

Varicose Veins.—Luke and Miller report 21 cases of varicose veins showing evidence of retrograde flow in which untoward results followed the operation of high ligation and retrograde injection of the saphenous vein. Death occurred in 4 cases and deep thrombophlebitis with permanent disability in 10 additional cases, some with persistent edema, eczema and ulceration of the leg. The increasing frequency of these unfortunate results is emphasized. These disasters result from operative difficulties and mistakes and from deep venous thrombosis subsequent to operation. In the latter group the lack of muscular activity of the legs following operation, resulting in a slowing of the deep venous return, and the use of too great a quantity of sclerosing fluid probably play a considerable part in the formation of the thrombosis. It is suggested, therefore, that only a local anesthetic be used and that patients walk immediately after the operation. No more than 5 cc. of any sclerosing solution should be injected at the time of operation. If an embolus should occur, removal of the clot in the vein with ligation of the superficial femoral vein is advocated. "Dicumarol" in adequate dosage should be administered only in those cases in which ligation is not feasible. Experience may finally show that ligation alone should be carried out, with later injections once a week until the varicosities have been obliterated.

Sacrococcygeal Chordoma.—Gentil and Coley report 7 cases of sacrococcygeal chordoma in 5 men and 2 women between the ages of 50 and 70 years who were treated at the Memorial Hospital during the period 1930 to 1943. Additional 128 cases of sacrococcygeal chordoma collected from the literature are reviewed; 88 of the patients were men and 40 were women, and the median age was 46 years. The condition is rare. It occurs more frequently in men and chiefly in the age groups between 40 and 60 years. Aspiration biopsy showing the three main microscopic features, i.e., presence of intracellular and extracellular mucin, physaliferous cells and lobular arrangement of the tumor cells, is a useful and reliable method of establishing the diagnosis. Though generally considered benign, sacral chordoma metastasizes in approximately 10 per cent of the cases and causes death either directly or indirectly in nearly all instances. It is of long duration, is slow growing, yields but little to intensive roentgen therapy and is not amenable to complete surgical removal owing to its inaccessibility and extensive involvement of the pelvic organs and spinal cord. Local recurrence following surgical excision is a constant feature Pain is the most serious symptom, especially when the disease is advanced, and is difficult to control; radiation therapy is of some value especially during the late stages. A method allowing more radical surgical extirpation is needed, but radical surgery involves difficulty with regard to bladder and rectal control. These complications might be overcome by preliminary permanent colostomy and ureteroenterostomy, but these operations may well be considered unduly radical to apply for a slow-growing and relatively low grade malignant tumor It is nevertheless the authors' opinion that surgical excision should be attempted whenever a recurrence occurs even though there is a little likelihood of complete removal; cases in which there were long term survivals were essentially treated by repeated surgical excisions.

Journal of Nervous and Mental Disease, New York

107: 1-98 (Jan.) 1948

Neurologic Signs and Complications of Electric Shock Treatments: Review. W. Karliner. -p. 1.
Psychosomatic Disorders and Their Significance in Antisocial Behavior. D. Abrahamsen. -p. 11.
Acute Psychiatric War Casualties. E. Klein. -p. 25.
Dynamic Study of So-Called Psychopathic Personality. T. C. Rodgers. -p. 43.
"Concept of the Self" in Acute Traumatic Neurosis of War. B. Buchenholz and R. Frank. -p. 55.
Neighborhood Quarrels. A. J. Arieff, I. C. Sherman and D. B. Rotman. -p. 62.
Evaluation of Dynamics in Functional Mental Conditions. O. Kant. -p. 71.

107: 99-206 (Feb.) 1948

Electro-Encephalographic Patterns in Experimental Epilepsy. B. L. Pacella, N. Kopeloff and Lenore M. Kopeloff. -p. 99.
Fatality in Electroshock Therapy: Report of Case and Review of Certain Previously Described Cases. O. A. Will Jr., F. C. Rehfeldt and Meta A. Neumann. -p. 105.
Chronic Alcoholism. L.R. Sillman. -p. 127.
Hepatolenticular Degeneration: Report of 4 Cases in a Spanish-American Family with Differential Diagnosis and Treatment. H. R. Carter. -p. 150.
Vasopressor Reactivity in Cerebral Vascular Disease as Measured by Cold Pressor Reaction. A. H. Becker, J. Michaels and Cornelia B. Wilbur. -p. 160.
Differences in Attitudes Toward Return to Duty of Neurotic and Psychotic Soldiers in Army General Hospital. R. T. Porter and J. J. Michaels. -p. 167.

Minnesota Medicine, St. Paul

32: 121-224 (Feb.) 1948

Early Years of Andreas Vesalius. J. F. Fulton. -p. 141.
Assassination and Gunshot Wound of President Abraham Lincoln. O. W. Parker. -p. 147.
Recurrent Dislocations of Shoulder: Experiences with Transplantation of Subscapularis Tendon. E. H. Juers. -p. 150.
Surgical Treatment of Aneurysm of Abdominal Aorta. C. E. Rea. -p. 153.
Retinitis Pigmentosa. F. N. Knapp. -p. 157.
•Present Status of Relation of Cholesterol to Arteriosclerosis. E. R. Hayes. -p. 158.

Cholesterol and Arteriosclerosis.—Evidence is accumulating that certain persons possess an inherently defective mechanism for metabolizing cholesterol. These subjects may resemble the rabbit, a species in which there develops atherosclerosis quite uniformly if cholesterol is fed. Conversely, other persons may be more similar in this respect to the rat, in which feeding of cholesterol does not produce atherosclerosis. The discovery of certain lipotropic substances which will mobilize lipids from the liver has suggested that these same substances might be effective in mobilizing cholesterol from atherosclerotic arteries or, more likely, in preventing the deposition of the lipoid in the vessels of those who are predisposed to hypercholesteremia. Hermann found what he regards as a significant effect from substances like choline, methionine and inositol

New England Journal of Medicine, Boston

238: 345-384 (March 11) 1948

•Total Pancreatectomy. E. A. Gaston. -p. 345.
Pulmonary Tularemia in Massachusetts: Report of Case Due to Tick Bites. W. E. R. Greer. -p. 355.
•Presacral Neurectomy for Dysmenorrhea. F. M. Ingersoll and J. V. Meigs. -p. 357.
Primary Friedländer-Bacillus Peritonitis: Report of Case. M. P. Osborne. -p. 361.
Abdominal Surgery. A. W. Allen. -p. 364.
Subacute Bacterial Endocarditis. Congenital Bicuspid Aortic Valve. -p. 370.
Adenocarcinoma of Rectosigmoid (Grade II) with Secondary Abscess Formation and Extension into Pelvis and Uterus. -p. 374

Total Pancreatectomy.—Gaston reports the case of a man aged 70 who was subjected to a total pancreatectomy on account of diffuse carcinoma of the organ. Similar cases reported in the literature are analyzed. The surgical mortality of total pancreatectomy is high, but with increasing experience the surgical mortality can probably be reduced to acceptable limits. The diabetes that follows total pancreatectomy is relatively mild and appears to be associated with an increased insulin sensitivity. Hypoglycemic reactions, which may be severe or even fatal, should be avoided. Early treatment of the diabetic state should be directed toward the prevention of ketosis rather than the rigid control of blood sugar levels. The fatty liver associated with total pancreatectomy in dogs has not been observed in man, but prevention of this disorder can probably be effected by a diet rich in choline. Because of the poor digestion of fat in the total absence of pancreatic secretion the stools tend to be bulky and frequent. The postoperative diet should be low in fat, the caloric intake being made up with carbohydrates, which are well tolerated. In addition, pancreatin in doses of 15 Gm. daily should be administered to increase the absorption of fat and protein and to aid in maintenance of nitrogen equilibrium.

Presacral Neurectomy for Dysmenorrhea.—Ingersoll and Meigs say that at Massachusetts General Hospital and Palmer Memorial Hospital a total of 111 presacral neurectomies have been performed for relief of dysmenorrhea during the years from 1930 to 1946. In most cases the neurectomy was combined with dilatation and curettage, a suspension and any other necessary pelvic surgical measures that the gynecologic situation demanded. These 111 cases can be divided into a group with essential dysmenorrhea and a group with acquired dysmenorrhea. The patients in the former group had severe crampy pain starting shortly after the menarche, with painful menstruation that severely upset their social and economic life; physical examination was negative. The patients with acquired dysmonorrhea had pathologic processes to explain the painful periods. Complete relief was obtained in 81 per cent of cases of essential dysmenorrhea and 52.6 per cent of acquired dysmenorrhea. There were 12 therapeutic failures after presacral neurectomy for essential dysmenorrhea. These failures are accounted for on the basis of either regeneration of sympathetic nerves, incomplete operation or dysmenorrhea as a manifestation of a psychoneurosis. Twenty-four women had babies postoperatively; labor was painless for 8 of them.

Pennsylvania Medical Journal, Harrisburg

51:481-592 (Feb.) 1948

Thyroid Gland in Health and Disease. H. M. Thomas Jr. -p. 497.

*Present Status of BCG Vaccine in Prevention of Tuberculosis. J. D. Aronson. -p. 502.

Immunizing the Preschool Child. J. A. Gilmartin. -p. 508.

Safety Factors in Prostatic Surgery. W. J. Engel. -p. 512.

Surgical Treatment of Peripheral Nerve Injuries in General Hospitals. F. C. Grant and E. Spitz. -p. 521.

Paravertebral Block, Classification and Technic. G. J. Thomas. -p. 525.

External Ocular Injuries. R. F. Rohm. -p. 529.

Factor of Food Allergy in Acne. J. M. Flood. -p. 533.

Stunted Growth in Childhood: Inquiry into Some of Its Causes. T. O. Elterich. -p. 536.

Foreign Bodies of Maxillary Sinuses: Surgical Approach and Report of 24 Cases. P. T. Meyers. -p. 540.

BCG in Prevention of Tuberculosis.—Aronson shows that despite the fact that BCG vaccine has now been in use throughout the world for twenty-five years, there exists some opposition to its universal use. This opposition is based primarily on the supposition that the culture might revert to its original virulent state and induce progressive lesions and, second, on the view that the protective value of the vaccine has not, thus far, been definitely established. There is no unequivocal evidence that BCG vaccine has ever produced progressive tuberculosis in man. Freshly prepared BCG vaccine suspended in isotonic sodium chloride solution was injected intracutaneously into 1,550 American Indians of varying age who were tuberculin-negative. At the same time 1,457 Indians who were tuberculin-negative and comparable in age and economic background received an intracutaneous injection of isotonic sodium chloride solution and served as controls. No untoward local or general reactions were observed following vaccination. Both the vaccinated subjects and the controls were followed over a period of nine to eleven years by means of annual tuberculin tests and roentgenograms of the chest. During the period of observation 55 of the 1,550 vaccinated persons died from all causes, including 6 who died from tuberculosis. Among the 1,457 controls, 108 died from all causes, including 52 deaths from tuberculosis. The author concludes that the use of BCG vaccine does materially reduce the morbidity and mortality from tuberculosis.

Psychiatric Quarterly, Utica, N. Y.

21:531-752 (Oct.) 1947

Modern Concepts of Genetics in Relation to Mental Health and Abnormal Personality Development. F. J. Kallmann. -p. 535.

Systematic Psychotherapy of Psychoses. L. A. Gottschalk. -p. 554.

Psychotherapies I Encountered. A. A. Brill. -p. 575.

Control of Enteric Infections in Mental Hospitals. H. S. Ingraham. -p. 592.

Telepathy and Psychoanalysis: Critique of Recent "Findings," with Discussions. A. Ellis, J. Eisenbud, Geraldine Pederson-Krag and N. Fodor. -p. 607.

Experiences with Mixed Insulin and Electric Convulsive Therapy. E. O. Niver and K. A. Catlin. -p. 660.

Psychologic By-Products of Psysical Examination. Margaret E. Fries. -p. 671.

Public Health Reports, Washington, D. C.

63:297-328 (March 5) 1948

Report on Ten Proved Cases of Histoplasmosis. I. L. Bunnell and M. L. Furcolow. -p. 299.

63:329-356 (March 12) 1948

Morbidity Reporting in Local Areas. I. Patterns of Reporting. Margaret D. West. -p. 329.

Field Tests with Tick Repellents. J. M. Brennan. -p. 339.

63:357-392 (March 19) 1948

Action of Streptomycin in Experimental Infection with Q Fever. R. J. Huebner Sr., G. A. Hottle Sr. and Eleanor B. Robinson. -p. 357.

Studies of Acute Diarrheal Diseases. XVIII. Epidemiology. A. V. Hardy and J. Watt. -p. 363.

63:393-424 (March 26) 1948

Incidence of Poliomyelitis in 1947. C. C. Dauer. -p. 393.

Poliomyelitis in England and Wales in 1947. W. H. Bradley and A. H. Gale. -p. 397.

Review of Gastroenterology, New York

15:101-180 (Feb.) 1948

Thyroid in Gastroenterology. J. E. Cox. -p. 111.

Types of Cirrhosis of Liver Responsive to Treatment. L. M. Morrison. -p. 119.

Some Observations on Acute and Chronic Glossitis. N. Jolliffe and H. D. Fein. -p. 132.

Sulfathaladine in Intestinal Disease. Report of 587 Proctologic Cases. G. Angelo. -p. 145.

Sulfonamide Therapy of Infections of Gastrointestinal Tract. A. Bassler and A. G. Peters. -p. 151.

Peptic Ulcer--Is It a Psychosomatic Disease? J. A. Riese. -p. 159.

Cirrhosis of Liver: Response to Treatment.—Morrison attempts to clarify and evaluate the conditions under which cirrhosis of the liver can be expected to improve. He outlines a combined intensive treatment which consists of a maximum protein (three meat servings daily plus skimmed milk), high carbohydrate, low fat diet, daily injections of 5 cc. of a "whole" liver extract, highly potent injections of vitamin B complex, daily oral vitamin B complex, and multiple "total" vitamin capsules orally, together with 2 Gm. each of methionine and choline daily. He compares the results of this treatment on 20 patients (11 without ascites and 9 with ascites) with the results obtained in 23 patients who were treated only by such methods as were in use in 1938, that is, by paracentesis, diuresis, high carbohydrate diet and palliative therapy; this group of 23 contained 11 cases without ascites and 12 with ascites, and was called the "untreated" group. After two years all patients in the treated group without ascites were alive, as compared with a 27 per cent mortality rate in the control series. Excellent therapeutic results occurred in those patients with the alcoholic type of cirrhosis of the liver, i.e., the fatty or portal, Laennec's cirrhosis, in the early or moderately advanced stages. In the terminal form of the atrophic portal cirrhosis, with a shrunken liver, the therapeutic regimen frequently gave indifferent results or was a complete failure.

Rocky Mountain Medical Journal, Denver

45:185-264 (March) 1948

Radiosensitivity of Tumors. S. Warren. -p. 205.

Early Diagnosis of Carcinoma of Cervix and of Corpus Uteri. L. S. McGoogan. -p. 206.

Management of Tension States in General Practice. T. M. Rogers. -p. 208.

Obstetric Aspects Concerning Prevention of Neonatal Deaths. E. S. Taylor. -p. 211.

Psychiatric Group Therapy. P. A. Draper. -p. 212.

Blood Donor Service for Rural Community. M. R. Rymer and R. Patterson. -p. 215.

Good Progress in Cancer Case Reporting. R. L. Cleere. -p. 216.

Physicians' Sponsored Hospital Plan Applies for Blue Cross Endorsement. C. H. Gellenthien. -p. 217.

Surgery, Gynecology and Obstetrics, Chicago

86: 257-384 (March) 1948 Partial Index

*Cytologic Method as Aid in Diagnosis of Gastric Carcinoma. Ruth M. Graham, H. Ulfelder and T. H. Green Jr. -p. 257.

*Syndrome of Ovarian Pain and Insufficiency: Importance of Conserving Ovarian Tissue. G. P. Heckel. -p. 260.

*Endometriosis as Cause of Intestinal Obstruction. P. McGuff, M. B. Dockerty, J. M. Waugh and L. M. Randall. -p. 273.

Fractures of Tibial Condyles Involving Knee Joint. E. F. Cave. 289.
•Surgical Treatment of Recurrent Acute Pancreatitis by Endocholedochal Sphincterotomy. H. Doubilet and J. H. Mulholland. -p. 295.
Hypospadias with Enlargement of Prostatic Utricle. F. S. Howard. -p. 307.
One Stage Pharyngeal Diverticulectomy: Improved Technic and Analysis of 186 Cases. T. A. Shallow and L. H. Clerf. -p. 317.
Osgood-Schlatter's Disease. E. S. R. Hughes. -p. 323.

Cytologic Method in Gastric Carcinoma.—Graham and her associates present the results obtained with the cytologic technic on gastric aspirations from 50 patients suspected of having cancer of the stomach. A fasting specimen of gastric secretion is obtained by aspiration. Gastric aspirations were used rather than gastric washings. It is of the utmost importance that the specimen be sent to the laboratory immediately, since if there is more than half an hour's delay the cells are digested and no distinct cellular characteristics can be identified. The specimen is centrifuged immediately, the sediment spread on a glass slide and placed at once in a fixative of equal parts ethyl ether and 95 per cent alcohol. After fixation for at least fifteen minutes, the slides are stained by Papanicolaou's method. The malignant cells often appear in groups; they have nuclei which are hyperchromatic and usually contain prominent nucleoli. Often the cytoplasm shows vacuolization, a characteristic of adenocarcinoma. There are occasional single cells which can be identified as malignant. In this series of 50 patients, 24 had carcinoma of the stomach. Cancer cells were seen in the gastric fluid of 15. All 24 of these patients were explored. Seven of the lesions were resectable, and 5 of these had previously shown malignant cells in the gastric secretion. One of the 2 failures in this small group involved a scirrhous carcinoma of the wall of the stomach without ulceration of the mucosa. Such a tumor could not be expected to shed cells into the gastric lumen. Although 9 of the 24 cases of carcinoma in this series were erroneously called negative on cytologic examination, only 2 of the 7 resectable cases were missed and 2 extremely early cases were both diagnosed correctly. The authors believe that the cytologic method is of great value in the detection of gastric cancer.

Ovarian Pain and Insufficiency.—Heckel divides his cases into 3 groups. In the first group of 15 cases ovarian tissue had been previously removed, in most instances because of pain in the lower part of the abdomen. Pain recurred following operation, and when the patients came under observation of the author its source could be identified as the ovary. The second group of 75 patients were observed before surgical intervention was performed. In all of them observation revealed the ovary to be the source of the pain and in none was it of sufficient cyclic regularity to be classed as mittelschmerz. Cases of cyclic intermenstrual pain or mittelschmerz comprise the third group of 25 cases. The author stresses that the frequent association of pain with menstrual irregularities indicates that the pain is itself a sign of ovarian dysfunction. This syndrome of ovarian pain, menstrual aberrations and other signs of ovarian failure, such as hot flushes, occurs in all ages of reproductive life. The more frequent occurrence of pain on the right side in these cases in addition to other evidence suggests that the right ovary is the more active. Observations on women from whom ovarian tissue has been removed and the known effects of partial castration in animals demonstrate the importance of an adequate mass of ovarian tissue for normal function and the urgent need for conserving ovarian tissue in women. If one ovary is removed because of pain, signs of ovarian insufficiency and pain in the remaining ovary may be expected. The beneficial effect of therapy with estrogen, including alleviation of cyclic intermenstrual pain without the prevention of ovulation, suggests that the importance of the mass of ovarian tissue lies in its production of estrogen

Endometriosis as a Cause of Intestinal Obstruction.—McGuff and his associates report that the files of the Mayo Clinic between 1920 and 1946 contain records of 48 cases in which the diagnosis of " endometriosis of the bowel " had been made by a pathologist In 16 of these 48 cases pathologic material had been removed in an effort to alleviate clinical symptoms and signs of intestinal obstruction caused by cicatrizing endometriosis. The present study concerns these 16 cases. To make the diagnosis of endometriosis as a cause of intestinal obstruction, the possibility of its occurrence should be kept in mind in every case of intestinal obstruction in which the patient is a woman from 30 to 50 years of age Acquired dysmenorrhea, menstrual periodicity of symptoms, sterility, rectal or pelvic pain, absence of loss of weight, the presence of associated uterine fibroids or ovarian cysts and a long history of intestinal symptoms which suggest progressive intestinal obstruction with frequent exacerbations at menstruation are most important in the diagnosis of this condition. Severe constipation, lower abdominal pain and distention are almost always present. If the obstruction is ileal vomiting is almost always present, but if the obstruction is colonic obstipation is more often present. An accurate preoperative diagnosis of intestinal obstruction caused by endometriosis can usually be made on the basis of the clinical history, digital examination, sigmoidoscopic examination and interpretation of the roentgenogram of the colon and the terminal portion of the ileum. The finding of a firm tumor in the rectovaginal septum or of tender palpable nodules plus the palpation of uterine fibroids and bilateral ovarian cysts is suggestive of endometriosis as the cause when intestinal obstruction is present. Sigmoidoscopic examination, with the presence of an extrarectal mass and an intact puckered mucosa, and a roentgenogram of the colon, with the presence of a long, inconstant filling defect with sharp regular borders and an intact mucosa, are the two most valuable adjuncts to diagnosis when the lesion is in the lower bowel. The treatment of intestinal obstruction caused by endometriosis is surgical. A preoperative diagnosis of endometriosis as a cause of colonic obstruction will obviate the necessity for resection of the bowel. In most instances surgical treatment will consist of bilateral oophorectomy or of panhysterectomy with or without temporary colostomy. The procedure of choice in obstruction of the ileum caused by endometriosis is ileal resection with or without preliminary enterostomy and with or without panhysterectomy as indicated by the presence of associated pelvic pathologic lesions. A plea is made for biopsy, frozen section and pathologic confirmation of the clinical diagnosis in all cases of endometrioma obstructing the bowel, as carcinoma can be positively excluded only by this method.

Endocholedochal Sphincterotomy in Recurrent Pancreatitis.—Doubilet and Mulholland believe that endocholedochal sphincterotomy should be the definite surgical procedure in the treatment of recurrent acute pancreatitis if reflux of bile into the pancreas through a common biliary pancreatic passageway can be demonstrated.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Journal of Neurol., Neurosurg. & Psychiatry, London

10: 141-200 (Nov.) 1947

Investigations on Patient Subject to Myoclonic Seizures After Sensory Stimulation. G. D. Dawson. -p. 141.
*Actinomycosis of Brain. W. Lewin and A. D. Morgan. -p. 163.
Arsenical Encephalopathy in Indian Troops. L. Krainer, D. A. K. Black, R. J. McGill and N. V. Rao. -p. 171.
Aphasia Studied in Patients With Missile Wounds. F. Schiller. -p. 183.

Actinomycosis of Brain.—Lewin and Morgan present clinical observations and necropsy observation on a man aged 31. The chronicity of the lesion suggests that the infection was actinomycotic from the outset. After infection of the basisphenoid bone, spread occurred to the soft tissues around the sella turcica, with involvement of the right cavernous sinus, progressive thrombosis along the superior petrosal and right lateral sinuses, and recurrent metastatic abscesses of the lungs. Infection of the meninges resulted in a subdural empyema and subpial abscess. The congenital cysts of the lungs and the amebic dysentery were coincidental lesions. Three previous cases of sphenoid osteomyelitis have been recorded, and 6 necropsy reports describing involvement of the intracranial venous sinuses in actinomycosis of the nervous system were found in the literature. The ways in which actinomycosis may spread intracranially are summarized. Over the last ten years, reports of 12 further cases have been found; they are included in the authors' summary of the modes of invasion of the nervous system by the fungus. This may occur by one of three routes. With increasing knowledge of the disease it is apparent that several of the so-called primary cases hitherto reported were secondary to foci elsewhere in the body, the original lesion healing completely or being discoverable only after diligent search. Although some authors deny that the infection can ever be primary in the nervous system, there is a small group of cases which can be classified as such.

Lancet, London

1: 237-272 (Feb. 14) 1948

Principles of B.C.G. Vaccination. A. J. Wallgren. -p. 237.
Treatment of Nutritional Macrocytic Anemia with Synthetic Folic Acid. T. D. Spies, G. G. Lopez, R. E. Stone and others. -p. 239.
Classification of Peripheral Nerve Injuries. R. Roaf. -p. 242.
Treatment of Amebic Dysentery. A. W. Wright and A. E. R. Coombes. -p. 243.
Primary Meningococcal Conjunctivitis in Children. R. D. Stuart and Doris McWalter. -p. 246.
*Suprarenal Hemorrhage and Pregnancy. C. W. F. Burnett. -p. 249.

Adrenal Hemorrhage and Pregnancy.—Burnett says that previous reports on massive adrenal hemorrhage indicate that it is usually associated with one of the following four different states: (1) involution of the gland subsequent to pregnancy or following destruction by neoplastic invasion; (2) vascular damage by toxemia, trauma, septicemia or arteriosclerosis; (3) hypertension, or (4) generalized hemorrhagic tendency. Though the evidence for most of these causes is now fairly conclusive, the suggestion that massive adrenal hemorrhage is associated with puerperal involution of these glands needs much more confirmation than is provided by the only 3 cases of adrenal hemorrhage in association with pregnancy that have as yet been reported. The author reports the case of a woman, aged 33, who was hospitalized with a threatened abortion when she was two months pregnant. After rest and sedation, progesterone and vitamin E, the bleeding stopped and the pregnancy was conserved. A month later she was hospitalized in a state of collapse and pulseless. She spoke with difficulty but said that two hours before admission she had miscarried and subsequently had felt " very ill." In spite of continuous inhalation of oxygen she became cyanosed and died twenty minutes after admission. Necropsy disclosed an adrenal hemorrhage. The author considers it impossible that such a rapid termination could be induced by physiologic involutional changes in the adrenals; it is more conceivable that the adrenal hemorrhages were responsible for the abortion. Since abortion had previously threatened, and since the patient had had three other abortions of unknown cause, there may have existed in her case an abnormal hormonal reaction to pregnancy, involving the adrenal glands. The previously reported 3 cases of adrenal hemorrhages associated with pregnancy are reviewed. It is doubtful whether puerperal or neonatal involution of the adrenals plays any part in the causation of massive adrenal hemorrhage.

Medical Journal of Australia, Sydney

1: 89-124 (Jan. 24) 1948

*Fibrocystic Disease of Pancreas: Review of 14 Cases. D. Pitt. -p. 91.
Mesonephroma Ovarii. H. F. Bettinger and H. Jacobs. -p. 100.

1: 125-156 (Jan. 31) 1948

Physiologic Activation of Prothrombin. P. Fantl and Margaret H. Nance. -p. 129.
Recent Progress in Pediatrics. F. Arden. -p. 133.
Risks of Surgery in Aged. J. W. S. Laidley. -p. 136.
Risks Associated with Anesthesia of Aged. P. L. Jobson. -p. 139.

Fibrocystic Disease of Pancreas.—Pitt describes observations on 14 cases in which fibrocystic disease of the pancreas had been definitely established. In 6 additional cases the data were incomplete. This total of 20 cases was observed in two years. Of the 14 reported cases, 9 have terminated fatally. The survival of the other 5 may have been due to early diagnosis and suitable treatment. The primary deficiency is in pancreatic external secretion; secondary deficiencies of calories, protein and protein derivatives and vitamin A arise from this. It is suggested that not only does the essential metabolic difference between celiac disease and fibrocystic disease lie in protein metabolism but protein metabolism holds the key to the hepatic disorder and possibly to the pulmonary disorder. In the treatment the deficiencies must be made good. A high caloric, protein-rich and restricted fat diet must be planned. Added casein and egg are recommended as sources of protein. Evidence is produced to justify the use of pancreatin. Vitamin A may be supplied by injection. When the disease is controlled oral administration may prove adequate. Other vitamins are given by mouth. Penicillin and sulfonamide therapy is used for the recurrent pulmonary infections, from which every effort should be made to protect the child.

Lyon Chirurgical, Paris

43: 1-128 (Jan.-Feb.) 1948. Partial Index

Progress in Vascular Surgery. R. Leriche. -p. 5.
*Thirty-Nine Observations of Total Gastrectomy. R. de Vernejoul. p. 17.
Juxta-Adrenal Paraganglioma (Pheochromocytoma) in Patient

with Hypertension Successfully Operated on (Disturbances of Glycoregulation in Paroxystic Hypotension). R. Fontaine and J. Warter. -p. 36.
•Pancreatoduodenectomy for Cancer of Head of Pancreas; Recovery. P. Mallet-Guy, R. Koppes, J. Sermonard and Miss M. Rademaker. -p. 51.

Total Gastrectomy.—Vernejoul reports 39 total gastrectomies in 14 women and 25 men between the ages of 40 and 63 years. Thirty of the patients had cancer of the stomach, 4 had juxtacardiac ulcers and 5 had peptic ulcers after partial gastrectomy. Ten of the patients who submitted to surgical operation died; 9 of these had cancer and 1 had a juxtacardiac ulcer. Six of the 29 patients who survived the operation had recurrences or metastases; 1 patient was lost sight of, 10 have been operated on for less than one year The condition of the remaining 12 patients is highly satisfactory, 1 of them was operated on for cancer nine years ago and has gained 6 Kg. Juxtacardiac and peptic ulcer may present debatable indications for total gastrectomy, and vagotomy (Dragstedt's operation) may be preferred. Thus cancer of the stomach remains the main indication for total gastrectomy A study of the immediate postoperative results and of the recurrences and metastases will be an aid in answering the question of whether total gastrectomy should be limited to diffuse tumors, for which this operation is indispensable, or should be likewise performed in cases of localized tumors in the prepyloric area.

Pancreatoduodenectomy for Cancer.—Mallet-Guy and his co-workers report 1 case of cancer of the head of the pancreas in a woman aged 42. The patient had icterus of three months' duration. A large deformity of the duodenal bulb was demonstrated on roentgenologic examination. Cholecystogastrostomy and gastroenterostomy were performed in the first stage Twenty-one days later removal of the head of the pancreas was performed simultaneously with that of the inferior portion of the duodenum exactly at the duodenojejunal junction Intervention was terminated by an anastomosis of the pancreatic stump to the second jejunal loop by using Cattell's technic Healing occurred by first intention and recovery was uneventful

Schweizerische medizinische Wochenschrift, Basel

78:121-144 (Feb 14) 1948. Partial Index

Present State of Treatment of Children with Meningitis. G. Fanconi. -p. 121.
•Effect of Penicillin on Various Forms of Icterus Associated with Syphilis and Its Treatment. P. Robert. -p. 123.
•Treatment of Interstitial Polymyositis (Wagner) with Penicillin. F. Por and J. Friedmann. -p. 125.
•Investigation on Incidence and Prevention of Goiter in Newborn Infants in Area of Entrance to the Hospital in Frauenfeld. H. J. Wespi-Eggenberger. -p. 130.

Penicillin for Icterus Associated with Syphilis.—Robert reports 3 cases of icterus associated with syphilis in 2 men aged 20 and 32 and in a woman aged 25. The first patient presented syphilitic icterus occurring simultaneously with syphilitic roseola and palmoplantar syphilids. The jaundice was associated with hepatosplenomegaly. The sedimantation rate was increased. Twenty thousand units of penicillin was administered every three hours for seven and a half days for a total dose of 1,200,000 units. The icterus as well as the manifestations of early secondary syphilis subsided completely within nine days. The icterus in the second patient occurred twenty-four hours after the initiation of the specific treatment with neoarsphenamine for flat condylomas, palmar syphilids and mucous plaques of secondary syphilis. The jaundice was severe but was not associated with hepatosplenomegaly. Twenty thousand units of penicillin was administered every three hours for seven and a half days. The icterus disappeared within eight days after treatment with penicillin was terminated. The rapid effect of the penicillin on the icterus suggests the presence of a hepato-Herxheimer reaction rather than a toxic arsenical lesion. In the third case the icterus occurred immediately after the first course of treatment for primary syphilis with neoarsphenamine combined with a bismuth compound was terminated. The icterus in this case is considered as being due to the neoarsphenamine and the alcoholic excesses of the patient. Penicillin, 20,000 units, was administered every three hours for seven and a half days, but the icterus disappeared only one month after the penicillin treatment was terminated. Three cases are not sufficient to solve the difficult problem of pathogenesis and differential diagnosis of icterus occurring in the course of syphilis and its treatment, but the possibility is suggested of considering the penicillin therapy as a diagnostic measure *ex juvantibus*.

Penicillin in Interstitial Polymyositis.—Por and Friedmann report 1 case of acute eosinophilic interstitial polymyositis (Wagner) in a farm woman aged 42 with acute swelling of the muscles of the extremities and of the trunk associated with pain, disturbance of general condition and rise of temperature. Penicillin treatment was instituted on the twenty-first day of the disease. Fifteen thousand units of the drug was administered every three hours for a total dose of 1,500,000 units. Temperature was restored to normal within six days. Swelling subsided gradually and the general condition was improved. The patient was discharged from the hospital three weeks after the initiation of the penicillin treatment. She was able to resume her work in the house and in the field. This is the first case of interstitial polymyositis in which complete recovery resulted from penicillin therapy.

Goiter in Newborn Infants.—To prevent the occurrence of goiter in newborn infants, Wespi-Eggenberger gave 132 pregnant women 150 to 200 micrograms iodine daily for at least the last four weeks of pregnancy This prophylaxis was carried out either by the administration of 3 drops of a 1 per cent solution of potassium iodide daily or of iodized sodium chloride (20 mg. potassium iodide to 1 Kg. sodium chloride). Eight hundred and fifty-six women in whom this prophylaxis has not been carried out served as controls. One hundred and twenty-one (91.6 per cent) newborn infants whose mothers had received the prophylactic treatment presented a normal thyroid gland, 10 (7.6 per cent) presented a small goiter and only 1 (0.8 per cent) had a medium-sized goiter. Five hundred and forty-one (63.2 per cent) newborn infants whose mothers did not receive the treatment had normal thyroid glands, 274 (32 per cent) had a small goiter, 31 (3.6 per cent) had a medium-sized goiter and 10 (1.2 per cent) had a large goiter. This comparative study, made at the hospital in Frauenfeld in the Canton of Thurgau, revealed that the incidence of goiter in the newborn infants had been reduced from 36.8 per cent to 8.4 per cent and that goiters of large and medium size had disappeared almost completely. These results are in accordance with those obtained by similar studies in the Cantons of Zurich and Appenzell. The goiter problem is one of iodine dosage The goiter itself is a sequela of iodine deficiency

Book Notices

Planning for the Care of the Chronically Ill in New York State—Some Medical-Social and Institutional Aspects. New York State Commission to Formulate a Long Range Health Program also Known as New York State Health Preparedness Commission. State of New York Legislative Document (1946) No. 66A. Paper. Pp. 131, with 1 illustration. Joint Hospital Survey & Planning Commission. Gov. A. E. Smith State Office Bldg., Albany, N. Y., 1947.

This study is further evidence of the excellent work being done by the New York State Commission to Formulate a Long Range Health Program. The commission has released other studies in the health field which were equally excellent. In this study special attention is given to the care of the chronically ill between hospital and home, to the points of view of local public welfare and the hospital on the problem of the chronically ill, and to the place of nursing homes in the care of the chronically ill. The data of the commission are presented with a clearness unusual in such a difficult subject. Maps are utilized to show the pattern of the observations throughout the state. Forty-eight tables are included to give readers the many details necessary for an understanding of the commission's conclusions. To allow for comparison and for a broader vision in planning, the commission has included a fairly detailed summary of the programs for the chronically ill in six other states, together with the details of licensing procedures for nursing homes in the six states. For those interested in the care of chronically ill this study is essential reading. Similar studies in every state would place the solution within reasonable possibility.

Out of This World: Anesthetics and What They Do to You. By Sylvan M. Shane, M.D., Director of Anesthesiology, South Baltimore General Hospital, Baltimore. Cloth. Price, $2. Pp. 111, with 4 illustrations. Creative Age Press, Inc., 11 E. 44th St., New York 17, 1947.

This book is one which could well be read by every person who anticipates having an operation or who has a friend or relative about whom he is concerned. The book easily accomplishes its purpose of dispelling fears associated with anesthesia as well as giving a concise clear summary of the anesthetics in popular use today. The style of the book is novel, having accurate information presented in a very entertaining and often humorous manner.

The sensations of the patient before going to sleep are colorfully described. The advantages of ether anesthesia over other general anesthetics used, and what these are, are clearly given, and the use of local anesthesia is discussed both as to its limitations and indications. Each chapter is cleverly introduced and arouses an interest in the contents which follow, especially on the subject of childbirth. There is an excellent description of the events which occur in the delivery room, and some of the recent developments in local anesthesia during labor are presented. The latest type of anesthesia—the so-called saddle block or low spinal—is omitted. The use of hypnotism in obstetrics is mentioned, and its further use in surgery and other fields is implied. One of the most delightful portions of the book is the physiology and anatomy in relationship to the mechanism of the action of anesthetic agents. In the closing pages the author gives a fascinating preface to a thrilling story which he relates—the story of the discovery of anesthesia.

So Youth May Know: Sex Education for Youth. By Roy E. Dickerson. Forword by Percy R. Hayward, Editor of International Journal of Religious Education. New edition. Fabrikoid. Price, $2.50. Pp. 259, with 26 illustrations. Association Press, 347 Madison Ave., New York 17, 1948.

This book has gone through twelve printings. New materials have been added and revisions made in the light of scientific progress. An attempt is made to provide young people with accurate scientific information to replace misconceptions.

The book presents information pertinent to the real life experiences of teen-agers in clear, understandable language. The role of clean living in the development of an attractive personality is stressed, and self control given a positive emphasis as a means of attaining one's goal and ideals.

The first part of the text deals with human reproduction and the meaning of sex, and seeks to give youth the benefit of the newer interesting and important scientific discoveries in the field. The straightforward approach to problems of friendship, love, abstinence, promiscuity and petting in the second section is especially noteworthy. Part three is given over to methods of achieving self control, while the next section is devoted to courtship, engagement and marriage. The last part of the book, setting forth new ideals of sex chivalry, should be a stimulus to clean living for our young people. A rather detailed appendix, covering the mechanism of sex, prostitution, venereal diseases and masturbation, provides specific information to youth on these problems as they relate to modern society.

The book was first written for young men in their late teens and early twenties, but newer attitudes toward frank treatment of sex matters would suggest that many boys can read the material with profit at 14 or 15 today.

Life: Its Nature and Origin. By Jerome Alexander. Cloth. Price, $5. Pp. 291, with 31 illustrations. Reinhold Publishing Corporation, 330 W. 42d St., New York 18, 1948.

Jerome Alexander, the distinguished colloid chemist, presents his stimulating theory of the origin and nature of life in this refreshing book, which is packed with erudition. Mr. Alexander's knowledge of chemistry is profound, and yet he has had the time and interest to acquire a wealth of information about biology and medicine; these combine to furnish a rational account of many processes occurring in the living cell which because of the author's chemical point of view will be read with profit by all those seeking a deeper insight into the nature of living things and a more fundamental understanding of medicine.

Mr. Alexander begins by stating that life is an accomplished fact, a practical going concern and not a figment of someone's imagination—there must be some mechanism through which it got started. The most reasonable view is that life began with the chance formation of a self-reproducing unit of molecular or near molecular complexity. Life depends on a great variety of ordered chemical reactions which are limited in space, mass and time. The evidence presented indicates that "many if not all the basic material facts of life are understandable on catalytic principles including selective absorption and differential diffusion. But the mental and spiritual phenomena which emerge and which are just as real as the material ones, are as inscrutable as ever."

Catalysts promote syntheses or degradations of matter and they function "like a duly qualified judge who may wed or divorce couples who come within his jurisdiction and remain there long enough for the operation." Catalysts (enzymes) are essential to life and must reproduce themselves? The formation of new catalysts is considered comprehensively from the standpoints of immunology, genetics, embryology, differentiation and morphogenesis—catalysis is the basic mechanism of all of these fields. Also many, if not all, drugs which are effective in small amounts operate on specific enzyme systems. For the reproduction of catalysts (autocatalysis) Mr. Alexander favors the template theory in common with many of our most distinguished contemporary thinkers. This process may be likened to silver foil that is pressed firmly against a coin; on the foil surface nearest the coin it will develop a negative image of the coin detail, while it will duplicate the coin on the surface of the foil farther away.

Jerome Alexander's opinions must be considered seriously, since the scientific evidence is sound. The present work is a profound study, but it is written with much simplicity and charm, and it abounds both with elegant phrases and with wit. Many readers will derive pleasure and profit from it.

Opiate Addiction. By Alfred R. Lindesmith, Associate Professor of Sociology, Indiana University, Bloomington, Indiana. Cloth. Price, $3. Pp. 238. Principia Press, Inc., Bloomington, Indiana, 1947.

This book is based on information which the author obtained by interviewing 60 to 70 morphine addicts in the course of a sociologic study of drug addiction which was carried out fifteen years ago. The writer has been publishing articles on drug addiction based on this same material since that time. A perusal of the book forces one to the conclusion that the author has, in large part, accepted the views of the confirmed addicts who formed his case material as being the correct ones concerning addiction.

The central theme of the book is that a person is not an addict until he has experienced the distress of withdrawal of an opiate, has recognized the distress as being due to the lack of the drug, has used the drug to relieve the symptoms of abstinence and has been informed of the name of the drug. As a result of this experience, the person develops a number of characteristic attitudes, including a tendency to use the drug to alleviate not only the distress of withdrawal but any form of distress. This hypothesis does not explain all the phenomena of addiction. It does not account for the fact that most persons who become addicted to morphine in the United States begin the use of the drug with full knowledge that if they continue to take it over any long period of time they will become addicted. Despite this knowledge, which they usually have because of their contacts with habituated addicts, such persons progressively increase the number of doses and the amount of the drug until they become addicted. Although the author states that the effects of the drug may be pleasurable to certain persons and that "a sensitive man of certain neurotic ailments may be tremendously impressed with the soothing qualities of the drug, and by contrast with his usual state of mind, may feel intense pleasure," he tends to minimize the importance of the pleasurable effects of morphine in the genesis of addiction.

The author believes that the importance of emotional and personality disorders in the etiology of addiction has not been proved. He complains that persons who have attributed addiction to personality difficulties did not use control groups. He implies that a sample of the ordinary nonaddict population would show as great an incidence of marked psychopathic and psychoneurotic traits as occurs among drug addicts.

Lindesmith doubts that psychiatric treatment is of any value in the treatment of drug addiction; he believes that the "cure is up to the addict himself." The latter view probably arises from the nature of the material on which the book was based. Most of the addicts whom the author interrogated were actively using drugs at the time of the interview, and some were paid for their cooperation. The hopeless attitude of the author regarding treatment seems to be identical with the attitude of confirmed addicts. The author has, apparently, made no effort to locate and study addicts who have received modern treatment and who have remained abstinent for many years. He would certainly not find such persons in the fringes of the underworld where he conducted his study.

The measures which the author proposes as a solution of the addiction problem in the United States are startling and dangerous. He would reinterpret the Harrison Narcotic Act so that physicians could legally prescribe drugs for the maintenance of addiction alone. The addict would then have a legitimate low cost source of supply and would not be forced to purchase his drugs in the illegal market. Although the author states that availability of drugs and contact with persons already addicted are factors which contribute greatly to the spread of addiction; he does not believe that the mechanism he proposes would tend to spread addiction. In spite of the fact that he admits that addicts will increase their dosage beyond bodily needs if the drug is available, he implies that physicians could limit the spread of addiction by limiting the amounts supplied the addict for his bodily needs. Addicts would, of course, circumvent such a system by obtaining prescriptions from many physicians and would not hesitate to supply any surplus drugs which they might have to curious thrill-seeking nonaddicts. The author believes that his plan would not increase the incidence of addiction because of the situation in England. Although physicians prescribe for addicts in England, there is less addiction in the United Kingdom than in the United States. It seems especially naive that a sociologist would assume that conditions in the United States and England are identical. Addiction to opiates was never a great problem in England, even when opiates could be obtained there without prescription, while in the United States, as the author admits, the morphine habit was spreading rapidly prior to the passage of the Harrison Narcotic Act. The author also ignores the seriousness of the narcotic situation in countries where opium is easily available.

The book cannot be recommended.

Die gynakologischen Operationen und ihre topographisch - anatomischen Grundlagen. Von Prof. Dr. med. Heinrich Martius, Direktor der Universitats-Frauenklinik Gottingen. Fifth edition. Boards. Price, 58 marks. Pp. 424, with 427 illustrations by Käthe Droysen. Georg Thieme, Diemershaldenstrasse 47, Stuttgart-O (American Zone), 1947.

This is a revised edition of a volume on gynecologic surgery which has enjoyed considerable popularity. Considering the difficulties under which German books are published, this is an excellent publication. All of the standard gynecologic procedures including their surgical anatomy are described and profusely illustrated. Many of these pictures and diagrams are in contrast colors adding to the ease of their interpretation. There are no new or spectacular additions to this text. Conspicuous by its absence is a discussion on modern anesthesia and preoperative and postoperative care of the gynecologic patient. These are fields in which the greatest progress has been made in the last decade.

A Survey of Diagnostic Agents. By T. D. Whittet, Ph.C., D.B.A., Chief Pharmacist, University College Hospital, London. Based on a Series of Articles Which Appeared in "The Pharmaceutical Journal," April-May, 1947. Published by the Pharmaceutical Society of Great Britain. Paper. Price, 2s, 6d. Pp. 32. The Pharmaceutical Press, 17 Bloomsbury Square, London, W. C. 1, England, 1947.

The contents of this little booklet have been assembled chiefly from material published in the *Pharmaceutical Journal* of Great Britain. The author states that the purpose of this book is to provide in permanent form information required by pharmacists studying for the diploma in biochemical analysis and for postexamination use when they are called on to prepare the diagnostic reagents described. In concise form many diagnostic methods now commonly used in medical practice are minutely described. The exact ingredients and the manner of performing the tests are also disclosed. Many of the procedures are among those routinely ordered by physicians for certain conditions so as to establish or confirm a diagnosis. This book, of pocket size, is suitable for rendering valuable service to the practicing physician as well as to the pharmacist. There is an index for convenience.

Reconstructive and Reparative Surgery. By Hans May, M.D., F.A.C.S., Assistant Professor of Surgery, Graduate School of Medicine, University of Pennsylvania, Philadelphia. Foreword by James Barrett Brown, M.D., F.A.C.S. Fabrikoid. Price, $15. Pp. 964, with 963 illustrations. F.A. Davis Company, 1914-1916 Cherry St., Philadelphia 3, 1947.

The author reviews the standard concepts of preoperative preparation, including the use of standard instruments and suture materials. He discusses the various types of skin graft, the historical background, subsequent development and modification of their uses. The general and local preoperative and postoperative management is covered, insuring optimum results. He then discusses the various types of free transplants and also the consideration and planning of tissue shifting and transplantation by means of the single pedicle flap, double pedicle flap and tube flaps. Wound healing and treatment of wounds, including the classification of wounds and their individual treatment in relation to time interval, is discussed according to modern concepts including chemotherapy and use of antibiotics. There is the usual historical review of evolutionary treatment of burns, classifying them into three degrees, with discussion of treatment of each. He points out the importance to lifesaving of measures to maintain the protein fluid level of the blood. In summary, the accepted treatment is: maintenance of asepsis of the denuded areas; supportive treatment as combating infection and loss of protein, and early covering of denuded areas with split grafts, particularly over movable joints. The operative correction of scars is discussed according to usual accepted methods. With regard to the cheek, temple and skull region, he points out that small defects of the face involving only skin and subcutaneous tissue can be handled by tissue-shifting operations. Large defects including skin, muscle and mucosa are to be corrected by pedicle flaps, either from adjacent or remote areas. The section on lips, chin and palate shows many variations of procedures for closing defects of the lip, but these are standard and appear in all textbooks. In the discussion of cleft lip Blarr's modified Mirault operation is illustrated, but the major portion of the illustrations on cleft lip and cleft palate are taken from G. Axhausen, even to the extent of carrying German titles. In the section on the nose and intranasal regions the author discusses defects of the columnella, tip and alar aspects and describes the usual standard operation for their correction. He also discusses the utilization of flaps from adjacent and remote parts to cover extensive defects. Subtotal and total defects of the nose are illustrated by the technic of the Indian and Italian methods. Deformities of the nose, congenital and traumatic, are described according to the technic of Joseph with little modification. Defects of eyelids, eyebrows and orbits are corrected by the standard methods previously described.

Defects of the ear, both partial and complete, are corrected by the usual methods. Deformities of the ears, such as protruding ears, large ears and cauliflower ears, are corrected by recognized technics. The osseous framework of the face as to fractures of the mandible and maxilla, the prosthetic appliances for the face and the neck, larynx and trachea are discussed in a limited way.

The section on skeletal bones and joints is superficial and does not discuss bony problems with deep enough penetration. The author's illustrated cases show consistently good results except for cosmetic correction of nasal deformities, which show improvement but do not demonstrate results that are obtained by the refinements of technic of the last ten years. This book is an adequate reference in methods and planning of reconstructive surgery.

Textbook of Human Physiology. By William F. Hamilton, Ph.D., Professor of Physiology, University of Georgia School of Medicine, Augusta. Cloth. Price, $6. Pp. 504, with 121 illustrations. F. A. Davis Co., 1914-16 Cherry St., Philadelphia 3, 1947

The organization of this text is excellent, except that an undue amount of space is devoted to special senses A unique feature is a discussion of pain and vivisection As is to be expected from this author's interests in the circulatory field, the circulation likewise receives a disproportionate amount of attention, one hundred and twenty-three pages compared to twenty-one for the digestive system, eleven for the kidney and thirteen for metabolism The endocrines are covered in twenty-one pages. Despite great personal respect for both the author's character and personality and his scientific understanding, the need for the book is not clear, despite considerable explanation in the author's preface It seems to be just another textbook suitable for an elementary medical student, but likely to be misleading to one who is not too inquiring.

Handbook of Physiology & Biochemistry. Originally "Kirke's" and Later "Halliburton's." By R.J.S. McDowall, M.D., D.Sc., Professor of Physiology, University of London, King's College London. Thirty-ninth edition. Cloth. Price, $7. Pp. 899, with 305 illustrations. The Blakiston Co., 1012 Walnut St., Philadelphia 5, 1946.

Designating this book the thirty-ninth edition is somewhat misrepresentative, as it bears no more resemblance to the original Kirke's Handbook than does an early number of the *Saturday Evening Post* to its present day namesake. The type is too small for comfortable reading. Some of the illustrations are reminiscent of the day when students entered medical school with no training in physics or chemistry and it was necessary to provide fundamental information now readily available to all students. Many of the illustrations are evidently original work of the author. The material in the text is factual and well condensed, so that the entire subject is presented in something over eight hundred pages in a manner quite as adequate as in many more voluminous tomes. The most notable exception to this is the chapter on endocrines, the entire subject being covered with twenty-five brief pages. While most of the essential details are presented, certainly there can be no question of the need for greater detail on many points. There seems to be little justification for illustrations such as figure 132 on page 325 or for the accompanying directions for making a blood count. Many procedures are employed in the laboratory which might be much more aptly discussed. The inclusion of the word biochemistry in the title is also a misnomer, because the book carries very few of the features of the textbook of biochemistry. However, it is a good textbook for medical students, and the fact that it continues to be popular under its present authorship is evidence that students find it desirable.

ADOPTING A CHILD. By Frances Lockridge. With the Assistance of Sophie van S. Theis, Secretary of the Child Placing and Adoption Agency of the State Charities Aid Association. New York. Cloth. Price, $3. Pp. 216. Greenberg: Publisher, 201 E. 57th St., New York 22, 1947.

Not often does one read a book on a subject so sentiment ridden and emotionally charged as adoption that one can wholeheartedly and without reservation recommend to parents seeking children to adopt This book achieves the unusual success of being warm and human, highly informative, accurate and balanced The author reviews the history of adoption, its recent growth and its present status The functions and point of view of adoption agencies and the "black market" in babies are discussed Sources of babies and children for adoption are described, and the procedure and purposes of good adoption practice are carefully reviewed. The volume is replete with human anecdotes effectively woven into the explanation of the book The volume closes with a list of public and private adoption agencies in the United States and Canada The publisher makes an abbreviated edition available for 25 cents.

Patología digestiva: Actualidades clínico-radiológicas y terápeuticas. Tomo II. Editado por B. Varela Fuentes, profesor de clinica de nutricion y gasteroenterologia, de la Facultad de medicion de Montevideo, Montevideo, y Alberto Munilla, director de la Escuela de dietistas, de la Facultad de medicina de Montevideo. Paper. Pp. 782, with illustrations. Espasa-Calpe Argentina S. A., Buenos Aires, 1947.

This is an ambitious work, well written, printed, illustrated and documented. Every Spanish-speaking gastroenterologist will want to have a copy on his desk. There are chapters on constipation, the radiologic study of the terminal ileum and the ileocecal sphincter, amebiasis, chronic ulcerative colitis, cholecystography, congenital malformations of the biliary tract and hydatid disease of the liver, cirrhosis of the liver in the child, obstruction of the cystic duct, a study of the metabolism of the biliary pigments, anemia with falciform red blood cells, experimental pancreatitis, alcaptonuria and two chapters on certain phases of diabetes. The treatment of chronic ulcerative colitis is that used in the United States today. In this disease penicillin appears to be of value mainly to clear up complicating inflammations. There is a curious chapter on the treatment of gastroduodenal ulcer with female sex hormones. There is a good chapter based on research as to the innervation of the digestive tract. Other unusual chapters are on intra-abdominal pressure, the innervation of the liver and the biliary tract and xanthomatosis with cirrhosis of the liver. This last appears to be a common condition in Argentina.

Congenital Malformations of the Heart. By Helen B. Taussig, M.D., Associate Professor of Pediatrics, Johns Hopkins University School of Medicine, Baltimore. Cloth. Price, $10. Pp. 618, with 177 illustrations. The Commonwealth Fund, 41 E. Fifty-Seventh St., New York 22; Oxford University Press, Amen House, Warwick Square London, E. C. 4, England, 1947.

This book on congenital malformations of the heart must be on the desk of every cardiologist and physician interested in congenital heart disease. Even those who occasionally see a patient with congenital heart disease will enjoy reading this book and will be aided in making a correct diagnosis. The book is well planned, clearly and concisely written. Each type of congenital malformation of the heart is dealt with similarly according to a definite pattern. This plan makes the book an excellent reference work in which one can find promptly what is being sought. Students and practicing physicians enjoy reading a book in which facts and observations are arranged in an orderly manner on a simple, well formed trellis where they can be seen.

The reading matter is well clarified by illustrations which truly illustrate. Reproductions of roentgenograms are good, and the line drawings indicating what is to be seen in these roentgenologic pictures are helpful. Schematic colored plates showing the course of the circulation of the heart give the reader a clear mental image of the basic pathologic condition. Again, this book on congenital malformations of the heart is a "must" for every clinician who is interested in congenital heart disease. In the foreword Dr. E. A. Park makes this pointed comment: "Dr. Helen B. Taussig has done for the clinician what Maude Abbot did for the pathologist; namely, made the malformations of the heart understandable and accessible."

Chemical and Physical Investigations on Dairy Products. By H. Eilers, R. N. J. Saal, and M. van der Waarden. Executed by Order of the General Netherlands Dairy Union (Coöperative Dairies). Monographs on the Progress of Research in Holland During the War, No. 12. Paper. Price, $4. Pp. 215, with 51 illustrations. Elsevier Publishing Company, Inc., 215 Fourth Ave., New York 3, 1947.

This volume contains three papers on subjects connected with the chemistry of dairy products and is one of a series of monographs on the progress of research in Holland during the war. The first paper, by H. Eilers, deals with the colloid chemistry of skim milk and covers the calcium-caseinate-phosphate phase of milk, the proteins denaturable by heat and the behavior of skim milk on concentration. The second paper, by Saal and Heukelom, covers work on the oxidation-reduction potential of milk and of butter-plasma. The last paper, by van der Waarden, gives researches on the chemical processes underlying the deterioration of the flavor of butter in cold storage. In all cases the authors present an accurate review of the older literature as well as the recent work which they have conducted. Since much recent work is available on the amino acid content of casein, significant changes can now be made in the table opposite page 6. This monograph should be valuable to any one dealing with the processing of dairy products.

The 1947 Year Book of General Medicine. Edited by George F. Dick, M.D., and others. Fabrikoid. Price, $3.75. Pp. 734, with 113 illustrations. The Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1947.

This volume is well up to the standard of previous contributions now so well known to the medical profession. The numerous comments by the editors help to make much more valuable the capable abstracts.

Ulcer: The Primary Cause of Gastric and Duodenal Ulcer: Diagnosis, Medical and Surgical Treatment, Prevention. By Donald Cook, B.A., M.D. Cloth. Price $5. Pp. 192, with 27 illustrations. Medical Center Foundation and Fund, 30 N. Michigan Ave., Chicago 2, 1946.

The author has written in an interesting manner the medical facts and theories surrounding the most widely discussed topic—peptic ulcer. He mentions all the common theories of ulcer causation and notes the factors that are not explained in each of these theories. Then he speaks of the "primary cause" of ulcer, whether gastric or duodenal, which is his contribution to the subject. It is based on ischemia and anemia of the stomach mucosa and wall, due to pressure against the stomach by the posterior wall of the liver and behind by the spinal vertebral bodies, the crura of the diaphragm and the firm prevertebral tissue. He pays especial attention to the length of time the ulcer-bearing area of the stomach is held in the angle of the hepatovertebral notch and the severity of the pressure and the anemia which results. This lowering of tissue resistance predisposes to ulcer formation. He then ingeniously fits all the theories into his "primary cause" and works out treatments in the same way, fitting in the various factors of treatments, complications and surgery. He quotes at length from the work of Sippy, which he describes as "a classic" which made ulcer a "medical condition" and perfected "a treatment" to which little has been added in the last thirty years. He has added a concept of the pathologic condition which fits into the ideas of decreased resistance of the stomach wall, that allows the digestive action of the secretions of the stomach, hydrochloric acid, activating pepsin, to cause peptic ulcer. Also, he explains the good effects of frequent feeding and use of alkali in medical management, largely on the basis of drawing the ulcer-bearing area of th stomach away from the hepatovertebral notch rather than on the ground of acid control.

Rehabilitation of the Physically Handicapped. By Henry H. Kessler, M.D., Ph.D. Cloth Price, $3.50. Pp. 274. Columbia University Press, 2960 Broadway, New York 27, 1947.

In the expanding field of rehabilitation and services to the handicapped, there has long been needed a single, comprehensive volume such as this, to give the physician, nurse, social worker, therapeutist rehabilitation counselor, placement specialist and personnel administrator an introduction to and general survey of the modern concepts of rehabilitation. Long a leader in the field of rehabilitation, and currently president of the National Council on Rehabilitation, Dr. Kessler has had both the professional training and the experience necessary to present and interpret the growing rehabilitation movement. After completing his medical education he received both the M.A. and the Ph.D. degree in the social sciences. In 1919 he became assistant director, later medical director, of the New Jersey Rehabilitation Clinic, the first such government service in the United States. A pioneer in the cineplasty technic of amputation, Dr. Kessler, as a captain, developed the Navy's outstanding rehabilitation program for amputees at Mare Island, Calif. Since the war he has served as a consultant to the Office of Vocational Rehabilitation.

In his analysis of the present status of rehabilitation in the United States, Dr. Kessler repeatedly calls attention to the great gap between the number of physically handicapped persons in this country and the appalling lack of facilities and trained personnel to give them the services which they need. He points out, however, that great progress has been made in the past twenty-five years, particularly during World War II, in the recognition that the social, economic and personal factors are equally as important in rehabilitation as the physical. Much of this improved status of the disabled he attributes to the demonstration by physically handicapped persons during World War II that they are efficient, reliable and valuable workmen when selectively placed in jobs commensurate with their physical capacities, and to the growing professional and public interest in rehabilitation springing from the successful programs of the military services during that period. The factual material which Dr. Kessler presents has been, until now, scattered in dozens of professional journals of a score of various professional fields. Its synthesis into one volume, together with his experienced analysis and stimulating style, makes this an informative sourcebook for all concerned with this major medical, social and economic problem.

Sex in Our Changing World. By John McPartland. Cloth. Price, $2.75. Pp. 280. Rinehart & Co., 232 Madison Ave, New York 16, 1947.

The author's thesis holds that millions of persons look on sex as a form of diversion and not as the basis of a permanent, lastingly satisfactory relationship. His contribution to the literature is a mixture of scientific comment and crude observation. The volume goes somewhat beyond the borders of popularization of sex knowledge. After reading the author's chapters on homosexual persons and sex crimes, one might recommend that the author read over his own chapter on boundaries of decency.

Blood Pressure and Its Disorders Including Angina Pectoris By John Plesch, M.D., L R.C.P.&S. Second edition. Cloth. Price, $6. Pp 307 with 125 illustrations. Williams & Wilkins Co., Mount Royal and Guilford Aves, Baltimore 2, 1947.

The first edition was unenthusiastically reviewed in THE JOURNAL, Dec. 23, 1944. One hundred and fifty-eight pages and sixty-four illustrations have been added to the second edition. Like the first, it deals principally with tonoscillography. As such it seems adequate in technical detail and may be of value to students of this method. As a clinical text on circulatory disease it is unpardonable. To describe the syndrome of malignant hypertension as "capillaritis generalis" and to illustrate it from the detailed case history of Colonel N , noting through several pages, such irrelevancies as his blood count, the straw color of his urine and the mucoid cloud it formed on standing; to make a plate of his altogether undistinguished electrocardiogram (leads 1, 2 and 3), indicating it as typical of the disease, and then to ascribe his illness to the "festering of a war wound" is gibberish. Postprandial angina pectoris does not respond to a kosher diet, nor is cupping recognized as an acceptable alternative. Angina with persistent discomfort is hardly to be treated three times a day by a powder which combines theobromine, "luminal" (phenobarbital) and 1/20 grain (3 mg.) "dilaudid" (dihydromorphinone), even for six weeks. The body fluids do not contain 0.85 per cent sodium chloride (NACl). The author's low sodium diet "still contains so much salt that the daily output of NaCl in the urine is about 1 per cent." It is amazing that the publisher should adorn with elegant format and honored name this ill digested mass of fat, fancy and foolishness. Caveat emptor.

Andreas Vesalius Bruxellensis: The Bloodletting Letter of 1539: An Annotated Translation and Study of the Evolution of Vesalius's Scientific Development. By John B. deC. M. Saunders, F.R.C.S., and Charles Donald O'Malley. Cloth. Price, $5. Pp. 94. Henry Schuman, 20 E. 70th St., New York 21, [n. d.]

For the medical historian any writing of Vesalius is significant. This discussion of a letter on bloodletting, published in 1539, is beautifully presented in a work with numerous and competent annotations. It affords an insight not only into the knowledge of anatomy of that day but also into many other other aspects of scientific work.

Modern Dermatology and Syphilology. By S. William Becker, M.D., Clinical Professor of Dermatology, University of Chicago, Chicago, and Maximilian E. Obermayer, M.D., Clinical Professor and Chairman of the Department of Dermatology, University of Southern California, Los Angeles. Second edition. Fabrikoid. Price, $18. Pp. 1017, with 498 illustrations. J. B. Lippincott Co., 227 S. 6th St., Philadelphia 5, 1947.

The new edition of this contribution to textbooks in the field of dermatology brings up-to-date studies in many fields of dermatology. It adds the advances on tropical medicine made during World War II, revises the section on syphilis by considering the therapeutic uses of penicillin and makes its nomenclature conform to the Standard Nomenclature of Disease. The quality of the printing, the paper and the illustrations make this book especially valuable for the general practitioner and student.

Textbook of Endocrinology. By Hans Selye, M.D., Ph.D., D.Sc., Professor and Director of the Institut de médecine et de chirurgie experimentales, Université de Montréal. With a preface by Professor Bernardo A. Houssay. Cloth. Price, $12.80. Pp. 914, with illustrations. Acta Endocrinologica, Universite de Montréal, Montreal, Canada 1947.

In the introduction, Dr. Bernardo Houssay says, "This book represents a critical and concise, orderly presentation of what is most important in the immense collection of facts of modern endocrinology." Each of the chapters has been surveyed by recognized experts in the special field concerned, and chapters are devoted to each of the important glands and glandular systems of the body. A final chapter entitled "Correlations" draws together the interrelationships that govern the sexual cycle, pregnancy, lactation and adaptation. The book is excellently printed on good paper, and the illustrations are among the finest available in any of the books devoted to such subjects. The volume avoids the difficulties associated with the use of other textbooks in the field, of too much pro and con discussion, by a didacticism which represents the voice of authority. Nevertheless, the author does not hesitate to indicate the Lack of positive information where it is not yet available. The index offers an unusual contribution in its indication of target organs and the influences that act on them.

A Text-Book of Mental Deficiency (Amentia). By A. F. Tredgold, M.D., F.R.C.P., F.R.S., Consulting Physician to University College Hospital, London, England. Seventh edition. Cloth. Price, $8.50. Pp. 534, with illustrations. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1947.

This book has the standard British approach to the problem of the mentally defective, and the legal aspects are those that prevail in Great Britain. There are, nevertheless, reports of writings in the American field, but the statistics cited are for the most part those previous to 1917 except one article published in 1933. There is an almost complete disregard of modern dynamic psychology. One is startled by the author's suggestion that the prostitute who practices her profession "in a decent respectable manner" is not vicious, but if she openly and persistently flaunts herself, she is Among the most interesting chapters is one called "Idiot Savants."

Temas de cancerilogia y radioterapia. Conferencias dictadas en el curso libre de cancerologia del ano de 1945, bajo la direccion de los profesores Cesar A. Pantoja, director del Instituto de radium, Universidad Nacional de Colombia, y Alfonso Esguerra Gomez, profesor titular de cancerologia. Recopilacion, redaccion y edicion de Luis Maria Borrero H. Revision literaria del Dr. Nicolas Bayona Posada, relator del Instituto. Campana colombiana contra el cancer. Paper. Pp. 675, with illustrations. Editorial Minerva, Ltda., Bogota, 1946.

This volume is a compilation of the lectures given in the National Radium Institute of Colombia, by the staff of the Institute and professors of the National University. The first part of the book is devoted to the social, laboratory and clinical aspects of cancer. Following this there is a chapter on the roentgen diagnosis of this special field. The second part is devoted to the physics of curietherapy and roentgenotherapy, which forms the main body of the book, and is illustrated by numerous diagrams. There is a short chapter on surgery and biology of cancer. The format and general appearance of the book are excellent.

Music and Medicine. Edited by Dorothy M. Schullian and Max Schoen. Cloth. Price, $6.50. Pp. 499, with illustrations. Henry Schuman, Inc., 20 E. 70th St., New York 21, 1948.

For many years Col Fielding H. Garrison was interested in the relation of music to medicine and published earlier one of the best essays on the subject, entitled "Medical Men Who Have Loved Music." That essay appears complete in the present symposium together with contributions on the subject by other interested writers. There are such chapters as musical therapy, music and hospitals, emotional expression in music and the occupational diseases of musicians. Thus far there has been no other comprehensive scientific book available in this field, although there has been a mass of incompetent unscientific writing. This book brings together the state of existing knowledge in a field in which esthetics and science draw closely together.

Dermatologie fur Augenärtze. Von Walther Schonfeld, Prof. Dr. med. an der Universitat Heidelberg. Boards. Price, 24 marks. Pp. 109, with 92 illustrations. Georg Thieme, Diemershaldenstrasse 47, Stuttgart-O (American Zone), 1947.

In his preface the author states that this is not a substitute for a text book on dermatology. he divides his material into diathesis, by which he means hereditary cinstitutional disease, and skin diseases. Under the former, he discusses seborrheic dermatitis, exudative diathesis and allergic disease. The skin diseases are discussed under (1) diseases of unknown etiology, diseases of known infectious etiology and virus infections: (2) diseases caused by light and heat, toxicity, avitaminosis, sarcoid, congenital and hereditary conditions, cancerous and noncancerous tumors, and (3) diseases of the cutaneous appendages such as hair, skin glands and pigment. Descriptions of various entities are short but adequate. The therapy of most conditions is described in only a line or two. The book is a good summary of cutaneous lesions seen by the ophthalmologist.

The Case of Rudolf Hess: A Problem in Diagnosis and Forensic Psychiatry. By Physicians in the Services Who Have Been Concerned with Him from 1941 to 1946. Edited by J. R. Rees. Cloth. Price, $3. Pp 224 W. W. Norton & Co., Inc., 101 Fifth Ave., New York 3, 1948.

The eight British and American psychiatrists who studied Rudolf Hess from 1941 to 1946 make available here their observations of this extraordinary character. Obviously the egomaniac was happy to know that he was of such importance, but where he now is, pleasure in this volume is probably exceedingly slight. In his letter that accompanies the book, written on Sept. 17, 1946, he takes it for granted that the experts who examined him did so by compulsion and that their attitude toward him was a crime. The experts incline to the conclusion that Rudolf Hess was a case of schizophrenia of a paranoid type Yet they recognize that a study of the structure and dynamics of his total personality made difficult any simple label. The whole story of Hess is told in this quotation: "...he appears as a self-centered, shy, shut-in, authistic personality, submissive but antagonistic to his father in early life, more devoted to his mother and what she stood for, suffering from guilt and an unsettled employment problem, given to an unstable alternation between heroic aggressive and doggedly-industrious, submissive patterns of living, caught in the swirling political currents of his country, with whose fate he becomes emotionally identified and whose extreme forms of irrationalities he is driven to adopt by his craving for devotion and fantasies of glory. He basks briefly but uneasily in the early sunshine of Nazi success but his haunting sense of inadequacy and inner conflict destroy his influence in a position of power far beyond his capacity—perhaps a little to his credit in the setting in which he was expected to live his life."

The 1947 Year Book of General Therapeutics. Edited by Oscar W. Bethea Ph.M., M D. F.A C.P. Cloth. Price, $3.75. Pp. 455; with 33 illustrations The Year Book Publishers, Inc., 304 S Dearborn St., Chicago 4, 1947.

This book summarizes much that is new in therapeutics in a way which enables the reader to get his information promptly. Due consideration is also given to new diagnostic tests and devices for therapy. The sulfonamide drugs and the antibiotics are exhaustively reviewed. There are good summaries as to the presently accepted indications, contraindications, complications and modes of therapy of these agents. The parasitic diseases have also been given an extensive discussion, particularly the protean manifestations of amebiasis Two new drugs—"diramin" (an aqueous solution of the products resulting from the reaction between antimony catechol and triisopropanolamine in the presence of propylene glycol) and "melarsen" (a pentavalent arsenic preparation)—are here introduced.

The results of therapeutic measures in the various stages of syphilis are statistically presented. Recent experiences in the therapeutics of rheumatic fever, rheumatoid arthritis, brucellosis and the menigitides are discussed at length. Results of influenza and BCG vaccinations are presented. The information on hematinics, blood and plasma transfusions, plasma substitutes and blood fractions is inclusive and should prove of help to the clinician. The review on the use and abuse of vitamins and hormones should also prove interesting. A discussion of various insulin mixtures, antithyroid drugs, anesthetic or analgesic substances, cardiac preparations and anticoagulants concludes this volume. The book can profitably be used by the medical practitioner as a good reference guide to accepted and also to some newer therapeutic procedures.

Occupational Medicine and Industrial Hygiene. By Rutherford T Johnstone, A.B. M D, Consultant in Industrial Health, Los Angeles Cloth. Price, $10. Pp. 604 with 117 illustrations. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1948.

Here is a significant book that is designed, produced and geared to the present day needs of the industrial physician and the general practitioner engaged in industrial medical practice industrial hygienists, industrial health officers, nurses, students and others concerned with the many branches of occupational medicine and industrial hygiene will also be attracted by this most extraordinary source of practical information. The volume, divided into seven parts and forty-one chapters, vividly reflects the unique and extensive experience of the author. Practical data from every important phase of the field are presented in a well written, clear, decisive and conclusive manner.

Of particular interest are the thorough descriptions of the clinical features of industrial diseases, covering signs, symptoms, diagnosis, laboratory procedure and treatment. Case histories illustrate clinical entities. Permanent and temporary disabilities are estimated. In his approach to the industrial solvents Dr. Johnstone has presented a simple review of organic chemistry, thus enabling the reader to grasp the significance of each substance and to classify the various solvents according to their systemic effect. Industrial metals and dusts, including beryllium, are handled with an understanding simplicity that will appeal to the reader. A section devoted to industrial hygiene has been written for the plant physician who has had no training in industrial engineering or hygiene The highly technical aspect of this field has been avoided. The language and descriptions are designed for practical use. In a manner the plant is brought to the physician, thus enabling him to understand health hazards which may exist in connection with such processes as welding, metallizing pickling, heat treating, anodyzing and the manufacture of plastic and synthetic products The preface, written in a typical "Johnstoneian" style, is superb. Definitely, an entirely new contribution to medical literature has been made.

Diabetes Mellitus in General Practice. By Arthur R. Colwell, M.D., Associate Professor of Medicine and Director of Medical Specialty Training, Northwestern University Medical School, Chicago. Cloth. Price, $5.25. Pp. 350, with 24 illustrations The Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1947.

The practitioner of medicine will be impressed with Colwell's "Diabetes Mellitus in General Practice." It is neat in format and in its content. It is interesting to note that the definition of diabetes, at the beginning of chapter one, reveals the transitory state of knowledge, as far as the underlying cause of the disease is concerned. The old definition with the pentad of symptoms originally described in the Papyrus Ebers, and repeated monotonously up to thirty years ago, is gone; but the definition of tomorrow, the ultimate one, has not yet been written. The background of the diabetic patient is discussed in a satisfactory way. Cases are designated as mild, moderate and severe, depending on the clinical severity of the disease. The time at which diabetes makes its appearance and the severity of the disease receive due consideration. Classification and diagnosis receive adequate consideration, and this gives the author ample opportunity to relate the fruits of his experience. Treatment is divided into treatment in general, treatment by diet and treatment with insulin. Adequate and inadequate modes of therapy are discussed and properly contrasted. This is wholesome in these times when in certain quarters the tendency to liberalism in the control of diabetes is being carried rather far. It is undoubtedly true that some patients seem to have done well for decades without strict control, but no one has yet shown that inadequate control produces as good or better results; and it seems true beyond question that uncontrolled patients show more frequent and more serious complications. Here the author is on solid ground, and his readers will be influenced in the logical direction.

The chapter on insulin and its modifications is thorough and satisfactory. The discussion is at its best, for the author has made valuable contributions to the knowledge of insulin mixtures over the past several years. The distinct value of insulin mixtures, especially the mixing of one part of protamine zinc insulin to two parts crystalline insulin, is emphasized. Complications, acute and chronic, mild and severe, are adequately discussed. This monograph covers the subject in a thoroughly satisfactory way and should be of distinct value to the practitioner of medicine for whom it was intended.

The Practice of Group Therapy. Edited by S. R. Slavson. Foreword by Nolan D. C. Lewis, M.D. Cloth. Price, $5. Pp. 271. International Universities Press, 227 W. 13th St., New York 11, 1947.

In the new field of group therapy nobody can claim rightfully to be an expert yet. Some of the workers have more experience or are more vocal about it—but even the best of them are courageous pioneers, and their work is still in the stage of testing experimentation. Neither methods nor principles are firmly established yet. It is, therefore, highly commendable that S.R. Slavson, as an editor, collected clinical observations and detailed case reports and made them available in his book for the interested newcomer to learn and study the new progress in group psychotherapy. After a short foreword by Nolan D. C. Lewis, the editor, S. R. Slavson, tried briefly to outline the general principles and dynamics. He also wrote a chapter about the "Contra-Indications of Group Therapy for Patients with Psychopathic Personalities."

The best part of the book is the clearcut description of group psychotherapy at work; Nathan W. Ackerman reports it in his chapter about "Interview Group Psychotherapy with Psychoneurotic Adults." Equally informative is the report by James Sonnett Greene, "Interview Group Psychotherapy for Speech Disorders." In a special chapter J. W. Klapman describes "Didactic Group Psychotherapy with Psychotic Patients." Some detailed reports of cases describe adults, children, allergic patients and the treatment of mother-child relations within the group.

The sincere, open-minded and progressive psychiatrist, who at the present time almost desperately attempts to avoid his own breakdown through overwork and who is acutely aware of his responsibility to meet the public demand for adequate psychiatric help, will find in the reports of this book hope and encouragement and guidance to experiment in the practice of group psychotherapy and to experience its potentiality not yet fully recognized and utilized.

Indice bibliografico de lepra 1.500-1.944. Volume II: I-P. Organizado por Luiza Keffer, bibliotecaria do Departamento de profilaxia da lepra de São Paulo, Brasil. Paper. Pp. 675-1434. São Paulo, 1946.

This second volume of the bibliography on leprosy covers the letters I-P and will be welcomed by leprologists and sanitarians. Volume I, covering the letters A-H, was published in 1944. This monumental work compiled by Luiza Keffer, Librarian of the Department for the Prevention of Leprosy of the State of São Paulo, represents one of the largest and most exhaustive bibliographies on any special subject in the field of medicine. Both authors and subjects are included in a single alphabet in dictionary order, an excellent style for quick and easy reference. Since it is a Brazilian publication, each entry is listed in the original language of publication with a Portuguese translation of the title immediately following. A list of the periodicals, with their abbreviations, covered in the bibliography, precedes the index proper.

Diseases of the Nervous System. By W. Russell Brain, D.M., F.R.C.P., Physician to the London Hospital and to the Maida Vale Hospital for Nervous Diseases, London. Oxford Medical Publications. Third Edition. Cloth. Price, $10.75. Pp. 987, with 80 illustrations. Oxford University Press, 114 Fifth Ave., New York 11; Amen House, Warwick Sq., London, E. C. 4, 1947.

Brain's book fills the requirements for a competent textbook on neurology. It has neuroanatomy, neurophysiology and neuropathology, with precise and concise clinical descriptions of all disease entities It is written in the best tradition of English neurology, in which the pervasive influence of Sherrington is felt throughout. Not in vain was the author a "scholar in physiology at the University of Oxford"[1] The book is well balanced; the author is objective, and in no instance does he attempt to impose his own views on the reader, nor does he put forth his pet theories, and he does not display his likes and dislikes. The style is somewhat cold, but the amount of information offered is enormous. It is good for the student, good for the practitioner and good for the diehard neurologist. It is particularly appropriate for the candidates of the American Board of Psychiatry and Neurology as a last minute refresher.

The book is carefully edited, and the number of inaccuracies and misprints is under the physiologic minimum. Here are a few: The cutaneous area of the of the ulnar nerve as shown in figure 4, though taken from an atlas of anatomy, is not correct: this area does not extend proximally above the wrist. Brain states that Erb's syphilitic spinal paralysis is characterized by "absence of sensory loss." Erb himself said in a publication in English of 1902: "Syphilitic spinal paralysis is distinguished from simple spastic spinal paralysis by the presence of disturbances of sensation...." It is regrettable that even such an open-minded man as Russell Brain has succumbed to the prevalent wave of "intervertebral disk hysteria." "Whether true sciatic neuritis occurs is now doubtful: it it certainly very rare...." He speaks of "true" sciatic neuritis. He means, of course, not "true", in contradistinction to "false", but evidently primary neuritis. The existence of such a neuritis has been established beyond any reasonable shadow of a doubt, now and forever—disk or no disk!

The criticism to which this book may be exposed in view of such minor errors in no way detracts from its fundamental value or from its position as the best of its kind. Next to Gordon Holmes's "Introduction to Clinical Neurology," it can be recommended *primo loco* for any student of neurology.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST

INCLUSION BODIES

To the Editor:—Is there any way of distinguishing between Negri bodies and distemper bodies in a section of the brain of a dog? Can both inclusion bodies occur in the same brain? Will anti-rabic treatment cause any congenital defects in a newborn infant if given to the mother in the first trimester of pregnancy? Will anti-rabic treatment produce encephalitis in a child recently recovered from (A) polio, (B) measles or any other virus disease?

M.D., New York.

ANSWER.—Negri bodies and distemper bodies stain differently with methylene blue. The Negri bodies contain characteristic granules. There is of course no reason (so far as we know) why rabies and distemper might not occur in the same dog at the same time when presumably both bodies would be found in the brain.

It is not known whether antirabic treatment early in pregnancy might be followed by defects in the offspring. Neither is it known whether antirabic treatment is liable to cause encepahalitis in a child recently recovered from some other virus disease.

CORNEAL ABRASION

To the Editor:—Please outline the treatment for simple corneal abrasion.

J.E. Walton M.D., Homer, Ill.

ANSWER.—An uncomplicated corneal abrasion, in a healthy person, will heal with amazing rapidity, sometimes within hours, without any treatment. Almost all drugs retard the rate of healing and even ointment bases only tend to soften the epithelium and delay healing.

The first consideration should be removal of the causative agent, whether a misplaced lash, foreign body or conjunctival concretion. An eye patch applied for twenty-four hours will minimize discomfort and this, plus a simple antiseptic, may be all that is required. Severe abrasions may require a cycloplegic as atropine or homatropine to relieve ciliary spasm, and local anesthetics may be required for pain.

TETANY

To the Editor:—I have a patient whose parathyroids were removed incident to a thyroidectomy. As a result she requires frequent injections of calcium gluconate and occasionally parathyroid to control recurrent bouts of tetany. Supplement oral therapy of dihydrotachysterol (A.T. 10) and high doses of calcium lactate by mouth in addition to enteric-coated ammonium chloride are given. The problem at present, however, is a peculiar type of edema to which the patient is subject. She is 22 years old, white, and her thyroid was removed in 1945. The edema is concentrated over the lower part of the abdomen, buttocks and upper part of the thighs. It does not pit. Cardiac and renal function are apparently normal. Profuse diuresis is achieved with injection of meralluride (1 to 2 cc.) daily and every other day. Assuming renal function and serum protein are normal, can any other reason be advanced to explain this type of edema? I would also appreciate any suggestions both as to control of edema and also tetany.

Paul Gerber, M.D., Philadelphia.

ANSWER.—The type of solid edema is seen in some persons who have toxic diffuse goiter (Graves' disease) which is much like that described in the patient. It is almost always symmetric, usually involves the shins, does not pit and appears much like pigskin. A small biopsy specimen taken from an involved area should show the characteristic myxomatous changes and edema in the cutis, as well as homogenized collagenous tissue. Although this process is called localized myxedema, it does not respond to dessicated thyroid as does generalized myxedema. It may be present with an associated elevated basal metabolic rate or it may appear when the basal metabolic rate is normal or low. Its etiology is probably related to the thyroid-stimulating hormone of the pituitary gland.

Dihydrotachysterol plus calcium lactate by mouth is good treatment for hypoparathyroidism. The dose of the former should be adjusted so that enough is taken each day to maintain a blood calcium level near the normal range of 9 to 11 mg. per hundred cubic centimeters. The tolerance of the individual patient of this drug is variable, and its action is slower than parathyroid, but more rapid than vitamin D2. A starting dose of 1.25 mg. daily can be given and then the amount increased or decreased, based on the behavior of the serum calcium and the patient's symptoms.

PROLAPSE OF RECTUM

To the Editor:— Is the injection treatment, as recommended in Medical Record 149:273 (April 19) 1939, for large complete rectal prolapse a recognized procedure? The patient is a woman aged 73 with first-sized prolapse of the rectum. She had recurrences after colopexy and circular scar-formation operation.

M.D., Kansas

ANSWER. Perhaps the only instances in which injections of a sclerosing solution are useful in prolapse of the rectum are in children. There the procedure outlined by Harvey Stone of Baltimore with the injection of alcohol will sometimes effect a cure. In complete rectal prolapses in adults quinine and urea hydrochloride would be contraindicated because of its well known tendency to cause sloughs and because fundamentally it is not the mucosa alone which is prolapsed but all layers of the bowel.

MENINGITIS

To the Editor:—In the recent Volume II of the "Cornell Conferences on Therapy" (New York, the Macmillan Company, 1947) on the subject of meningitis, it is emphasized that after a spinal puncture more spinal fluid should always be withdrawn than the amount of therapeutic material injected (penicillin, for instance). Other textbooks on the technic of lumbar puncture emphasize this. Best, in the "Physiological Basis of Medical Practice," states that the spinal cord membrane and brain coverings and channels are capable of considerable expansion. Having personally treated several infants with meningitis and at times being unable to withdraw as much spinal fluid as I would like, I have proceeded to inject more penicillin solution than the amount of spinal fluid withdrawn. I have seen no bad effects on any of the children. It is my opinion that this caution in regard to withdrawing more spinal fluid than the amount to be injected is more theoretic than real. Kindly give me an opinion.

M.D., Ohio.

ANSWER.—The question of whether to withdraw more spinal fluid than the amount of substance to be injected is of secondary importance to the question of whether any should be injected at all. It is reasonable and theoretic, of course, to assume that if the pressure of the spinal fluid is already increased, as it often is in meningitis, any greater increase in pressure from even more fluid may be harmful despite the ability of the membrane to expand. Although many authorities still favor the use of spinal drainage and intrathecal therapy for meningitis, A. L. Hoyne and others for years have shown that the less the theca vertebralis is tampered with, the better the mortality rate. In a recent series of cases (*Ann. Int. Med.* 28:248, 1948) the mortality rate among 660 patients with meningococcic meningitis was 6 per cent, and only 2 of 28 patients with meningitis due to Haemophilis influenzae died (THE JOURNAL, February 28, p.597). The great majority of those who recovered did not receive intrathecal therapy, and in the meningococcic cases spinal tap was never done if the diagnosis could be established by blood culture or culture from the dermal lesions. According to A. H. Price and J. H. Hodges (*New York State J. Med.* 44:2012, 1944), it seems to be more important to direct penicillin into the tissues of the meninges, where the infection is, than to attack the bacteria which float in the spinal fluid; and to do this parenteral therapy is preferred.

INTERVERTEBRAL DISK

To the Editor:—A brief history of a patient is as follows: Onset occurred with acute pain low in the back and sciatica six to seven years ago. At that time an orthopedist attributed the condition to a sacroiliac strain. The acute symptoms subsided, leaving a chronic sciatica which was aggravated and accompanied by "lumbago" (left lumbar) on exertion, such as lifting. A second orthopedist two years later concluded that the original lesion had been injury to a disk. Last summer a severe attack of lumbago caused the patient to consult another orthopedist, who agreed that the basis of the trouble was a lesion in a disk and suggested that removal plus fusion would be necessary if the patient wanted to be active and comfortable. Since the last consultation, the patient has complained of his buttocks' and legs' "going to sleep" after sitting for ten minutes or more. There is more or less constant paresthesia of the right leg and particularly the outer side of the foot. Why should this get worse and appear in the opposite leg (not as marked) when sitting? Is there a correlation with the injured disk? Crossing the legs tends to aggravate the condition, but it is not prevented by not crossing them. The patient is a white man aged 35 years who is rather thin (6 feet 1 inch [185.4 cm.] and 150 pounds [68 Kg.]). He does office work requiring intermittent sitting of one half to one hour or longer. Information on literature, diagnosis and treatment is requested.

M. D., Virginia.

ANSWER.—The data supplied indicates an involvement of the lumbosacral roots. The history indicates a rather long duration of symptoms referable to the roots on the right, and more recently an extension to those on the left. The presumption would be that the basis for the symptoms is a disturbance of the intervertebral disks. This is predicated on the distribution of the signs and and symptoms, the absence of sphincter disturbance and the clinical course. This may be either a ruptured nucleus pulposus or a partial extrusion of the entire disk.

The paresthesia that develops in the buttocks and legs after sitting is probably the result of increased pressure against the lumbosacral roots as a result of posture. The distribution of the paresthesia is important, because if it is referable to pressure on the lumbosacral roots then it should be present over the buttocks, down the backs of the legs and over the lateral aspect of the feet. The increase of symptoms in the syndrome of irritation of the lumbosacral roots by the sitting position is not uncommon, as witnessed by the discomfort that these patients have in driving a car and the not unusual relief of symptoms when they stand.

Taken as a whole, in a sciatic syndrome, the appearance of signs and symptoms indicating bilateral involvement of the lumbosacral roots is an indication for surgical intervention. A sudden twist or strain may at any time so greatly increase the pressure against the roots as to produce serious changes which will greatly interfere with recovery. While conservative treatment is possible and frequently sufficient in unilateral syndromes, surgical treatment is recommended when the signs and symptoms are bilateral.

The book on intravertebral disk by Spurling (Bedford, F. K. and Spurling, R. T.: Intervertebral Disc, ed. 2, Springfield, Ill., Charles C. Thomas, Publisher, 1945)

CALCIUM AND OXALIC ACID IN ARTHRITIS

To the Editor:—Arthritis has such a large scope, I would like to know what role calcium or its salts have in its development. Is oxalic acid or any of its salts ever used in the treatment of arthritis?

C.C. Lull, M.D., Beaver City, Neb.

ANSWER.—Because atrophy of epiphysial bone occurs often in rheumatoid arthritis and osteophytes (bony spurs) develop in osteoarthritis, physicians through the years have entertained the idea that some disturbance of calcium metabolism may be related to chronic arthritis. But no definite evidence of any such disturbance has ever been produced, and the concentrations of calcium in blood and urine of arthritic patients are generally normal. The bony spurs of osteoarthritis and the epiphysial atrophy of rheumatoid arthritis are believed to result from local, not general, abnormalities.

The level of oxalic acid in the blood of patients with various rheumatic and arthritic complaints has apparently interested a few foreign physicians for many years. The literature on this subject has been summarized recently by Jozef Grott, F. Kowalski and S. Windyga (*Acta med. Scandinav.* 125:576-587, 1946). These workers also reported their observations on the oxalemia of 402 patients. Included were 7 patients with "polyarthritis deformans," but the oxalic acid level is stated specifically in only "3 cases of severe polyarthritis deformans and 1 case of spondylarthritis deformans"; in all of these a normal level of oxalic acid was found In 4 of 9 patients who had Heberden's nodes the level of oxalic acid in the blood was increased.

From the evidence at hand there appears to be no rationale for the use of preparations of either calcium or oxalic acid in the treatment of any type of arthritis. There is no satisfactory evidence that the empiric use of any calcium preparation has been of value. No report on the use of oxalic acid in treatment of chronic arthritis has been noted. An account of the current conflicting views with regard to oxalic acid is contained in an editorial in THE JOURNAL (133:1010-1011 [April 5] 1947). In general "the biologic significance of oxalic acid requires more clearcut definition," but it may be pertinent to point out that the formation by oxalic acid of a highly insoluble precipitate with calcium (calcium oxalate) "is said to account for some 40 per cent of the cases of urolithiasis."

SAFE DRIVING

To the Editor:—1. What is safe vision to qualify one to drive a car? 2. Are vision tests as carried out by the motor vehicle bureaus satisfactory even though vision may be excellent on the test chart? 3. What is adequate road lighting for night driving on an express highway within city limits? 4. For an express highway within city limits demanding more speed than on ordinary streets should illumination be proportionately increased and evenly distributed to reduce the danger of accidents, especially when road illumination is poor and dimming of auto lights is compulsory? 5. What candlepower as measured on the roadway is safe and adequate in relation to allowable speeds? There is at present a campaign in New York to serve summonses on many drivers for "improper driving lighting." I believe that such a campaign is fraught with danger.

Emanuel Krimsky, M.D., Brooklyn.

ANSWER:—The visual requirements demanded of automobile drivers vary considerably in the several states that have regulations—from a minimum of 20/30 vision in both eyes without glasses to 20/70 vision in one eye with glasses. A committee of the American Medical Association suggested as minimal standards: visual acuity correctable to 20/40 in one eye and 20/100 in the other; form field of not less than 45 degrees to both sides laterally from dead center ahead; binocular single vision; ability to distinguish red, green and yellow, and glasses if required to be worn while driving. The Minimum Driver License Examination Standards recommended by the American Association of Motor Vehicle Administration in 1939 are: minimum vision of 20/60 in one eye or both eyes, glasses to be worn if necessary to attain this vision; ability to read and understand highway signs regulating traffic. The Interstate Commerce Commission demands that drivers in interstate commerce have a corrected vision of at least 20/40 in one eye and 20/100 in the other, a form field of at least 45 degrees in all directions and the ability to recognize red, green and yellow.

The Illuminating Engineering Society, 51 Madison Avenue, New York, recently published a booklet on "Recommended Practice of Street and Highway Lighting" which is available for 50 cents. The lighting recommendations depend on the width of the roadway, the density of traffic and the traffic hazards present. About 1 foot-candle measured on the roadway is generally considered safe and adequate. Improved road lighting always gives a reduction in accidents. In 1938 New Jersey checked and revised the road lighting in the state, with the results that there were 37 per cent fewer night accidents than in the previous year.

ADRENAL CORTEX EXTRACTS

To the Editor:—I should like information on the value of adrenal cortex extracts in peripheral circulatory failure in acute infections, uremia and pneumonia.

Georges-Henri Jurcot, M.D., Montreal, Canada.

ANSWER.—Although animal experimentation suggests that adrenal cortical extracts, as well as synthetic corticoids, play an important role in the defense against various types of nonspecific stress, the results obtained in patients with peripheral circulatory failure, acute infections, uremia and pneumonia are not encouraging. This may be due to the fact that the adrenal cortex normally produces adequate amounts of corticoids so that exogenous hormone administration cannot improve the situation significantly because corticoid deficiency is not the "bottleneck" in such cases. At present the administration of adequate quantities of the so-called glucocorticoid compounds (those especially involved in the mechanism of gluconeogenesis from protein) is not yet possible because of their restricted availability. Somewhat more encouraging results have been obtained in severe burns and traumatic shock when large doses of cortical extract were given (Selye, H.: *J. Clin. Endocrinol.* 6:117, 1946). It is suggested that, except for experimental purposes, the use of corticoids for the treatment of the forementioned conditions be postponed until adequate amounts of the pure crystalline compounds become commercially available.

CLICKING OF HEART

To the Editor:—A woman, aged 29, has complained of a "throbbing of her heart" at which time a "clicking" noise is heard with approximately each heart beat. This is produced only when she lies on her left side, usually when she is lying on a sofa with the head on the arm of the sofa. This noise can be heard without a stethescope at a distance of about 3 feet (91 cm.) and sounds as if a piece of stiff "celluloid" is being popped or bent. Pressure on the precordial area causes the noise to disappear. There is no pain associated with it. The clicking is heard at the same rate as the heart beat but does vary as to whether it appears at systole or disastole; i.e., it is not rhythmical with the heart beat. This clicking may be heard in groups of three, then pause, or miss, then another run of six to eight, then pause; i.e., it is not constant, but when it does appear it is consistent with the heart beat. Auscultation of the heart is normal except when the "clicking" appears, at which time the heart beat sounds booming and loud. One examiner suggested that it was gas and possibly a diaphragmatic hernia. Another said that it possibly is the so-called "xiphomanubrial noise," to which I cannot find any reference. Roentgen examination of the chest and partial gastrointestinal series were negative. Please mention the possibilities and where I might find reference to "xiphomanubrial noise." The past history of the patient is entirely negative.

E. R. BARBER, M.D., Lancaster, S.C.

ANSWER.—The auscultatory phenomenon described is unusual but is undoubtedly of extracardiac origin. Its character and variability with position and respiration suggest the movement of air in adjacent lung tissue synchronous with the heart beat. Hammond has described a somewhat similar sound disappearing in a few days following acute mediastinal emphysema. However, the described situation does not resemble that clinical syndrome. It is possible, but most unlikely, that the movement of fluid and air in the stomach might be responsible. In any event, the absence of demonstrable disease in the heart, lungs and upper part of the gastrointestinal tract indicates that this sound is probably unimportant as far as organic disease is concerned. The "Xiphomanubrial noise" mentioned in this query has been described and the literature reviewed by M. Solis-Cohen, in an article entitled "Xiphosternal Crunch and Its Incidence in Healthy Inductee," *Am. J. M. Sc.* 210:333-342 Sept 1945.

DEMENTIA PARALYTICA

To the Editor:—A physician patient, aged 48, has been under treatment since December 1941 for dementia paralytica. Symptoms appeared with persistent headache followed during 1942 to October 1943 with hallucinations, amnesia and agraphia. He became untidy and dull, wandered the streets and, half dressed, entered the homes of neighbors. In November 1943 he started malaria therapy. From March 1944 to July 1946 he took a course of tryparsamide, total 125 Gm. and bismuth subsalicylate, 50 cc. In March 1945 epileptic fits began. In October 1946 he began a course of penicillin therapy, 2,400,000 Oxford units. In January 1947 he started fever therapy with typhoid vaccine in combination with calcium penicillin in oil and wax ("delacillin," Squibb), 5,000,000 Oxford units. The epileptic fits continued on and off. I have prescribed diphenylhydantoin sodium. Now my patient has improved considerably, but I feel that I should completely rid him of his attacks so that he may resume work. Is there a later more effective remedy for his condition?

C.Y. Wu, M.D., Shanghai, China.

ANSWER.—The first requirement is complete control of the neurosyphilis. From the recorded data, it is presumed that the patient has had sufficient treatment to arrest the syphilitic process. A more recent examination of the spinal fluid than that recorded as of December 1946 would be useful in establishing this fact. A normal cell count and total protein should be obtained within six to twelve months after fever therapy and penicillin therapy. The epileptic seizures are probably residual symptoms of cerebral scarring. If reexamination of the spinal fluid shows abnormality in cell count and total protein, another course of penicillin to the amount of 6,000,000 units, given intramuscularly over a period of no less than fifteen days, might be advisable.

For direct control of seizures, anticonvulsant drugs may need to be used to the point of toxicity: diphenylhydantoin sodium ("dilantin") 0.4 or 0.5 Gm. daily, combined, if need be, with phenobarbital, 0.1 to 0.2 Gm. or else methylphenylethyl hydantoin ("mesantoin") 0.3 to 0.6 Gm., alone or combined with "dilantin."

ORTHOSTATIC ALBUMINURIA

To the Editor:—The question concerns (1) orthostatic albuminuria, (2) adolescent menorrhagia and metrorrhagia and (3) the possibility of etiologic connection between these two conditions. A white girl aged 16, of tall and slender build, consulted me several months ago because of continuous vaginal bleeding for the past four months. General physical examination revealed essentially normal conditions except for pallor and small size of the uterus, as determined by rectal examination. The patient is a virgin. Laboratory studies disclosed a secondary anemia; the urine contained plenty of albumin but no casts. Blood urea nitrogen and creatinine determinations were within normal limits, as was the blood pressure. The albuminuria was of the orthostatic type, and urine secreted by the kidneys while the patient was in the recumbent position did not contain a trace of albumin. The tuberculin patch test was negative. Roentgen examination of the chest revealed normal conditions. The plasma proteins were 7 per cent with a normal albumin-globulin ratio. A diagnostic and therapeutic curettement of the uterus was performed. The pathologic report stated that the endometrium resembled that seen about the tenth day of a normal menstrual cycle, there was cystic dilatation of endometrial glands, possibly hyperestrogenemia. The girl received two Rh-compatible blood transfusions and was discharged. A high protein diet, iron and vitamins by mouth, plenty of rest, 1 Gm. thyroid daily, (the best metabolic rate was normal), and injections of the progesterone, 10 mg. twice a week, were recommended. During the past four months she has gained 10 pounds (4.5 Kg.). Her blood count has remained normal and she feels well, but she still has frequent, fairly profuse and irregular uterine bleeding. Bleeding time, coagulation time, prothrombin time and platelet counts were normal. Because of my suspicion of a tuberculous renal and genital infection a retrograde pyelogram was done, which showed good function of both kidneys and evidence of a minimal, healed pyelonephritis on the right side. " Tween 80" culture of the catheter urine was negative. My questions are these; 1. Is the continuous loss of rather large amounts of albumin in the urine harmful to the patient's general health? 2. Is there any additional safe treatment for this girl's metrorrhagia, which will not deprive her of the ability to become pregnant? 3. Is there any possible etiologic connection between the orthostatic albuminuria and the metrorrhagia?

M.D., Washington.

ANSWER.—Orthostatic albuminuria usually occurs in young persons who have poor muscular tone and pronounced evidence of vasomotor instability. The prognosis is good, because in many cases the condition disappears as the general health improves. 1. The replacement of the albumin lost in the urine by proper diet generally prevents harm. 2. There need be no fear that the patient's abnormal bleeding or the endocrine treatment used to try to over come it will prevent subsequent pregnancy. Endocrine therapy, unfortunately, is generally not successful. It does little harm and this is nearly always temporary. Roentgen or radium therapy, which is occasionally used, can do irreparable harm if the dosage is too great. In nearly all cases the use of proper diet, iron, vitamins and blood transfusions aided by either anterior pituitary-like hormone, progesterone, estrogens or testosterone propionate suffice to tide the patient over until the condition is rectified. 3. As far as is known, there is no connection between orthostatic albuminuria and menorrhagia

MERCURY AND SULFUR PRESCRIPTIONS

To the Editor:—Books on dermatology are loud in their warnings with regard to the incompatibility of prescriptions that contain compounds of mercury and sulfur. In what way are preparations containing these two elements incompatible, chemically or clinically? What bad results may be caused by the simultaneous use of prescriptions containing them?

M.D., Missouri.

ANSWER.—The principal incompatibility between compounds containing mercury and compounds containing sulfur is chemical in nature. Prescriptions containing mixtures of such compounds may tend to become pharmaceutically inelegant and lose therapeutic potency through the formation of black insoluble mercuric sulfide or free mercury. This is especially true of compounds in which the mercury is loosely bound and in which sulfur is present in low stages of oxidation. No harmful effects may be ascribed to the concurrent use of separate prescriptions containing mercury and sulfur compounds, respectively, but it is possible that the therapeutic efficiency of either prescription might be reduced.

TUBERCULOSIS

To the Editor:—A few additions might be appended to the section labeled " Tuberculosis" in Queries and Minor Notes, THE JOURNAL, January 3, page 70. The questions were by a Portsmouth, Virginia, physician. 1. It was wise to stress that minimal pulmonary tuberculosis is often infectious, even though to a minor degree. Stiehm's careful work showed that bacilli could be found if they were searched for in the gastric washings (70 per cent), but Sanford found them in 86 per cent of 105 active minimal cases; laboratories are now obtaining even higher figures where a routine intensive search can be made by several methods over a period of months. 2. Alcohol has recently been found to be much more valuable against the tubercle bacillus than was formerly thought (C.R. Smith, *Pub. Health Rep.* 52:1295 [Sept. 5.] 1947). The information is not yet generally known. Various strengths of ethyl and isopropyl alcohol were tested on tubercle bacilli in wet and dry mediums. The mediums included sputum, and the conditions were probably more stringent than would be encountered in a heavy droplet or dust contamination. The results revealed that tubercle bacilli are quite sensitive to alcohol, and that it is a good antiseptic. Some strengths are more effective than others in certain circumstances. Ethyl alcohol, 95 per cent, is bactericidal in fifteen to thirty seconds against wet bacilli; 50 per cent is the more effective strength against dry smears, 70 per cent is probably the best all purpose dilution. Isopropyl alcohol is at least as effective as ethyl, and even more so in 50 to 70 per cent dilutions. The amount of the sputum substrate did not appreciably delay the effects. Most of the bacteria were killed in the first few seconds. Practically, 70 per cent ethyl alcohol may be used with confidence on dry hands, or after washing; the alcohol should be allowed to dry on the hands in the ensuing thirty to sixty seconds. Plain inexpensive "rubbing alcohol" (50 to 70 per cent isopropyl) is as good or better. They may both be used to sterilize small objects or surfaces (provided that the material will not be injured), to rinse rubber gloves while in use, and in thermometer containers. The odor is not bad or lingering, and there is no residue. 3. Information on the effect of cresols is archaic and unsatisfactory. Apparently, nothing has been done for years to determine the effects of solutions of less than five per cent, or for times of less than five minutes either by private or by commercial investigators. The available experiments (mostly in Germany) used heavy masses of sputum, a situation which is not applicable to current needs. References to cresol as the antiseptic of choice against the tubercle bacillus must be modified by the data on alcohol, and proved by new tests in which high dilutions and "dust and droplet" conditions are simulated. The low cost and the cleansing action of the cresols make them potentially important. Incidentally, more work could be done on the relative efficiency of masks, on the use of oil on floors and on the development of an odorless cresol. A manual of the American Hospital Association (*Oatway, W. H., Jr.*: " The Management of Tuberculosis in General Hospitals," Chicago, 1939) contains a complete isolation technic, but certain procedures had to be included which were derived from contagious disease technic and are not completely proved for tuberculosis work. 4. I do not believe that there is any report extensive enough to truly show the percentage of physicians who contract tuberculosis while working in sanatoriums. Most data on professional contact infection and disease have been obtained by examination of physicians and medical students in general hospitals or sanatoriums. The data show that continued contact with patients, or tuberculous patients, will produce increasing amounts of infection and disease but that it is possible to minimize these factors by a strict isolation technic. The answer to the remainder of the problem is to employ only persons with positive reactions to the tuberculin test or to use BCG vaccine, an efficient and more feasible method.

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NECK SURGERY AS RELATED TO OTOLARYNGOLOGY

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Neck surgery in otolaryngology has not been developed to any great degree. It is open to development at present, and it is my hope that in the future increasing numbers of otolaryngologists will adopt this field of surgery as their responsibility. Some instructors not only teach neck surgery along with otolaryngology, but they also advocate that the otolaryngologist should follow a definite program of training in this field. A year in general surgery should be added to his training; in his basic subjects he should be taught gross and surgical anatomy, as well as the surgical pathology and histopathology of the neck; and, under the direction of a good teacher, he should be guided in the practical application of this knowledge.

In particular, certain features of the anatomy of the neck should be stressed, among the most important of which are the cervical fasciae. Because of their great clinical importance, the study of these fasciae in the cadaver is insufficient. The otolaryngologist should be impressed with the difference between the fasciae he sees in the cadaver and those which exist in the living body. Histogenetically, the fasciae are composed of the same type of connective tissue cells that enter into the formation of the supportive framework and the covering of the muscles, blood vessels, nerves and viscera. They are morphologically identical with the periosteum and muscle tendons and with the supportive framework of serous membranes. As a matter of fact, the fasciae cover and blend with the external coat of all the important organs of the body, i. e., blood vessels, nerves, bones, muscles and most of the viscera. The fascial interspaces serve as paths of least resistance for the spread of infection, neoplasms and foreign bodies. Only with a comprehensive knowledge of these fasciae is the otolaryngologist well fitted to perform operations on the neck.

Before proceeding, perhaps it would be well to define what is meant by the neck. It may be said, with a certain degree of safety, that the neck is the isthmus which connects the head with the body; therefore, it must be of great importance, as not only does it carry the cervical vertebrae, which support the head, but also through it pass the airway, the food passages, the great blood vessels, the lymph nodes and salivary glands and many of the cranial nerves. Even the upper end of the esophagus must be considered part of the neck. Each of these structures is subject to certain infections and pathologic changes. It is apparent, then, that the otolaryngologist's knowledge of the disorders which occur in the neck should be definite and broad in its scope. Actually, the neck may be, and often is, the seat of pathologic changes, which may produce as many surgical problems as, if not more than, any other portion of the body. Certain of these problems, which in the past have been left to the general surgeon, are now thought by many physicians to belong in the field of otolaryngology. It is increasingly important, therefore, that the otolaryngologist have adequate training in the management of these problems of neck surgery.

All too often neck surgery is thought of as applying only to those diseases which are approached by opening the neck externally, but in the true sense this is not so. For instance, a tonsillectomy is considered a surgical procedure on the pharynx; but, inasmuch as the pharynx is included with the neck, a tonsillectomy may be classified as an operation on the neck. (This example is used only for the purpose of illustrating that any discussion of neck surgery in otolaryngology should include all those structures which are part of the neck.) Stated in another way, the otolaryngologist who does not recognize the surgical procedures for tumors of the neck as just as much a part of his field of work as a tonsillectomy should at least consider this larger view of neck surgery.

It has been said that what a disease is, what it is thought to be and what it ultimately proves to be are nowhere in all pathology so well illustrated as in this part of the body. The early recognition and the proper management of the many disorders in the neck with which the otolaryngologist is frequently confronted call for a thorough knowledge of the anatomy of the regions concerned and of the diseases and injuries which may occur in them. The greatest difficulty one meets in making conclusive diagnosis is in the preoperative differential diagnosis of the lesions. In general, the most commonly encountered conditions necessitating operations on the neck fall into the following classification: primary tumors, secondary tumors, congenital diseases of the neck, infection of the salivary glands and inflammatory infections of, and traumatic injuries to, the neck.

Primary tumors of the lymph nodes are seen in cases of Hodgkin's disease, lymphosarcoma and lymphoepithelioma. In Hodgkin's disease, or Hodgkin's granuloma, there is an involvement of the lymph nodes in which one or more of them are enlarged; in the majority of cases a single node is affected, usually one

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in the posterior triangle of the neck. Many times a patient with such a condition presents himself to the otolaryngologist, with a history of acute tonsillitis or infection of the upper respiratory tract, causing the patient to think that the enlargement of the lymph node was secondary to the infection. Definite diagnosis must be made by biopsy, but surgery offers the patient little hope of a cure. In cases of lymphosarcoma, surgical intervention may be of value if the tumor is removed while it is small. Lymphosarcoma of the nodes of the neck usually appears in the posterior triangle or under the upper third of the sternocleidomastoid muscle, although later it may invade such structures as the esophagus or the larynx. Lymphoepithelioma occurs typically in the anterior triangle under the angle of the jaw, protruding under or anterior to the sternocleidomastoid muscle. In some cases, the lymphoepithelioma is preceded by a tumor of the pharynx. The termination of this tumor, if it is not removed by early operation, is a functional disturbance or destruction of the organs of the neck by direct invasion.

Secondary tumors of the neck that may be encountered include metastases from malignant growths in the buccal cavity, direct extension from the buccal cavity and metastases from lesions below the clavicle. These secondary tumors may be defined as deposits of malignant tissue lodged in lymph nodes of this region, and coming from primary tumors situated somewhere in the area of drainage. Surgical treatment of these tumors, if carried out, must be radical and extensive.

Congenital diseases of the neck occasionally produce cysts in vestigial structures, aberrant tumors (notably of the thyroid gland) and tumors of the carotid sinus. Cysts of the thyroglossal duct may extend as low as the sternal notch, and they usually end in the base of the tongue. The treatment of these growths is surgical. Branchiogenic cysts also occur. These lesions develop gradually without disturbance and may furnish the basis for malignant epithelial growths. Again the treatment is surgical; irradiation has been unsatisfactory. Branchiogenic fistulas may extend from the lateral wall of the pharynx to the skin in the region of the sternal notch. Any portion of these fistulas may exist; the opening may be near the sternum, in the middle of the area, or in the pharynx. Surgical treatment is necessary, and this must be complete. Tumors of the carotid sinus are rare and not well understood. It is important to remember in connection with these tumors that when operated on early they are easily removed, but if operation is delayed they are disposed to involve the carotid vessels and often become inoperable.

Disorders of the salivary glands also may be brought to the attention of the otolaryngologist. The physiologist would classify these glands as part of the digestive system, but the pathologist would classify them as [illegible] of the neck. Various tumors, [illegible] growths and inflammatory processes may affect the salivary glands. The submaxillary and parotid glands are the ones with which the otolaryngologist has oftenest to deal because of infection and the blocking of drainage with stones; also, the tip of the parotid gland may become involved when the hair follicles or the ceruminous glands of the external auditory canal are infected.

Inflammatory infections of the neck are common. The tonsils, the cervical vertebrae, the nasal sinuses, the temporal bone and the mastoid cavity, the teeth and the esophagus and respiratory tract are often the sources of infection of the neck. Acute lymphadenitis follows an infection, usually one of the upper respiratory tract. Ordinarily, a single lymph node is involved to the extent that drainage has been blocked. Surgical treatment with incision of the skin and blunt dissection to obtain drainage is necessary. Cellulitis of the floor of the mouth (Ludwig's angina) is another infection of the neck. It may be regarded as an intensely infectious phlegmon occurring under peculiar anatomic conditions. Dental infection is the commonest cause. The surgical treatment of this condition is radical and should be undertaken early. Abscesses of the pharyngomaxillary fossa are common and usually originate from infection in the tonsil, parotid gland or tip of the mastoid process, from a retropharyngeal abscess or from vertebral caries. Dr. Harris P. Mosher described the approach to this fossa when it is infected; his is still the classic method of approach for its drainage.

Trauma of the neck includes injuries to the muscles, blood vessels, larynx and esophagus. These injuries may be slight, or they may be serious in their nature. Many times the surgeon is called on to carry out rapid surgical procedures in repairing these injuries, and he must make quick decisions in order to save a life.

It may be noted that the problems of neck surgery arising in most of the conditions just enumerated may be encountered frequently in the practice of otolaryngology, and, in many instances, they are closely related to other problems in this field. The surgical procedures on the neck associated with otolaryngology will be familiar to most practitioners, although a few deserve brief mention at this time.

In surgery of the blood vessels, the procedure with which the otolaryngologist is most concerned is ligation of the blood vessels in the neck to control hemorrhages. The vessels most commonly ligated are the common carotid artery, the external and internal carotid arteries and, at times, the lingual artery.

The King operation for the relief of abductor paralysis of the vocal cords is an important surgical procedure. This operation was created and described by Dr. B. T. King; later, it was modified by him, as well as by other surgeons, namely, Kelly, McCall, Furstenberg and Woodward, each adding something to improve the technic.

One of the most important surgical procedures on the neck is the subtotal laryngectomy for cancer of the larynx. This operation is probably the most formidable one the otolaryngologist is called on to perform, and it requires the highest degree of skill at his command. One should not undertake this procedure without thorough training in the technic.

Laryngofissure is a second surgical procedure for cancer of the larynx. It is not so formidable as a laryngectomy; nevertheless, it requires great knowledge of surgical technic.

Repair of the hypopharyngeal diverticulum is a surgical procedure which should be undertaken by the otolaryngologist. It is not too difficult a technic, but it requires the teamwork of the surgeon and an endoscopist to carry out the procedure successfully. It should be a one stage operation.

I am purposely omitting surgery of the thyroid gland from this discussion because the gland is so closely related to internal medicine that I feel its surgical treatment should be left to one who is intimately acquainted with this field of practice and its associated problems.

Lesser types of surgery of the neck could be mentioned, but time will not permit.

CONCLUSION

The otolaryngologist should be prepared to perform more surgical procedures on the neck.

His preparation should include a comprehensive knowledge of the histopathology and surgical anatomy of the neck, with special stress on the cervical fasciae. This area may present more surgical problems than any other area in the body.

A keen knowledge of surgical technic is extremely important.

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ABSTRACT OF DISCUSSION

Dr. August L. Beck, New Rochelle, N. Y.: Dr. McCaskey has called attention to the gap between the field of otolaryngology and that of general surgery. As knowledge of disease affecting the viscera of the neck has advanced, it has become increasingly evident that many abnormalities of these organs can be dealt with only through an external approach. One of the best examples is a pharyngomaxillary abscess which has eroded an artery. With such a condition, incision of the lateral pharyngeal wall through the mouth probably would promptly be fatal. The otolaryngologist should possess a thorough knowledge of the functions and diseases of the viscera in his field as well as of the anatomy of the head and neck. Thorough familiarity with the following topics as they pertain to the neck is necessary for intelligent treatment of disturbances in this region: portals of entrance of infections, descriptive and applied anatomy, symptomatology, functions of all structures in the head and neck and complications and related systemic manifestations. Basic training in general surgery is imperative, but training in general surgery without training in otolaryngology is not enough to enable the surgeon to deal intelligently and accurately with all the problems of neck surgery. I agree with Dr. McCaskey that surgery of the thyroid gland is best left in the hands of the general surgeon because of the systemic disturbances which result from its derangement. On the other hand, if the qualified otolaryngologist is familiar with the entire subject of diseases of the thyroid gland there is no reason for his not performing surgical procedures involving it. Likewise, treatment of diseases of the cervical portion of the spine is best left in the hands of the orthopedist. If infections and abscesses of the fascial plane involve the surrounding soft parts, the problem becomes one which the otolaryngologist should be best qualified to manage. Pharyngomaxillary, or parapharyngeal, infections, as well as cellulitis of the floor of the mouth, which is somewhat severer on one side, may always be reached by Mosher's approach to the submaxillary fossa. Sublingual and submental cellulitis is most easily and directly reached through the suprahyoid midline approach, and no important structures are encountered in the procedure. Infections predominant in the posterior triangle are reached through an approach in that area, behind the sternocleidomastoid muscle. In cases in which preliminary tracheotomy is necessary, the otolaryngologist is best qualified to make the decision and to perform the operation. Dr. McCaskey has pointed out that recognition of structures in the neck in the presence of disease is sometimes more difficult than recognition in a cadaver. This statement is true. One must acquire the ability to recognize swollen, inflamed, distorted and displaced structures in making surgical approaches in the living patient. The otolaryngologist with good surgical skill can equip himself to work intelligently and successfully in this field.

Dr. Joseph W. Kelly, New York: Dr. McCaskey's paper is an excellent plea to the young otolaryngologist to qualify himself in this branch of surgery. I cannot understand why neck surgery is more open to development now than it has been at any time in the past. With the advent of the antibiotic drugs, the necessity for use of the radical procedures in treatment of infections of the neck has practically fallen into the category of the radical mastoidectomy. Ligations of the jugular veins and the procedures on the carotid sinus and on jugular vessels used in treatment of the old acute mastoiditis are gone. The cases of free and open damage to the neck accompanying infections of the floor of the mouth, with edema of the larynx and the necessity of tracheotomy, resulting in secondary pneumonia and death, have been few in the last ten years. When I remember that the last 6 patients with meningitis under my care at Bellevue Hospital recovered, I realize what a far cry the situation of today is from that of the twenties and thirties. When I read papers written by men of this society advocating the closed treatment of the periesophageal abscess, or inflammation, with penicillin and sulfonamide compounds, I wonder that it is necessary to make a special study of the fasciae of the neck. Occasionally I now have to drain a localized abscess, but the sleepless nights of terror spent in treating infections of the neck are, in my opinon, a thing of the past. I cannot agree with Dr. McCaskey that tonsillectomy should be included with surgical procedures on the neck, nor should I consider the closing of a cleft palate in this category. Operations for extensive deep malignant neoplasms of the neck are the most discouraging in neck surgery. The surgeon suffers, and the patient suffers excruciating pain if the branchial plexus is involved. I strongly advocate dissecting a gland to make a diagnosis in cases of neoplasms of the neck. Branchial and thyroglossal fistulas and cysts, in my opinion, are well within the field. I do not know of more satisfying and satisfactory surgical results than those obtained with the proper performance of these procedures. It is almost as satisfying as removing a trachectomy tube after an arytenoidectomy. In the surgical treatment of cancer of the larynx, less work, but more judgment, is required to perform a laryngofissure than a laryngectomy. The receptive student can be taught the technic of laryngeal surgery, but it is difficult at times for the teacher not to err on the side of conservatism. Dr. McCaskey feels that the hypopharyngeal diverticulum should be repaired in a one stage operation. I must plead guilty of doing it in one stage for convenience, but I believe that the two stage Leahy procedure is the better surgical technic. I, too, strongly urge more training in neck surgery for otolaryngologists. We at the Manhattan Eye, Ear and Throat Hospital have been trying to accomplish this for the past twenty-five years, and we are not discouraged with the result.

Dr. Benjamin H. Shuster, Philadelphia: Dr. McCaskey's talk and the discussions of Dr. Beck and Dr. Kelly are of vital importance to otolaryngologists. It will do no good to discuss these topics before a meeting such as this while in hospitals the general surgeon believes that neck surgery belongs to him, the general plastic surgeon believes that rhinoplasty is in his domain and the thoracic surgeon insists that bronchoscopy is his. After such a division of the field, there is little major work left for the otolaryngologist. This problem can best be solved in the teaching schools. Unless graduate schools include in their curriculums all the topics that we as otolaryngologists believe are within our field, there will always be a question of who is to do what, and we shall get nowhere. If the schools teach students to perform certain procedures, they can say, "Our students have been trained to do this work. It is our work, and we should do it." The spectacle of an experienced otolaryngologist throwing up his hands when he is required to do a ligation in the neck or to open an abscess of the brain is not a healthy one. He may call on a younger surgeon whose ability and experience are less than his own to carry out the procedure, just because he believes he is out of his department. I believe we must assert ourselves in this matter and encourage proper training in the procedures associated with our work. Such a policy will get us the proper recognition. Proper training will not require an extra year of general surgery, as Dr. McCaskey suggests. There is too great a tendency toward piling up years of work irrelevant to the training of an otolaryngologist.

Dr. Hayes Martin, New York: Dr. McCaskey has advised that otorhinolaryngologists take over the treatment of all surgical conditions of the neck except for the diseases of the thyroid gland. I wonder whether he has adequately considered all aspects of the problem. So far as the treatment of benign lesions—cysts, abscesses—of the neck are concerned, any surgeon who has a knowledge of the anatomy of the neck may safely handle the problem. Unfortunately, these benign diseases and conditions are not the most important ones, and I refer particularly to cancer. In my opinion, any surgeon who undertakes an operation for cervical tumor should be competent and prepared to perform any radical procedure which may be required. The preoperative differential diagnosis of benign tumor and cancer cannot be sufficiently accurate to justify any lesser attitude. The operations which may be necessary in cases of cervical tumors, no matter how benign the growths appear in the beginning, include such procedures as wide local resection of the tumor down to the deep vessels and nerves of the neck, excision of the submaxillary salivary gland, excision of the parotid gland with dissection of the branches of the facial nerve, complete radical dissection of the neck, resection of the mandible, ligation of the major vessels of the neck and opening of the pharynx. When Dr. McCaskey advises otorhinolaryngologists to take over all surgical treatment of the neck, does he imply that they already have had previous surgical training adequate to carry out surgical procedure of this type? It appears to me that the problem is more involved and complex than the essayist has indicated. I should like to ask whether Dr. McCaskey has ever known of a case in which a surgeon has exposed a presumably benign tumor or cyst only to find an infiltrating cancer, and, lacking courage and experience to continue, has retreated and consoled himself with the alibi that the tumor was inoperable and that no matter what was done the patient would have died anyway. Many such patients later apply to cancer clinics, where the operations have to be performed again, with a greatly lessened chance of cure. In many others the tumor is found to be inoperable after the first inadequate attempt. The surgeon who operates for a cervical tumor should be prepared to do whatever radical procedure may be necessary to cure cancer. If he is not qualified by training and experience to perform such radical operations, he should not attempt surgical treatment of these tumors.

Dr. Carl H. McCaskey, Indianapolis: I thank the discussers for the points they have brought out in this paper. You will note, when you read the paper, that one of my first statements was that a man, to qualify for this kind of surgery, should be well trained in otolaryngology and should have had at least one year's training in general surgery. As for Dr. Kelly's discussion of tonsillectomy, I included my statement as a sort of feeler, for I wanted you to realize that the tonsil is still in the neck. Dr. Martin made a good point when he said that a surgeon does not always know what he will find when he makes a surgical entrance into the neck, even for biopsy; he has some idea, but he is not always certain. Therefore, he should be so well prepared when he starts that he will be able to follow through. In most medical schools, we have been subject to the domination of the surgical department. Until we can be on our own and assume complete control of our own departments, we are not likely to get a chance to do this work.

The Intervertebral Disk Syndrome.—In 1927, Schmorl began his meticulous necropsy studies showing the high incidence (38 per cent) of displacement of the nucleus pulposus into the spongiosa of the vertebral body. Schmorl and Andrae also called attention to the cartilaginous masses found within the spinal canal, consisting of nucleus pulposus herniated through defects in the annulus fibrosus. The modern concept of the syndrome of protrusion of intervertebral disk dates from the work of Mixter and Barr, Adson, Love, Craig, Camp, Walsh, Dandy, and Bradford and Spurling. The first case of intervertebral disk herniation to be described clinically was that of Kocher in 1896. Since 1934 a voluminous literature on the subject has accumulated: The first published report of a patient operated on for protrusion of an intervertebral disk into the spinal canal was that of Oppenheim and Krause in 1909.—Lewin, Philip, M.D., *Journal of the International College of Surgeons*, March-April, 1948.

MANAGEMENT OF TICK TYPHUS (ROCKY MOUNTAIN SPOTTED FEVER) IN CHILDREN

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and
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The prevalence, severity and high mortality of tick typhus (table 1) in the Eastern states are not generally appreciated. It is probable that the actual incidence is much higher than the number of cases would suggest. In our series of 27 patients in the pediatric age group there have been 7 deaths, a death rate of 26 per cent. Our series is probably made up largely of cases of unusual severity, since most of the patients were referred to our hospital because their condition was critical. During this same period (1943 to 1946) the national mortality rate for patients less than 39 years of age was 12 per cent. The mortality rate in North Carolina during the past two years was 31 per cent, a figure comparable to ours.

There are two possible explanations of the high death rate in North Carolina. The strain of the organism may be unusually virulent, or the cases reported to the health department may be only the most severe ones.

HISTORY AND PHYSICAL EXAMINATION

One of the biggest problems in the management of tick typhus is the establishment of the diagnosis at an early stage in the disease. The history and physical examination can be of great help in the diagnosis. Only 50 per cent of our patients gave a history of having removed an engorged tick prior to the onset of fever. This fact suggests that the contact with the tick need not be so long nor so intimate as is believed, or that there may be some vector other than the tick. No studies have been made in North Carolina to demonstrate the animals which serve as a reservoir of the disease or other arthropods which might serve as vectors.

Table 1.—*Rocky Mountain Spotted Fever, Cases and Case Mortality*

	1936		1937		1944		1945	
	Cases	Case Mortality, %	Cases	Case Mortality, %	Cases	Case Mortality, %	Cases	Case Mortality, %
Montana	65	23	31	13.9	5	80	2	....
Idaho	31	35.5	46	10.9	5	40	6	....
Maryland	32	14.1	33	18.2	64	23.5	47	....
Virginia	50	13.9	54	16.8	81	16.1	99	20.1
North Carolina	32	25	29	17.2	59	32	57	31.7
Total for United States	362	24	429	20	470	27.6	474	....

The incubation period in our patients, when it was known, varied from one to eight days. The prodromal period lasted from one to nine days; in only 4 patients, however, was it more than four days. Three of these patients with long prodromal periods were moderately ill, and 1 was severely ill. High temperature, severe headaches and vomiting were common in this period. During this time the Rumpel-Leede phenomenon may help to suggest the diagnosis.

Read before the Section on Pediatrics at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1947.

From the Departments of Pediatrics and Internal Medicine of the Bowman Gray School of Medicine of Wake Forest College and the Pediatric Service of the North Carolina Baptist Hospital.

These studies were aided by a grant from the John and Mary R. Markle Foundation.

The rash usually appears first on the extremities, but may spread so rapidly that by the time it is first noted most of the body may be involved. The rash, which is maculopapular, may become petechial and purpuric, and may even progress to gangrene. In our experience the administration of serum early in the disease modified the rash (fig. 1). The severity of the rash is an index of the severity of the disease.

Physical examination usually reveals a dehydrated and seriously ill child. The pulse is rapid, and the blood pressure is at the lower limits of normal. In addition to the rash, there is nearly always demonstrable edema which is generalized, frequently nonpitting, and not dependent (figs. 2 and 3).

LABORATORY STUDIES

Laboratory studies have been of considerable interest. Nearly all of our patients experienced severe anemia (table 2). The loss of blood did not seem sufficient to explain the anemia, and no evidences of hemolysis were noted. Though it has been said[1] that the leukocyte count is usually elevated, the white blood cells during the first seven days of the disease numbered less than 10,000 in 85 per cent of our cases. Later in the disease the white blood cell counts rose above 10,000 in the majority of patients. In many cases it was felt that the leukocytosis was associated with the appearance of secondary bacterial infections or followed hemorrhagic phenomena. The differential count showed an average of 70 per cent polymorphonuclear leukocytes regardless of the total number of white cells. Twenty per cent of the polymorphonuclear leukocytes were nonsegmented.

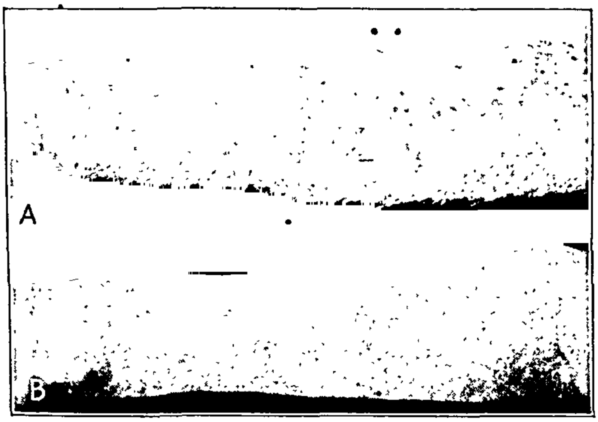

Fig. 1.—*A*, eleventh day of rash in a case of severe disease. Note the hemorrhagic character of the diffuse rash. *B*, tenth day of rash in a case in which serum therapy was used. Note discrete papules.

The microprothrombin time was determined in 5 patients. In 3 of these patients it was normal. One patient, who had a normal prothrombin time on admission, received prophylactic oral doses of vitamin K, 1 mg. daily for five days. At that time the prothrombin time was 2 minutes against a control of 14 seconds; when this test was repeated the prothrombin time was 3 minutes against a control of 18 seconds. After 1 mg. of vitamin K was given parenterally, the time returned to normal and remained so. The fifth patient had a slightly elevated prothrombin time on admission. One day later the prothrombin time was 2 minutes and 30 seconds, in comparison with a control of 19.5 seconds. The prothrombin time remained at this level for five days in spite of the daily parenteral administration of 4 mg. of vitamin K.

The total serum proteins (table 3) tended to be low, and dropped below 5 Gm. per hundred cubic centimeters in 14 patients. The serum albumin fell below the critical edema level of 2.5 Gm. per hundred cubic centimeters in 6 cases (table 3). Blood levels of nonprotein nitrogen and chlorides were determined on admission. Thirty per cent of these patients had nonprotein nitrogen levels above 40 mg. per hundred cubic centimeters. Fifty-five per cent of this group had blood chloride levels below 92 milliequivalents per liter (table 3).

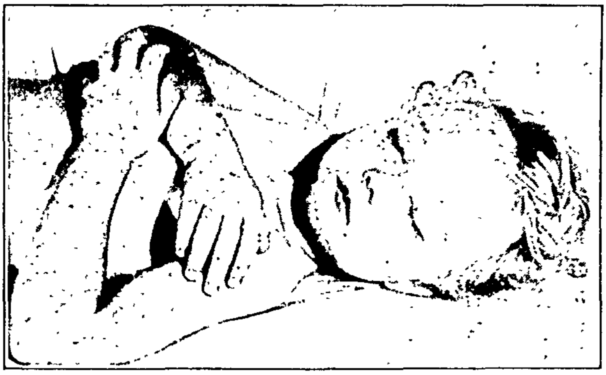

Fig. 2.—Patient M. D. on sixteenth day of rash. Note the pronounced edema with closure of the eyes.

Blood volumes were determined by the "Evans blue" technic[2] and extravascular fluids by the thiocyanate method.[3] The blood volumes tended to be low at the peak of the disease. The large amounts of fluid present in the extravascular spaces, particularly during the edematous stage, corroborated our impression[4] that the loss of fluids from the vascular spaces was even greater than had been expected and supported the hypothesis that this fluid shift is a factor in the production of the peripheral vascular collapse. These studies will be reported at a later date.[4a]

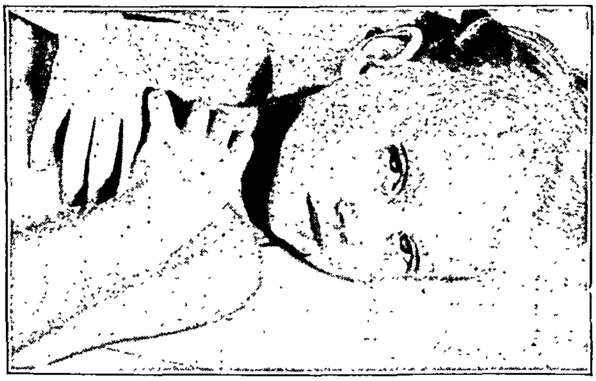

Fig. 3.—Patient M. D. after recovery. Note subsidence of edema.

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[1] Nelson, W. E.: Mitchell-Nelson Textbook of Pediatrics, ed. 4, Philadelphia, W. B. Saunders Company, 1945, p. 503.

[2] Gibson, J. G., Jr., and Evelyn, K. A.: Clinical Studies of Blood Volume: Adaptation of Method to Photoelectric Microcolorimeter, J. Clin. Investigation **17**: 153-158 (March) 1938.

[3] Crandall, L. A., Jr., and Anderson, M. X.: Estimation of State of Hydration of Body by Amount of Water Available for Solution of Sodium Thiocyanate, Am. J. Digest. Dis. & Nutrition **1**: 126-131 (April) 1934.

[4] Harrell, G. T.; Venning, W., and Wolff, W. A.: The Treatment of Rocky Mountain Spotted Fever, J. A. M. A. **126**: 929-934 (Dec. 9) 1944. Harrell, G. T.; Wolff, W. A., and Venning, W.: A New Approach to Basic Supportive Therapy in Rocky Mountain Spotted Fever, J. South. M. A. **38**: 367-371 (June) 1945.

[4a] Harrell, G. T., and Aikawa, J. K.: The Pathogenesis of Circulatory Failure in Rocky Mountain Spotted Fever: Alterations in the Blood Volume and Thiocyanate Space at Various Stages of the Disease, Arch. Int. Med., to be published.

The cerebrospinal fluid was examined in 8 patients. No abnormalities were noted in 2 cases, and in 2 others the only finding was increased pressure. Three patients showed 11 to 22 mononuclear cells in the spinal fluid as the only evidence of intracranial involvement. In 1 patient the fluid was obtained under increased pressure, and the protein content was elevated. In 1 patient who had two negative spinal fluid examinations there were severe sequelae, manifested by pronounced mental retardation and behavior disorders.

TABLE 2.—*Hematologic Data at the Peak of the Disease*

Patient	Age, Years	Hemoglobin, Gm. per 100 Cc.	Red Blood Cell Count	Hematocrit, Vol. per Cent	White Blood Cell Count	Polymorphonuclear Cells, %
L. D.	8	9.2	3,820,000	32	19,000	90
G. H.	15	9.0	2,720,000	29	10,900	86
R. W.	15	9.0	3,010,000	23	5,600	..
W. M.	4	9.0	4,000,000	..	20,650	87
P. S.	3	10.3	....	30.5	11,950	59
D. D.	7	7.7	3,310,000	..	13,800	90
B. D.	2	8.0	2,600,000	..	10,750	61
H. N.	3	8.0	3,900,000	36	11,850	53
M. E.	11	10.5	3,630,000	..	9,000	84
D. O.	2	9.5	3,050,000	22.5	13,000	75
B. C.	12	10.4	4,200,000	..	16,700	82
D. K.	6	10.0	....	30	9,050	..
I. S.	7	11.0	3,600,000	34	23,200	..
T. S.	10	13.0	4,700,000	34	13,850	67
A. B.	14	9.5	3,270,000	30	8,850	77
B. R.	1	11.5	4,200,000	35.5	10,500	..
R. D.	3	6.6	2,000,000	21.5	20,150	81
M. L.	4	9.2	3,250,000	..	30,150	77
C. M.	12	13.0	3,580,000	40	26,650	83
G. D.	15	11.1	3,600,000	32	4,500	95
D. H.	7	8.5	2,760,000	26	12,300	63
P. T.	12	10.5	4,140,000	42	8,850	55
D. B.	3	Died on admission				
P. B.	7	14.0	5,350,000	41	16,450	93
J. R.	14	10.5	3,100,000	..	6,400	74
M. D.	4	10.0	3,090,000	31.5	9,700	..
C. S.	4	10.5	3,520,000	..	16,600	80

Two serologic tests are of value in confirming the diagnosis of Rocky Mountain spotted fever. A positive reaction to the Weil-Felix test confirms the presence of a rickettsial disease, but does not differentiate clearly between murine typhus and tick typhus. A persistently negative reaction to the Weil-Felix test helps to exclude tick typhus. The complement fixation test is specific for tick typhus. These serologic tests are diagnostic only when the titer rises during the course of the illness. They are of no value early in the disease, since the titer does not reach diagnostic levels before convalescence. The highest titers in our patients were obtained against Proteus OX-19, though in 1 patient who died the OX-2 and OX-K strains gave reactions in higher titer. Three patients had positive complement fixation reactions[5] for murine typhus, though in all of these the titers with tick typhus were higher.

CLINICAL COURSE AND COMPLICATIONS

The clinical course of the disease was fairly constant. There were no deaths in patients who survived more than fourteen days after the onset of fever. The duration varied from eight to twenty-eight days, the average being twenty-one days. We were unable to predict the outcome from the appearance of the patient when first seen. Two critical periods were common: at the time of admission and on the tenth day of the rash. Electrolyte disturbances and shock occurred early in the disease; later, peripheral circulatory collapse and pneumonia were common.

Few diseases have so many complications as tick typhus. Peripheral circulatory collapse is the most common. A rising pulse rate, especially if it goes above 140, is an indication of impending trouble. The appearance of a thready pulse and a drop in the blood pressure are ominous signs. Peripheral circulatory collapse usually occurs when the edema is maximal, although it may take place earlier in the disease if dehydration is severe. It sometimes develops so suddenly that recognition at an early stage is made possible only by frequent and careful examinations. Sixty per cent of our patients, and all of those who died, had circulatory collapse some time during the illness.

Though none of our patients had definite evidence of cardiac failure, this may occur. Any increase in venous pressure, a gallop rhythm or enlargement of the liver should make one suspect that there is severe myocardial involvement. Pneumonia has been a common and severe complication, and it is difficult to differentiate this from cardiac failure. Forty-five per cent of our patients had clinical or pathologic evidence of pneumonia. Pneumonia was thought to be a major factor in 4 of the 7 deaths in our series.

Nearly all the patients had signs of involvement of the central nervous system. Coma, delirium and fine tremors of the hand were common. Neither the clinical findings nor the spinal fluid studies enabled us to predict which children would be left with permanent damage to the nervous system. Fortunately, only 1 patient had any neurologic sequelae.

PATHOLOGY

The pathologic findings in tick typhus have been well described.[6] In our cases the most striking lesions were seen in the myocardium, lungs and brain. Though the heart usually showed mononuclear cell infiltration, there was in no case evidence of cardiac dilatation. Three pathologic lesions were seen in the lungs. Two patients had bronchopneumonia of bacterial origin. In 2 cases extensive mononuclear cell infiltration was seen in the interstitial spaces. One patient had diffuse alveolar and interstitial hemorrhage.

TABLE 3.—*Blood Levels of Chlorides, Nonprotein Nitrogen and Proteins*

		Blood Levels of Chlorides and Nonprotein Nitrogen on Admission		Lowest Blood Levels of Proteins During Illness	
Patient	Age, Years	Chlorides, MEq. per Liter	Nonprotein Nitrogen, Mg./100 Cc.	Total Serum Proteins, Gm./100 Cc.	Serum Albumin, Gm./100 Cc.
J. R.	14	79	64	4.5	3.3
D. H.	7	85	46	4.3	...
G. D.	15	87	45	5.2	4.0
R. W.	15	82	88	4.8	2.1
L. D.	8	95	42	5.4	2.9
D. O.	2	80	69	3.4	1.7
C. S.	4	91	31	6.9	3.9
P. B.	7	97	26	3.9	2.4
P. T.	12	85	29	3.4	2.2
M. L.	4	95	37	4.4	2.2
R. D.	3	90	32	5.3	2.7
A. B.	14	90	32	5.1	...
D. K.	6	88.5	30	5.0	...
W. M.	4	91	20	5.7	3.6
D. D.	7	92	34	4.9	3.2
H. N.	3	92	37	5.3	2.7
B. D.	2	99	35	4.9	2.6
G. H.	15	83	25	4.6	2.6
B. C.	12	99	24	5.2	2.1
M. E.	11	90	25	4.5	...

We feel that peripheral circulatory collapse is a frequent cause of death. This collapse is probably due to the shift of fluids from the vascular to the extravascular spaces, with a concomitant decrease in the blood volume. The two mechanisms probably responsible for this shift of fluids are reduction in the colloid fraction of the blood and leakage of fluids through damaged blood vessels. There are several possible explanations for the lowered protein value of the serum.

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[5] Complement fixation tests were performed by the National Institute of Health.

[6] Lillie, R. D.: The Pathology of Rocky Mountain Spotted Fever, National Institute of Health Bulletin 177, Federal Security Agency, United States Public Health Service, 1941.

Table 4.—*Patients Treated with Hyperimmune Rabbit Serum*

Patient	Age, Years	Total Dosage, Cc./Kg.	Doses	Time Given: Days' Fever	Time Given: Days' Rash	Duration of Disease, Days	Result
B. R.	1	3.0	3	3	½	8	Serum sickness; recovered
I. S.	7	2.0	2	3	½	20	Recovered
D. D.	7	0.5	1	3	1	14	Recovered
W. M.	4	2.0	2	2	1	22	Recovered
T. S.	10	2.0	2	3	¾	17	Recovered
P. B.	7	1.5	2	5	3	..	Died
C. S.	4	3.5	3	5	1	..	Died
R. W.	15	1.0	2	12	9	25	Recovered
P. S.	3	1.0	1	3	2	20	Recovered
J. R.	14	1.0	1	6	2	17	Serum sickness; recovered

In many cases the patient is so sick that he is unable to maintain an adequate protein intake unless aided by gavage feedings. Indirect evidence suggests that the synthesis of proteins in the liver may be impaired. Small amounts of protein are lost in the urine, and protein may be lost into the tissue spaces through the damaged vascular system. Studies of nitrogen balance indicate that there is a tremendous increase in protein catabolism. Since sodium and potassium are important in determining the partition of fluids in the body spaces, abnormalities in their distribution may be a factor in the fluid shifts in tick typhus.

SPECIFIC THERAPY

Two types of specific therapy are now available: hyperimmune rabbit serum [7] and para-aminobenzoic acid. In our experience, hyperimmune serum [8] has not proved to be of great value, even when given in amounts up to 1 cc. per kilogram of body weight daily for three days. Large doses of serum have not yet been given an adequate trial, however. Nine of our patients received serum within the first three days of the rash (table 4). The rash was probably modified in 5 patients. There was no definite decrease in the duration of the illness, though it was felt that at least 2 patients may have had a less stormy course than would have been expected without the serum. The mortality in the serum-treated group was 25 per cent. Because of the scarcity of the serum in 1944 and 1945, only the sickest patients were treated with it.

The value of para-aminobenzoic acid in tick typhus has not been definitely determined, since only 22 cases of tick typhus treated with the drug have been reported in the literature [9] (table 5). Though it is difficult to evaluate any form of therapy in such a variable disease, it was felt that the drug modified the course of the disease in all the reported cases. A similar modification was noted in cases of louse-borne typhus [10] and scrub typhus [11] treated with para-aminobenzoic acid. The evidence which has accumulated is sufficient to warrant its extensive clinical trial. Experience with laboratory animals [12] and with human patients indicates that the drug does not kill the rickettsias but inhibits growth. One would therefore expect the drug to be most effective if given early in the disease, and animal experimentation bears out this expectation.[13] Probably levels of 30 to 50 mg. per hundred cubic centimeters should be attained in the blood.[9f] Two toxic effects have been noted with high blood levels of para-aminobenzoic acid: The carbon dioxide–combining power may decrease moderately, and leukopenia of a mild degree may occur.

We have treated 3 patients in our hospital and 1 patient in another hospital with para-aminobenzoic acid (table 6). All were treated late in the course of the disease, and were critically ill. Three of the patients died, and the fourth survived after a stormy course. *None of these patients offered a fair trial for the drug.*

SUPPORTIVE THERAPY

Supportive therapy is directed at the prevention of cardiovascular complications and pneumonia and at the maintenance of nutrition. Those patients who were dehydrated at the time of admission and had an elevated nonprotein nitrogen level and a low blood chloride level were given calculated amounts of isotonic solution of sodium chloride intravenously until the urinary flow returned to normal. Those patients who had nitrogen retention but normal blood chloride levels received calculated amounts of 5 per cent dextrose in water intravenously. No more than 20 cc. of fluids per kilogram of body weight was given in any single intravenous injection. When signs of peripheral vascular

Table 5.—*Reported Cases of Tick Typhus Treated with Para-Aminobenzoic Acid*

Authors	Age, Years	Day of Disease, from Onset of Fever, on Which Patient Was: Treated	Improved	Well	Highest Blood Levels of Para-Aminobenzoic Acid, Mg./100 Cc.
Rose, Duane and Fischel [9a]	46	5	8	15	16.6
Maroney and Davis [9b].....	3	12	14	16	10.0
Hendricks and Peters [9c]...	4	12	14	14	8.8
Graham and Ross [9d].......	6	13	16	18	Not stated
Flinn and others [9e]........	3	13	..	17	29.0
	.8	7	..	9	18.5
	11	8	..	11	6.5
	11	7	..	12	23.5
	22	6	..	7	22.1
	33	4	..	6	26.0
	37	3	..	6	Not obtained
	12	9	..	12	48.0
	36	6	..	11	39.0
	67	8	Died 17	..	80.0
Ravenel [9f].................	17	8	16	13	42.0
	4	7	12	10	66.0
	10	7	8	9	21.0
	3	4	½	5	Not stated
	5	6	9	14	120.0
Peterson and others [9g].....	?	5	Died 6	..	Not stated
	?	4	..	8	Not stated
	?	12	..	15	Not stated

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[7] Topping, N. H.: Rocky Mountain Spotted Fever (Further Experience in the Therapeutic Use of Immune Rabbit Serum), Pub. Health Rep. **58:** 757-775 (May 14) 1943.

[8] Serum furnished by Lederle Laboratories of the American Cyanamid Company.

[9] (*a*) Rose, H. M.; Duane, R. B., and Fischel, E. E.: The Treatment of Spotted Fever with Para-Aminobenzoic Acid, J. A. M. A. **129:** 1160-1161 (Dec. 22) 1945. (*b*) Maroney, J. W., and Davis, H. C.: Rocky Mountain Spotted Fever: A Case Treated with Para-Aminobenzoic Acid, Deleware State M. J. **18:** 104-106 (May) 1946. (*c*) Hendricks, W. J., and Peters, M.: Spotted Fever Treated with Para-Aminobenzoic Acid, J. Pediat. **30:** 72-75 (Jan.) 1947. (*d*) Graham, G. S., Jr., and Ross, C. S.: Rocky Mountain Spotted Fever: Case Report and Discussion of Therapy, J. M. A. Alabama **16:** 289-293 (March) 1947. (*e*) Flinn, L. B.; Howard, J. W.; Todd, C. W., and Scott, E. G.: Para-Aminobenzoic Acid Treatment of Rocky Mountain Spotted Fever, J. A. M. A. **132:** 911-915 (Dec. 14) 1946. (*f*) Ravenel, S. F.: Para-Aminobenzoic Acid Therapy of Rocky Mountain Spotted Fever, ibid. **133:** 989-994 (April 5) 1947. (*g*) Peterson, J. C.; Overall, J. C., and Shapiro, J. L.: Rickettsial Diseases of Childhood, J. Pediat. **30:** 495-528 (May) 1947.

[10] Yeomans, A.; Snyder, J. C.; Murray, E. S.; Zarafonetis, C. J. D., and Ecke, R. S.: The Therapeutic Effect of Para-Aminobenzoic Acid in Louse Borne Typhus Fever, J. A. M. A. **126:** 349-356 (Oct. 7) 1944.

[11] Tierney, N. A.: Effect of Para-Aminobenzoic Acid in Tsutsugamushi Disease, J. A. M. A. **131:** 280-285 (May 25) 1946.

[12] *Anigstein, L., and Bader, M. N.:* Para-Aminobenzoic Acid: Its Effectiveness in Spotted Fever in Guinea Pigs, Science **101:** 591-592 (June 8) 1945.

[13] Snyder, J. C.; Maier, J., and Anderson, C. R.: Report to the Division of Medical Sciences, National Research Council, Dec. 26, 1942.

collapse were present, concentrated albumin, whole blood, plasma or red blood cells were given, the choice of therapy depending on the total serum proteins, the hematocrit reading and the blood volume; plasma and whole blood were the agents most frequently employed in this situation. If clinical signs suggested cardiac failure, no intravenous fluids were given and the patient was digitalized rapidly.

When there is the slightest evidence of pneumonia, penicillin should be administered in generous amounts. Although some experiments[14] suggest that penicillin may inhibit rickettsial growth, the aim of penicillin therapy in tick typhus is the prevention of bacterial pneumonia. We have the impression that penicillin may have saved a few patients in whom this complication might otherwise have proved fatal.

Every effort should be made to maintain a high protein intake. In some cases as much as 7 Gm. of protein per kilogram per day is needed to keep the patients in positive nitrogen balance. Most children with this disease are unable to take the amount and type of food required to maintain their nutrition, and should receive gavage feedings as soon as they refuse the diet. This procedure tires the patient less than prolonged attempts to feed him, and incidentally saves nursing time. Since the liver may not be able to utilize amino acids, proteins should also be given intravenously, in the form of plasma or whole blood. The patients in our series have left the hospital in good nutritional condition. Six children gained weight during the illness; 7 lost not over 5 per cent of their body weight, and the remainder were discharged weighing the same that they did on admission. None of these patients had clinical or laboratory evidence of edema at the time of discharge.

Table 6.—*Patients with Tick Typhus Treated with Para-Aminobenzoic Acid at the North Carolina Baptist Hospital*

Patient	Age, Years	Day of Disease, from Onset of Fever, on Which Patient Was: Treated	Well	Died	Highest Blood Levels of Para-Aminobenzoic Acid
G. D.	15	8	..	9	Not obtained
C. S.	4	13	..	15	74 mg. per 100 cc.
J. R.	14	9	18	..	50 mg. per 100 cc.

COMMENT

Though we have no proof that this vigorous approach to supportive therapy has lowered the mortality rate of tick typhus significantly, we have the impression that several patients recovered who would have died without these supportive measures. The most urgent problem at present is to find a procedure which will permit the diagnosis to be established before the appearance of the rash. Until an early diagnosis is possible, no form of specific therapy can be entirely satisfactory.

SUMMARY AND CONCLUSIONS

The clinical and laboratory findings in 27 children with tick typhus are described.

While treatment with specific hyperimmune rabbit serum and para-aminobenzoic acid did not lower the mortality rate significantly, it is felt that neither of these agents was given an adequate trial.

Vigorous supportive therapy is credited with saving several patients who otherwise would have died. Children maintained on a high intake of proteins and vitamins were discharged in good nutritional status. Until it is possible to establish the diagnosis of tick typhus earlier than at present, supportive therapy in this disease will be necessary.

In North Carolina tick typhus is a serious disease carrying a high mortality rate in children.

ABSTRACT OF DISCUSSION

Dr. David M. Greeley, New York: I am a little more optimistic than Dr. Kelsey is concerning the use of para-aminobenzoic acid, but I agree that, if it is to be effective, it has to be used early. Several careful clinical and metabolic studies have been done on patients suffering from both louse-borne typhus and Rocky Mountain spotted fever. The work by Dr. Kelsey and Dr. Harrell and his group at Winston-Salem and of the Cairo-Egypt unit of the American Typhus Commission has done much to elucidate the alterations which take place in the fluid, electrolyte and nitrogen balances and has helped to explain some of the clinical phenomena. The principal pathologic changes in louse-borne typhus and Rocky Mountain spotted fever are in the endothelial and smooth muscle cells of the smaller blood vessels of skin and subcutaneous tissue. The invasion of these cells by rickettsias result in intervascular thrombi and necrosis of these blood vessels. The permeability of these vessels is increased, and this in turn leads to extravasation of blood into the tissue spaces and accounts for the typical hemorrhagic rash which occurs in both of these diseases. In addition to the formed elements of the blood which are lost in the tissue spaces, fluid, chlorides and plasma proteins are lost, resulting in a situation analogous to that which occurs in patients who have been severely burned. The shift in the chlorides and plasma albumin from the blood to the tissue spaces alters the osmotic pressure relationships and gives rise to edema. There follows a reduction of blood volume with a lowering of the blood pressure and the effective glomerular filtration pressure. The latter, coupled with the tremendous destruction of body protein, gives rise to the prerenal azotemia. The principal cause of death, then, in peripheral vascular collapse is easily explained. For a time, the supportive treatment of Rocky Mountain spotted fever included the use of intravenous fluids; then, after a period, it was felt that such treatment was contraindicated. This belief arose because it had been noted that animals treated with intravenous fluids died more quickly and that patients treated in a similar manner did less well than control groups not treated with intravenous fluids. But in these instances, solutions of dextrose and sodium chloride were used, and it is now clear that such solutions will quickly pass into the tissues, thus intensifying the changes which have been described. However, much can be accomplished in selected cases by the intravenous administration of large amounts of blood plasma, albumin or whole blood, which will tend to raise, or at least prevent, a further drop in the plasma proteins; the blood volume will be increased, the blood pressure will rise and, along with it, the glomerular filtration pressure. As a result, there will be less tendency for the development of peripheral circulatory collapse and nitrogen retention. It has been noted, both in louse-borne typhus and Rocky Mountain spotted fever, that patients so treated do much better than control groups. The nitrogen retention in Rocky Mountain spotted fever is due primarily to the great destruction of body protein. However, if large amounts of protein are given by mouth or by gavage, this loss can be curtailed, and in some instances a positive nitrogen balance can be obtained.

Dr. Charles Armstrong, Washington, D. C.: The name of this disease is Rocky Mountain spotted fever, not tick-borne typhus. If one says tick-borne typhus, one might mean Rocky Mountain spotted fever; one might mean boutonneuse, the Mediterranean type, or if one is speaking of mite-borne typhus, one might mean tsutsugamushi or rickettsial pox. Let's stick to the name Rocky Mountain spotted fever. Nothing will be gained by writing tick-borne typhus and then Rocky Mountain spotted fever in parentheses. These patients were seen after the rash first appeared. That is really the first definite diagnostic symptom. But if one waits until the appearance of the rash, one is not seeing the case or making a diagnosis early.

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[14] Moragues, V.; Pinkerton, H., and Greiff, D.: Therapeutic Effectiveness of Penicillin in Experimental Murine Typhus Infection in dba Mice, J. Exper. Med. 79: 431-437 (April) 1944.

I think that something can be gained by a carefully taken history; a history of a bite with engorgement of the tick about seven to twelve days prior to the onset of the symptoms may give an inkling of what to expect before the appearance of the rash. And then one should, if one suspects Rocky Mountain spotted fever, get serum available so that one can start specific treatment, at the first appearance of the rash. It might be well also to remember that there is an effective vaccination available against this disease, which may be used in especially exposed persons. In Montana, the incidence of the disease has dropped until in 1945 there were but 2 cases reported. This year, there has not been a single case of the disease reported in the state. These results are, I think, largely due to the widespread use of the vaccine in that part of the country.

Dr. Weston M. Kelsey, Winston-Salem, N. C.: I believe that the name tick typhus is better than Rocky Mountain spotted fever for several reasons. Many practitioners have been misled in the diagnosis since they feel that it is a geographically limited disease. Unsatisfactory as it is, tick typhus correlates the vector with the disease as do the names murine typhus and louse-borne typhus. I admit that the terminology is unsatisfactory. The big problem is prophylaxis, especially in the pediatric age group where ticks are not recognized and removed before they have become attached. The question of just how to approach the public health problem in a rural area, such as North Carolina, remains unanswered. It has been difficult instituting programs for routine immunization, not to mention immunization against tick typhus, which would require contact with the patients every year.

THE MEANING OF CANCER RESEARCH

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Washington, D. C.

While the human body is a beautifully organized, well governed society of cells, probably no living species is a victim of more disorders and maladjustments than man. From study of the behavior of the various disorders much has been learned about the orderly, normal behavior of living units, i. e., cells, organs and systems. So far as communicable diseases are concerned, it is now axiomatic that they are manifestations of cellular reactions to external parasitic organisms (bacteria, protozoa or viruses). The reactions show a process of adaptation between two living variables, the mammalian cell host and the invasive parasitic agent. This process is essentially a struggle for survival, and it may end in the death of the host, the death of the parasite, the death of both or a compromise through which host and parasite manage to live together satisfactorily. Basically, the cancer process is no exception. It, too, is a movement toward the goal of all living things, survival.

That cancer is essentially the result of a process of cellular adaptation is suggested by the gradual, steplike change in the behavior of cells when they are transformed into the neoplastic stage. Under some conditions, but not all, cancer cells are tougher and have greater survival value than the homologous normal cells.[1] It is also commonly observed that cancer in the terminal stages of the disease will continue to increase in weight, while the rest of the body is wasting away. In experiments with animal transplantation, cancer implants are seen to elicit a richer supply of blood vessels from the host than implants of normal tissues, and they are also seen to assume a rate of multiplication superior to that of the surrounding normal tissue.[2]

Under the influence of the brilliant researches of the last seventy-five years, which have revealed that many human diseases are due to a single invasive parasite, investigators were misled in their search for a single cause of cancer. Not one of the numerous descriptions of parasites as the cause of cancer has withstood the test of time.

What is the status of present knowledge of the carcinogenic process? Cancer research has reached the stage at which the following affirmations can be safely made:

1. The inciting causes of cancer are multiple and complex. In fact, cancers now may be induced experimentally at will by (*a*) genetic manipulations, i. e., inbreeding, selecting and cross breeding; (*b*) injection or feeding of any of several hundred chemicals, some of which are organ specific; (*c*) hormonal imbalances and disturbances; (*d*) many of the energy agents (roentgen rays, gamma rays of radium and ultraviolet rays), *especially in animals that are subjected to interval* exposure to these agents, and (*e*) a combination of two or more of the aforementioned factors. Recently, Copeland and Salmon,[3] of the Alabama Polytechnic Institute, reported cancer in rats due to a simple dietary (choline) deficiency. It seems unmistakably clear that no single specific agent or condition or any single combination of agents or conditions is responsible for the initiation of all types of cancer.

2. Mammalian cancer cells are derived from normal cells. Pathologists without exception now agree on this point.

3. Certain precancerous conditions (warts, moles, papillomas and leukoplakia) are recognized, and no sharp line of demarcation can be drawn between the precancerous and the cancerous process. In contrast, there is no preinfectious process among the communicable diseases.

4. Cancer cells are not supplied with nerves from the host, although they elicit from the host an abundant blood supply and a supporting stroma of connective tissue. This property has been taken as additional evidence of *the autonomous nature of cancer*.

5. A greater variety of species is subject to the carcinogenic process than to any other disease. Spontaneous cancers have been described in insects, birds, fish, reptiles and amphibians, as well as in man, mice, rats, rabbits, dogs, cats, cattle, hogs, sheep and many other mammals. Yet each cancer is species specific. Cancer cells, like normal cells, cannot be implanted successfully in a foreign species except under highly artificial conditions.

6. Cancer reveals itself as a special type of cell behavior, peculiar to *organized multicellular forms*. A cancer is a group of disorganized cells. Every biologist who has observed the marvelous processes of cell differentiation and organization in any developing multicellular embryo wonders not that there is occasional evidence of disorganization, but that there is not more of it.

7. Cancer is not, as often stated, a "universal cell potentiality" because what is now called cancer cannot manifest itself in a single cell species. While free-living

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[*] Formerly Chief, National Cancer Institute; now director of Professional Training Program, Cancer Control Branch, National Institute of Health.

Read in a Symposium on the Present Status of Cancer Research before the Section on Pathology and Physiology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

[1] Brues, A. M., and Jackson, E. B.: Cancer Research **1**: 557-563, 1941.

[2] Algire, G. H., and Chalkley, H. W.: J. Nat. Cancer Inst. **6**: 73-85, 1945.

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single cell organisms are considered potentially immortal, as long as the environment is favorable and there is an adequate food supply, the life span of all multicellular individual organisms is definitely limited, even under the most favorable conditions. Continuity of life is maintained in multicellular forms through sexual reproduction. Death and extinction seem the penalties for the privileges and advantages of organized multicellularity. To put it another way, multicellularity seems to carry the seeds of its own destruction. A biologist would not claim this is true of all organized systems; but it is suggestive, and I know of no multicellular living thing that lasts forever.

Some investigators think the cancer process is related to the aging process, which may be defined as a gradual and, at present, an apparently inevitable process of disorganization and disintegration. Yet the disorganized cells known as cancer resemble, in many respects, youthful, embryonic tissue rather than cells that are old.

DEFINITION OF CANCER

It is difficult to define the cancer process. Can it be defined as an abnormal type of growth that serves no useful purpose? No, it cannot, because the body possesses many vestiges, as well as numerous moles, warts and benign growths, which serve no useful function. These structures and lesions are not cancers. Is autonomous, unlimited growth characteristic of cancer? No, it is not, because normal cells display unlimited growth when cultivated artificially in flasks and provided with an ample food supply. They do not produce cancers when again implanted in the animal body. Are the invasion and destruction of other tissues peculiar to the cancer process? Not at all. Normal leukocytes invade other tissues, and the so-called trophoblasts in the early stages of pregnancy invade and erode the body of the uterus. Is the ability to spread to other parts of the body and form metastatic tumors a characteristic quality of cancer? Certain tumors, such as the basal cell carcinoma of the skin and the tumors of the brain, do not metastasize. They are none the less malignant. Thus, it is not possible to pigeonhole cancer or to choose any one quality peculiar to the cancer cell.

When one attempts to summarize present knowledge of the carcinogenic process, one finds that much has been learned concerning what the late Dr. James Ewing called "the causal genesis" of cancer, i. e., the multiple external and internal environmental agents and conditions that start the carcinogenic process but are not essential thereafter to its continuation. On the other hand, little has been learned about the nature of the permanent intracellular change that takes place when normal cells are transformed into cancer cells, or what Ewing termed the "formal genesis." Many theories have been advanced to explain this intracellular change. It has been ascribed to the stimulating effect of latent intracellular viruses activated by the various inciting environmental factors mentioned previously, to the "hybridization" of an intracellular virus and the mammalian cell, to somatic mutations, to altered enzyme patterns and to modified mitochondria. But, regardless of the known inciting factors in the "causal genesis," and regardless of the various theoretic explanations of the "formal genesis," in every case of cancer the end result is essentially the same. Cancer is a process in which certain cells of an organized cell group have become parasitic on and finally fatal to the mother organism. These cells are truly traitors from within, in contrast to those responsible for the communicable diseases, which are all invasive gangster cells (bacteria, protozoa, viruses) from without. If cells become parasitic solely because they are activated by latent intracellular viruses, as some believe, it is necessary to postulate the existence of almost as many viruses as species and individual organisms, since each spontaneous cancer is species specific and largely individually specific. The phrase "individually specific" means that a spontaneous cancer arising in an individual organism of any species cannot be transplanted successfully, as a rule, to other individual organisms of the same species, unless one is dealing with highly inbred strains of animals, the members of which are as nearly alike as identical twins.

Although I hesitate to introduce new terms, one may think of cancer as an "autoparasite," in order to set it apart from the communicable diseases caused by external parasites. Perhaps the term "autosite" contrasts better with "parasite," but "autosite" has already been applied to the independent member of parasitic twin monstrosities. It is interesting that some cancers do possess characteristics which can be thought of as belonging to a latent parasitic twin, the production of which is without question an abnormality of the developmental process.

In attempting to classify cancers or to describe adequately the cancer process, one must remember there are no complete dichotomies anywhere in biology, but, rather, that there exists an almost imperceptible gradation in form and function, from the most primitive of organisms to the most complex.

UNIQUE QUALITIES OF CANCER

No two cancers seem identical in either causation or behavior. The parts played by heredity, by hormones, by diet, by external environmental conditions are seldom the same in cancers of different organs. The well known coal tar product methylcholanthrene seems to induce a cancer in practically any mammalian tissue in which pellets of this insoluble hydrocarbon are placed. On the other hand, among the several hundred chemicals which induce cancer when injected into or fed to animals, another coal tar product (beta-naphthylamine) when given to dogs causes cancer of the bladder only.

The azo dyes will induce cancers of the liver only when fed to rats and mice and compounds of relatively simple chemical structure (chloroform and carbon tetrachloride) also induce cancer of the liver, but not of other tissues.

An alkaloid (contained in ergot)[4] fed to rabbits for two years caused neurofibromas on the ears only. Tumors of the kidney followed the injection of a synthetic organic chemical (beta-anthraquinoline).[5] Urethane,[6] another synthetic organic compound, caused an increase in incidence of spontaneous tumors of the lung in a certain strain of mice, from less than 5 per cent to more than 75 per cent. Interestingly, the same drug has been used with good results temporarily in the treatment of human leukemia.[7]

Gordon[8] showed that the spotted platyfish (Platypoecilus maculatus) when mated to a member of its own species produces spotted but perfectly normal young. A swordtail (Xiphophorus hellerii) mated to a swordtail also produces normal young. But, when a perfectly healthy black-spotted platyfish is mated to an equally healthy Mexican swordtail, hybrid fish are born in which melanotic tumors invariably appear. If an unspotted platyfish is used in a hybrid mating, the disease will not appear. The spotted condition in the platyfish is inherited from one generation to another with a definite mathematic precision.

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[4] Nelson, A. A.; Fitzhugh, O. G.; Morris, H. J., and Calvery, H. O.: Cancer Research **2**: 11-15, 1942.

[5] Sempronj, A., and Morelli, E.: Am. J. Cancer **35**: 534-537, 1938.

[6] Nettleship, A., and Henshaw, P. S.: J. Nat. Cancer Inst. **4**: 309-319, 1943.

[7] Paterson, E.; Thomas, I. A.; Haddon, A., and Watkinson, J. M.: Lancet **1**: 677-682, 1946.

[8] Gordon: Am. Scholar **1**: 489-491, 1932.

Sharrer[9] observed that in the insect Leucophaea maderae the removal or injury of the recurrent nerve from the frontal ganglion of the sympathetic nervous system caused tumors to grow in the organs supplied by this nerve. The disturbance of endocrine balance as a factor was ruled out. The insects with tumors died in ten days to several months. Death was apparently due to starvation from obstruction of the alimentary canal.

Little and his group[10] at the Jackson Memorial Laboratory, Bar Harbor, Maine, showed that in 100 per cent of a series of castrated newborn mice (male and female) of a certain strain cancers of the adrenal gland developed after the age of 13 months. Yet the same operation has been employed by Huggins of the University of Chicago,[11] in the treatment of cancer of the prostate in old men. Of 20 patients, in each of whom the cancer had spread to other parts, 18 showed improvement and 4 remained completely free from symptoms for five years after the operation. It is not likely that castration would be helpful in the treatment of all forms of cancer, but why did some of these patients with prostatic cancer respond so favorably and others did not? At present no one knows, but the results suggest there is no "cure-all" and that each cancer is a law unto itself, and differs from all others, even those arising in the same tissue.

Among patients at Veterans Administration Facility, Hines, Ill., Shrek[12] observed that the incidence of cancer of the skin in white men is nearly seven times as great as in Negro patients. The records obtained among veterans also support the observation of many investigators that cancer of the skin in the white race occurs in the southern states much more frequently than in northern states.

The effects of the nutritional factors involved in the origin of experimental cancer are so variable that it seems impossible at present to form any general conclusions. However, Tannenbaum,[13] of Michael Reese Hospital, Chicago, reported that statistics obtained from life insurance companies suggested that among persons who were overweight at the time of the issuance of the policy there was a greater proportion of deaths from cancer than among persons who were of average weight or underweight. Tannenbaum also showed that in experimental animals a restricted diet will reduce the incidence of many different types of spontaneously occurring tumors, including leukemias. These observations provide leads, at least, toward methods of prevention.

CANCER RESEARCH AS AN ACTIVATOR

In my opinion, all the observations on the biology of cancer which have been slowly and painstakingly acquired during the past three or four decades, largely by the efforts of organized groups or what has been termed "interdisciplinary research," set cancer apart from other forms of so-called biologic maladjustments. Cancers and the neoplastic conditions cannot logically be classified with any other group of diseases. Investigators are finding that the problem of cancer is unique in many ways. The acceleration of cancer research since the late war has been due not only to generous federal and private financial support, but also to the fact that the cancer process, involving as it does problems in cell division, in metabolism, in regeneration and in the differentiation and organization of tissues, is of deep interest to all workers in experimental biology and medicine. No other disease problem has created such widespread interest among nonmedical investigators.

Thus, cancer research is activating numerous other fields of biology, and herein lies, I think, its basic importance and its true meaning. The group of fifteen distinguished experts appointed by the Division of Medical Sciences of the National Research Council for the American Cancer Society, whose duty is to recommend the allocation of funds for cancer research, is significantly called the "Committee on Growth." This designation recognizes that the cancer process is basically a problem in growth, and a study of growth leads naturally into practically every field of biology.

The extent to which the funds for the study of cancer are now supporting research in fundamental disciplines may be realized simply from a listing of the panels and sections set up by this committee. In the section on biology are panels on botany, cellular physiology, human genetics, experimental genetics, morphogenesis and viruses. In the section on chemistry are panels on cytochemistry, enzymes, experimental endocrine physiology, nutrition, proteins and synthesis and metabolism of steroids. In the section on chemotherapy are panels on bioassay, chemical-biologic coordination and the mechanism of action. There are two other sections, on clinical investigations and physics, with appropriate panels. Thus, the problem of cancer has stimulated research in many fundamental sciences.

THE POSSIBLE YIELD OF CANCER RESEARCH

In the history of science, time after time experiments designed to solve a specific problem have yielded unexpected, and sometimes highly significant, results. I am certain such results will mark the expanding program in cancer research. I trust a reference to a personal experience which illustrates this principle in a small way will be forgiven. Some years ago my associates and I began to study the effect of cancer-inducing agents on free-living, single cell species, exposing them continuously for long periods covering many generations.[14] It was believed that permanent morphologic changes might gradually be produced. Such changes were not obtained, but these studies gave information which subsequently enabled us to establish through reproducible experiments three principles involved in the mechanism of cellular adaptation to unfavorable environments. We found that continuous exposure to conditions which were apparently harmless to individual organisms and cultures would be fatal in time to the species. On the other hand, a discontinuous and alternating exposure to the same conditions resulted in survival and adaptation. Lastly, we observed that the ability of organisms to resist unfavorable environments was a function of their age or maturity. Unexpectedly, these experiments gave a better insight into the mechanisms by which living organisms survive or adapt to unfavorable environments. It is certain that the survival of the single cell, the multicellular organism and the species is never coextensive, and, therefore, one must always hold in mind that what may be to the best interest of an individual is not necessarily to the best interest of the race or species, Race preservation, rather than self preservation, may be the first law of nature.

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[9] Sharrer, B.: Proc. Soc. Exper. Biol. & Med. 60: 184-189, 1945.

[10] Little, C. C.: Cancer Research 3: 220-226, 1945.

[11] Huggins, C. B.: Prostatic Cancer Treated by Orchiectomy: Five Year Results, J. A. M. A. 131: 576-581 (June 15) 1946.

[12] Shrek, R.: Cancer Research 4: 119-127, 1944.

[13] Tannenbaum, A.: Relationship of Body Weight to Cancer Incidence, Arch. Path. 30: 509-517 (Aug.) 1940.

[14] Spencer, R. R.: Tr. New York Acad. Sc. 8: 135-137, 1946.

The release of atomic energy and the development of the atom bomb has deepened the faith of people the world over in the power of science. Indeed, these achievements have caused many to expect from biologic science too much, too soon. However, in the course of a few decades, and when a large number of talented young men and women can be recruited into the ranks of biologic research, I believe that the generous support of the public for cancer research will be justified in the results—perhaps in the by-products alone. The potentialities of new observations are not always realized.

I think I can speak for many investigators, though perhaps not all, in saying that the scientific method is more than just a working method and a means to an end. *I am sure that many scientists hold these truths* to be self evident:

1. The scientific method is the most effective tool man has ever devised for cutting into the facts of life and uncovering the secrets of nature.
2. The scientific method is a discipline and a way of life—the only way of life that has received universal approval.
3. Science is the only trustworthy custodian of truth in the world today.

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IDENTIFICATION OF MALIGNANT TISSUES

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A problem of considerable importance in practical pathology, as well as in cancer research, is the identification and classification of malignant tissues. The characterization of tissues as malignant or cancerous derives from a biologic conception of these states; yet in most laboratories of pathology the distinction is based solely on morphologic considerations. Thus, the assessment of properties and potentialities becomes an interpretation of fixed appearance, rather than a judgment based on actual behavior.

Morphology indicates character, but the proof of malignancy lies in behavior. Many tissues and tissue states bear a remarkable resemblance to cancer, but their fate in the organism and their significance to it place them in entirely different categories. Early embryonic tissues frequently resemble cancer so closely that the distinction cannot be made on the basis of a histologic examination of a section, and the definition depends on the fact that in the primary host and in experimental animals, embryonic tissues undergo differentiation while cancerous tissues do not. In like manner, the morphologic characteristics of productive inflammatory foci or of exuberant granulation tissue may lead to a diagnosis of sarcoma. Yet removal of the stimulus restrains proliferation and controls the lesion.

By far the more important group, however, are the neoplastic lesions representing developmental stages of cancer rather than the fully evolved autonomous growth capable of invasion and metastasis. Cancer is not the result of a sudden transformation of normal cells but, on the contrary, represents the final stage in a developmental process. The various stages of this process cannot be distinguished from their product with any degree of consistency on purely morphologic grounds, but the difference in biologic behavior is always of a major order. This difference is evident to the clinician who observes recovery of a patient after the surgical removal of a lesion diagnosed as cancer by the pathologist or who follows a patient with a morphologic diagnosis of cancer for years before metastasis occurs. The surgical pathologist's opinion in such cases is, of course, not a diagnosis at all, but a prognosis.

The distinction between cancer and its developmental stages or other morphologically similar tissue states is particularly evident to the biologist who studies the reactions of the tissues to transplantation. The reactions to transplantation of several of the commoner tissues are shown in the table. It will be noted that only embryonic tissue and cancer tissue survive heterologous transfer. The heterotransplantability of embryonic and cancer tissues accents their biologic relation. This observation is of considerable interest in itself; but for present and practical purposes, it is important to note only that reactions to transplantability constitute a biologic test for cancer. If the tissue in question grows in an animal of alien species, it is either embryonic tissue or cancer, and, even with present knowledge of gross pathology, the surgeon ought to be able to manage this phase of the distinction.

Heterologous transfer offers a basis for the biologic diagnosis of cancer and is also of value in the classification of tumors. A laboratory report describing a metastatic tumor as disorganized and anaplastic is of little use to the clinician in his search for the primary site, but such a report interprets the microscopic picture and represents the limitations of present technics in surgical pathology. Fortunately, the growth of such tumors in lower animals is associated with a higher degree of cellular differentiation and structural organization than that present in the parent cancer, and study of the transplants allows a more precise classification than is warranted from the morphologic features of the biopsy specimen.

The technic of heterologous transfer is extremely simple. The anterior chamber of the eye is used as a transplantation site, and the guinea pig is the animal of choice. After application of a 5 per cent aqueous solution of cocaine to induce anesthesia, the chamber is opened close to the upper border of the corneoscleral junction by means of a short, quick jab with a double-edged corneal knife. A small amount of fluid is allowed to escape, and a fragment of tumor measuring approximately 0.5 mm. in diameter is introduced into the chamber. Insertion of the tumor fragment is facilitated by the use of a trocar provided with a tight-fitting plunger and a short-beveled extremity. The fragment is then forced into the inferior angle of the iris by applying light pressure with a blunt instrument along the corneal surface. The corneal incision is not closed.

It is essential that judgment be employed in selecting fragments for transfer, for growth cannot be expected if necrotic material or scirrhous tissue representing desmoplastic reaction is used. Examination of frozen

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sections is often helpful in locating desirable portions of the specimen. It should be emphasized that only cancer tissue will survive heterologous transplantation. Benign tumors and so-called precancerous lesions fail to grow and rapidly disintegrate or undergo hyalinization.

The tissue need not be transplanted immediately after operation, for it will survive at ice box temperature for several days. It is possible, therefore, to preserve representative fragments in sterile Petri dishes, until routinely fixed sections have been prepared and examination suggests the desirability of further study.

The guinea pigs are not subjected to special treatment before or after transfer, but they are maintained under ordinary conditions of cage life. Neither their age nor sex appears to influence the incidence of takes or the course of growth.

Transplantation Reaction

	Type of Transfer		
Type of Tissue	Autologous	Homologous	Heterologous
Normal adult	+	+	−
Normal embryonic	+	+	+
Benign tumor and developmental stages of cancer	+	−	−
Cancer	+	+	+

The following cases are cited as illustrations of the use of this technic for purposes of tumor classification.

A woman aged 45, with a greatly enlarged inguinal lymph node, presented herself for examination. The remainder of the physical examination and the history as obtained from the patient at the time were not contributory. The node was removed, and histologic examination showed scattered anaplastic cells, with a preponderance of necrosis and desmoplastic reaction. There was nothing to indicate the proper classification or the primary site. Fragments of the mass were transferred to guinea pigs, and, when several of them were killed twenty days thereafter, the anterior chambers were observed to be approximately half filled with growing tumor. On section, the transplants were shown to consist of vascularized masses of cells with such characteristics of structure and organization that a histologic diagnosis of a melanotic melanoma was readily made. The patient was reexamined, and on direct question she told of the removal of a nevus from the foot several years previously.

A man aged 35 entered the hospital with a tumor of the sixth cervical vertebra, diagnosed elsewhere as osteogenic sarcoma. Biopsy specimen was taken, and on examination of a frozen section no diagnosis other than anaplastic tumor and necrosis could be made. Accordingly, fragments of the specimen were transferred to the eyes of a number of guinea pigs. The following day, a thorough search of paraffin sections disclosed several areas of greater cellularity than was noted in frozen sections, but these were nondescript and without indicative organization. A guinea pig was killed ten days after transfer, and the histologic structure of the growing transplant was typically that of a chordoma. It is of interest and in keeping with the results of transfer that the tumor metastasized and the man died a short time after operation—a relatively rare termination of growths of this type.

A woman aged 24 entered the hospital with recurrent tumor three years after incomplete removal of a growth from the eighth thoracic vertebra. The growth had been diagnosed as hemangioblastoma, and review of the sections revealed the classic histologic picture of such a tumor. At the second laminectomy, the tumor tissue showed a more disorganized structure, but the general appearance was consistent with the anaplastic development of a hemangioblastoma, and such a diagnosis was made. However, when the guinea pigs bearing grafts of the tumor were killed, twelve days after transfer, the transplants showed a well organized growth of cells whose *structure and arrangement were typically those of a chondrosarcoma.* As might be expected, considerable doubt was expressed by the clinicians as to the validity of the revised diagnosis; but at autopsy, approximately a year later, the typical chondrosarcomatous histology of an intrathoracic extension and of the widespread metastases attested the reliability of the guinea pig test.

A further use of heterologous transplantation as a means of determining the true nature of tumors of uncertain origin is *exemplified by a case of a boy with so-called myxosarcoma of* the hypopharynx. Considerable uncertainty has always existed as to the origin of this type of tumor, the question being whether it actually represents a malignant growth of myxoid tissue or whether it is merely a fibrosarcoma undergoing myxoid degeneration. An unmistakable answer was given by the guinea pig inoculation, at least for the case under discussion. In this instance the tissue used for transfer was the histologic prototype of myxosarcoma, yet the morphologic character of *the growing transplant was manifestly that of a fibrosarcoma.*

CONCLUSION

The object of this report is to call attention to the value of heterologous transplants as an aid to the diagnosis and classification of human tumors. The ability to survive in an alien host is not shared by normal adult tissue, benign tumors or chronic granulomas, and the mere fact of growth immediately identifies the tumor in question as cancer. The value of the procedure is enhanced from a diagnostic point of view by the increased differentiation and organization exhibited in the growing transplant. Completely disorganized tumors often undergo alterations in stromal-parenchymal relations to reveal an organized structure indicating the tissue or organ of origin. In other instances, an increased differentiation of the transplanted cells betrays their proper classification.

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ABSTRACT OF DISCUSSION

Dr. Stanley P. Reimann, Philadelphia: Dr. Greene has shown that the addition of his particular test helps greatly in the classification of tumors. A morphologic statement is not a finished diagnosis; but Dr. Greene, I am sure, will agree that those who use his method must first have had some experience and training in pathologic anatomy. The name given to a tumor makes no difference to the patient, nor does he care how it behaved in himself or in the guinea pig's eyes. The patient's fate depends on whether or not every last cancer cell has been removed or destroyed. But the study of the behavior of tumors is of the utmost importance to an understanding of malignancy. I again call your attention to the "confusion of tongues" in regard to tumors. Differences in words are often taken to mean differences in things and in phenomena. Something should be done about it! I still recommend that pathologic anatomy be taught first and then as much of the behavior of tissue as is known. But one must continuously bear in mind the difference between the patient's point of view and the position that the study of cellular activities in all their phases will eventually lead to a better understanding of cancer. Perhaps the patient, in the indefinite future, will also come to a different point of view.

Dr. E. V. Cowdry, St. Louis: I should like to ask about the essential feature, the failure of normal and chronic granulomatous tissues to grow, whereas malignant and embryonic tissues are capable of growth. In the transplantation of embryonic tissue, does the ability to grow fade out at the same time in the different types of cells? Does it stop suddenly, or does it gradually cease?

Dr. R. R. Spencer, Washington, D. C.: Dr. Greene's paper represents splendid pioneer work; as time goes on it will be increasingly important. However, I am skeptical about his classification and the attempt to "pigeonhole" cancer. I believe cancer is a process that is so general that it is difficult to classify. For this reason, I understand that leukemias, which certainly belong in the class of malignant hyperplasia and the malignant process, are excluded by Dr. Greene because leukemia cells will not grow by his method. I also understand that there is at least one experimental tumor in the rat—that developed by Dr. W. F. Dunning in her laboratory in the Detroit Institute of Cancer Research, which develops and kills the animals but which does not grow in the anterior chamber of the eye of heterologous species.

Dr. Alvin G. Foord, Pasadena, Calif.: If one took 100 consecutive malignant tumors and implanted each one in an animal, how many positive takes would result?

Dr. Robert S. Stone, San Francisco: One of the advantages of a conference is that one can hear the other man's discussion. I am a radiologist. It has always annoyed me that the pathologist notes a tumor as either radiosensitive or radioresistant, thereby encouraging, or discouraging, the clinician's advocation of treatment. Dr. Greene has shown a beautiful example of the difficulty one may have in telling from one section whether a tumor may be radiosensitive or radioresistant. Moreover, I should like to point out that labeling a tumor as radiosensitive or radioresistant has nothing to do with its curability. A most radioresistant tumor, such as cancer of the lip, may be the only one that can be cured, whereas a lymphoma or such a radiosensitive tumor as was shown a few minutes ago is seldom curable. In this respect, I differ with Dr. Reimann that one can make a prognosis, because with tumors that grow like the one shown here it is seldom possible for the surgeon to remove all the growth, for it has already gone too far. It is almost impossible for the radiologist to bring about a cure because, as Dr. Greene showed, the growth in the treated region disappeared beautifully but the tumor was already somewhere else. I hope that these studies of Dr. Greene's will result in a means, by behavior technic, of telling more of a practical nature about what radiologists should do with tumors.

Dr. Harry S. N. Greene, New Haven, Conn.: Dr. Reimann asked how frequently I believe a diagnosis of cancer could be made microscopically. The answer, of course, depends on one's definition of cancer. If cancer is defined in purely morphologic terms as a growth showing alterations in the size, shape and staining qualities of cells and nuclei; loss of polarity, and an increase in the number of mitoses, then a microscopic diagnosis can always be made. If, on the other hand, one's conception of cancer derives from its biologic attributes, and such properties as autonomy and ability to metastasize are considered as essential identifying qualities, then the basis of diagnosis depends on behavior. The technic I have described is a method of assessing character through behavior, and in my experience it has proved more reliable than the microscopic method of judging character from appearance. Dr. Cowdry's question concerned the growth of embryonic tissue in the anterior chamber of the guinea pig eye and how it differs from the growth of cancer. Cancer grows progressively and can be transferred serially through unlimited generations of animals. Embryonic tissue, however, undergoes differentiation after a period of rapid proliferation; subsequent growth is slow, and serial transplantability is limited to several generations. This distinction requires comment in passing. Actually, it is the most conspicuous difference between the two tissues. Morphologically, immunologically and biochemically cancer tissue and early embryonic tissue are identical. However, both in the primary host and in the experimental animal, embryonic tissue undergoes differentiation, whereas cancer tissue does not. It would appear, therefore, that the step from embryonic tissue to cancer was a relatively short one and that it was concerned with the process of differentiation. Accordingly, one of my endeavors has been to modify or to inhibit the differentiation of embryonic tissue, with the hope of producing a cancer. Briefly, it has been observed that if a crystal of methylcholanthrene or other so-called carcinogenic hydrocarbon is added to the embryonic organ at the time of transfer, a carcinoma characteristic of the transplanted tissue develops within thirty days.

Dr. E. V. Cowdry, St. Louis: My question was: When does the failure to grow appear in embryonic tissues? Does it appear suddenly in tissues of many kinds at the same time?

Dr. Harry S. N. Greene, New Haven, Conn.: Dr. Cowdry asked at what age embryonic tissue loses the ability to survive heterologous transfer. The age differs according to species. In man heterotransplantability is lost during the fifth month of gestation. It is retained throughout the greater part of embryonic life in the mouse, ceases at about the twenty-fifth day in the rabbit and about halfway through gestation in the guinea pig. A question was asked concerning the heterotransplantability of the lymphomas. Despite numerous attempts, I have not been able to transfer leukemia, Hodgkin's disease or any of the other lymphomas from man to lower animals. The inability to grow on transplantation would seem to constitute further evidence against their classification as neoplastic diseases. A question was asked concerning the percentage of takes to be expected from the transplantation of a human cancer. The number of takes is directly proportional to the amount of stroma or desmoplastic tissue present in the tumor. Stroma and desmoplastic tissue are adult tissues and they excite a foreign body reaction in the alien host, which may completely destroy the transplant. Successful transfer depends on the selection of tumor fragments containing a preponderance of parenchyma, and such selection is easily made from the appearance of frozen sections.

Special Article

CANCER OF THE HEAD AND NECK

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(Continued from p. 1314 in The Journal, Aug. 7)

III. CANCER OF THE LARYNX

Anatomically the larynx extends from the tip of the epiglottis to the inferior margin of the cricoid cartilage, and the term cancer of the larynx, therefore, includes all malignant growths arising in the epiglottis, the aryepiglottic folds, the arytenoids, the ventricular bands, the ventricles, the vocal cords, the subglottic area and the postcricoid region. Laryngeal cancer may be divided anatomically into two general groups: (1) Growths arising on the vocal cords and ventricles and in the subglottic region are classified as cancer of the intrinsic larynx, and (2) growths arising on the upper surface of the ventricular bands, the epiglottis or its appendages or in the postcricoid region constitute cancer of the extrinsic larynx.

ETIOLOGY

Laryngeal cancer comprises about 2 per cent of all human malignant tumors. Like cancer of the mouth this disease occurs most often in middle and old age, and predominantly in males (97 per cent). The incidence of intrinsic and extrinsic laryngeal cancer is about equal.

Causative Factors.—The preexistence of chronic local irritation which may so often be shown to play a part in the causation of malignant growths of the oral cavity is not readily demonstrated in cancer of the larynx. Although excessive smoking with inhaling, voice strain and syphilis are undoubtedly etiologic factors in an occasional case, these forms of irritation cannot be shown to have a significant etiologic role in most cases of laryngeal cancer. The disease usually appears to arise spontaneously. Leukoplakia of the larynx (pachyderma laryngis) sometimes undergoes malignant transformation.

PATHOLOGY

Epidermoid or squamous carcinoma is the predominant histologic form of cancer which affects the larynx. This is to be expected in a mucosa which consists entirely of stratified squamous epithelium covering the vocal cords and a pseudostratified transitional type lining the larynx above and below the cords. In the intrinsic part of the larynx, over two thirds of the growths are well differentiated epidermoid carcinoma (grades 1 and 2) and in the extrinsic part of the larynx about 50 per cent fall into this class. The degree of anaplasia of laryngeal cancer generally increases the further its site of origin is removed from the region of the cords.

SYMPTOMS, MORBID ANATOMY AND CLINICAL COURSE

The symptoms of laryngeal growths vary greatly depending on the exact site of origin.

Cancer of the Intrinsic Larynx.—Hoarseness is invariably present in the early stages of cancer of the cords, and in practically all cases careful questioning of the patient will reveal that this was actually the first symptom. The progress of the disease is usually slow, and hoarseness may persist as the only symptom for as long as one to three years in untreated patients before the airway is diminished sufficiently to produce dyspnea. As the disease infiltrates deeply into the vocal cords, complete aphonia results. If, on the other hand, the lesion tends to fungate rather than to infiltrate, husky phonation may be accompanied by gradually increasing dyspnea as the aperture of the glottis is narrowed. Eventually, the disease may perforate the laryngeal cartilage or the cricothyroid membrane to invade the soft tissues of the neck. Metastasis to the cervical lymph nodes rarely occurs early in the course of this anatomic variety of laryngeal cancer.

As viewed through a throat mirror or laryngoscope, early cancer of the intrinsic larynx usually appears as a granular, papillary outgrowth or as a flat, slightly excavated ulcer with raised borders, most frequently situated in the free edge or upper surface of the anterior two thirds of the vocal cords (fig. 9). The posterior third of the cords or the posterior commissure is seldom the primary site of origin. In later stages the growth infiltrates more deeply with eventual fixation of the affected cord, and as the disease progresses the lesion spreads upward into the ventricle and the ventricular band and across the anterior commissure to involve the opposite cord. Characteristically, cancer of the intrinsic larynx remains a fairly well localized disease until death.

Cancer of the Extrinsic Larynx.—The symptoms of extrinsic laryngeal cancer are varied and often misleading. Hoarseness seldom occurs early in the disease. Frequently the first symptom consists of slight pain or vague discomfort in the throat on swallowing. Persistence of such complaints and progression of their severity are probably the most characteristic subjective features of extrinsic laryngeal cancer. Hoarseness almost always occurs as the second symptom in the moderately advanced stages of the disease, and is due to downward extension of the growth toward the vocal cords or to edema at the level of the cricoid cartilage. The appearance of an enlarged cervical lymph node (discovered by the patient as a "lump in the neck") usually in the region of the carotid bifurcation is third in frequency as the earliest symptom of cancer of the extrinsic larynx. It is significant that such metastatic spread will occur as the initial symptom in about one fifth of the cases. In intrinsic laryngeal cancer metastasis to the cervical lymph nodes almost never occurs as the first symptom.

Viewed through the laryngeal mirror, extrinsic cancer of the larynx usually presents as a fairly bulky lesion (1 to 3 cm. in diameter) when first seen by the physician. The growth characteristically appears as a fungating, papillary tumor of the epiglottis, the aryepiglottic folds, the arytenoids, or the postcricoid region (fig. 10). Occasionally, the lesion presents as a slightly excavated ulcer which has infiltrated deeply. There is almost always accompanying edema that may be sufficient partly to conceal the ulcerated character of the lesion. On the outer or posterior surface of the arytenoids, or in the postcricoid region, slight swelling may obscure the ulcer entirely so that the actual growth can be visualized only by direct laryngoscopy. As cancer of the extrinsic larynx progresses, it tends to invade adjacent structures, and as the edema increases and the growth extends, both dyspnea and dysphagia occur.

Metastasis to the cervical lymph nodes in extrinsic laryngeal cancer frequently takes place fairly early, and almost always in the later stages of the disease. These metastases may become fairly bulky and may compress the cervical nerves to cause intractable pain. Metastasis below the level of the clavicle often occurs if the patient survives the local effects of the disease.

DIAGNOSIS

There is probably no anatomic form of cancer in which avoidable delay in diagnosis may be more readily demonstrated than in malignant tumors of the larynx. There are only three important symptoms in cancer of the larynx, namely, hoarseness in cancer of the vocal cords (intrinsic), and either persistent pain and discomfort on swallowing or the appearance of cervical metastasis in cancer of the extrinsic larynx.

An analysis of large numbers of cases of cancer of the cords reveals that the majority of patients with persistent hoarseness will consult a physician within six weeks. If cancer is suspected and proper investigative steps taken, the true diagnosis will of course be made in all instances. Analysis will also show that when the physician first consulted for hoarseness does not examine the vocal cords but only prescribes medication (gargles, etc.) there is an average delay of over ten months before the true diagnosis is made. Since the patient is assured that his hoarseness is not of serious significance, he tends to procrastinate for weeks or months before further insisting on relief. It is important to emphasize both to the members of the medical profession and to the laity that persistent hoarseness (over two weeks) is almost always serious in character and that it is imperative to find the cause.

In growths of the extrinsic larynx, the early symptoms—minimal dysphagia or the appearance of cervical metastasis—are less impressive than in cancer of the cords, but nevertheless the patient will usually consult his physician within two weeks of the onset. When the patient complains of such symptoms, the physician should realize that the disorder may be serious. An examination of the throat should be made by one experienced in this procedure and in the diagnosis of ailments of the throat. The appearance of an enlarged cervical node, usually termed by the patient "lump or knot in the neck," should always raise the question of metastatic cancer and calls for a thorough search of the mouth and all parts of the pharynx and larynx for the primary source of the tumor.

Differential Diagnosis.—There are numerous lesions occurring in the larynx which may simulate cancer clinically. These are: benign mucous polyps, pachyderma, papilloma, tuberculosis and syphilis. Elaborate descriptions have been published in the past to aid in the clinical differentiation between such diseases and laryngeal cancer. Even to the thoroughly experienced, a differential diagnosis based on clinical characteristics alone is often inaccurate. Only by microscopic examination of a biopsy specimen can a diagnosis be definitely made.

A biopsy specimen can be removed from most parts of the extrinsic portion of the larynx by a curved biopsy forceps guided by a laryngeal mirror. Biopsy of lesions in the intrinsic part of the larynx and the postcricoid region usually requires direct laryngoscopy.

TREATMENT

During the past fifteen years there has been a great deal of partisan and often prejudiced discussion as regards the most effective method of treatment for cancer of the larynx. Such controversy is to be expected, for the power of speech is considered to be one of the most precious of human attributes and one which distinguishes man from the lower animal. When cancer affects the larynx and a method of treatment is proposed to the patient which would deprive him of this function, the natural reaction of both the patient and his physician is one of reluctance and resistance, and any alternative method which promises to cure cancer of the larynx with preservation of this organ and of the function of speech deserves serious consideration.

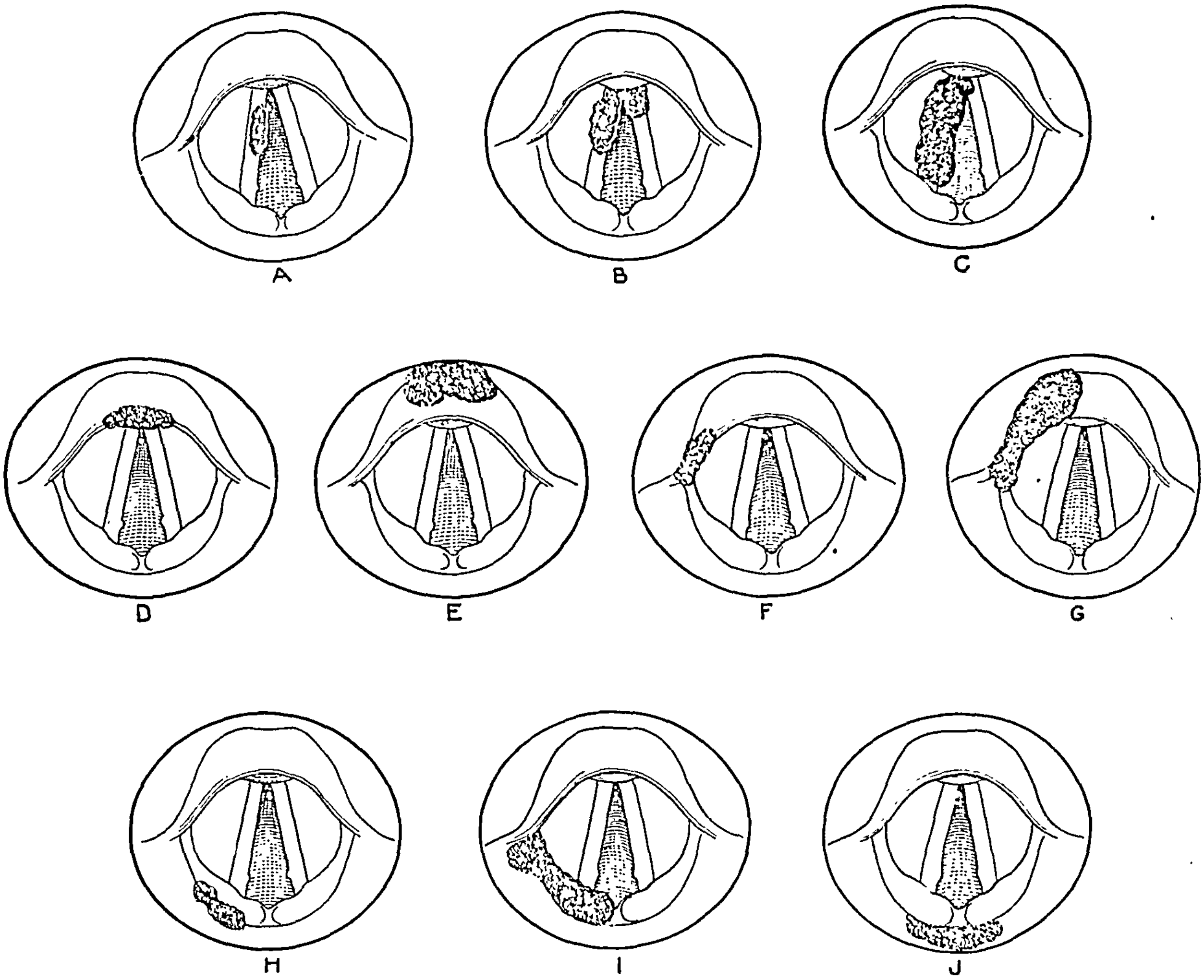

Fig. 10.—Cancer of the larynx as seen through the layrngeal mirror. The lesions as shown are reasonably early. In the more advanced stages, the appearance is variable and often somewhat confusing as to the exact point of origin. Top row: Cancer of the Intrinsic Larynx. (*a*) Lesion limited to about one third of one vocal cord. (*b*) Spread of the growth into the anterior commissure to involve the opposite cord. (*c*) Further progress of cordal cancer. Middle and bottom rows: Cancer of the Extrinsic Larynx, showing the most common variations in point of origin. (*d*) Base of epiglottis. (*c*) Tip of epiglottis. (*f*) Lateral aspect of epiglottis. (*g*) Epiglottis and aryepiglottic fold. (*h*) Lateral aspect of arytenoid. (*i*) Aryepiglottic fold and arytenoid. (*j*) Postcricoid region.

Fractionated radiation therapy for cancer of the larynx brought about some promising initial results, and formerly it was hoped and firmly believed by many that with further experience and refinements in technic the method would completely supplant surgery in the treatment of this disease. Such early hopes have not been sustained by the experience of the past twenty years. Radiation therapy will cure a small percentage of cases of laryngeal cancer, both extrinsic and intrinsic. This method of treatment, however, is uncertain and fraught with serious complications that may arise at any time, even years following completion of therapy, because of the degenerative effects of radiation on normal tissues in this area, even though the cancer itself is cured.

At the present time, it can be stated without question that surgical treatment (partial or total laryngectomy) will cure a higher percentage of cases of both extrinsic and intrinsic laryngeal cancer than will radiation therapy provided that the growth is in an operable stage. Surgery is, therefore, the method of choice from the standpoint of chance of cure and of saving life. Unfortunately, in cancer of the extrinsic part of the larynx (epiglottis, aryepiglottic folds, arytenoids, postcricoid region and ventricular bands) only about 1 in 3 cases has so far been considered operable, so that for the remaining two thirds of the cases radiation therapy has been the only alternative. The latter method will result in a small but definite number of cures in these otherwise inoperable and incurable patients.

Briefly stated, the indications for treatment in cancer of the larynx from the standpoint of obtaining the highest percentage of cures in all comers is as follows: early cancer of the intrinsic larynx—partial laryngectomy through laryngofissure; moderately advanced cancer of the intrinsic larynx—total laryngectomy; advanced cancer of the intrinsic larynx—total laryngectomy; early and moderately advanced cancer of the extrinsic larynx—total laryngectomy; advanced and inoperable cancer of the extrinsic larynx—radiation therapy.

After consideration of the aforementioned groups there still remains a small number of cases which do not fit into any of these classifications of treatment, such as locally recurrent cancer after total laryngectomy and cervical metastasis in both operable and inoperable cases. Many of these patients are still suitable subjects for further surgical treatment, but in the majority of such cases roentgen and radium therapy combined with surgical treatment is the best solution of the problem.

Cervical metastasis is not a frequent problem in cancer of the intrinsic larynx, for such spread usually occurs at an interval of several months or even years following surgical removal of the primary growth. In these cases, neck dissection is the method of choice of treatment (unilateral or bilateral). When metastasis occurs in cases of inoperable cancer of the extrinsic larynx, a program of radiation therapy may be employed and the treatment should be directed toward the metastatic nodes as well as the primary lesion. In other situations, operable metastases are present on admission in cases of operable primary lesions in the extrinsic or intrinsic part of the larynx. In these, it is often possible to remove the larynx and make a neck dissection in either one or two stages.

PROGNOSIS AND END RESULTS

The five year cure rate in cancer of the larynx as obtained in one clinic is given in table 2. This group includes all patients applying to a single institution—early, far advanced, primary or recurrent cancer following surgical treatment or radiation therapy elsewhere.

The prognosis in laryngeal cancer is influenced by a number of factors, the most significant of which are the size of the growth and the presence or absence of metastasis to cervical lymph nodes. The importance of these factors can be plainly demonstrated by the fact that when the tumor on the vocal cord measures 1 cm. or less in diameter a five year cure of 95 per cent may be obtained by partial laryngectomy through laryngofissure. The rate of cure in larger lesions of the intrinsic part of the larynx and in any lesion of the extrinsic part of the larynx is definitely lower.

IV. CANCER OF THE NECK

In a discussion of malignant tumors of the neck it is essential first to emphasize that the most frequent variety of cancer in this area is metastasis to the cervical lymph nodes from primary sites outside the neck and that only a small proportion of cancer in this region arises primarily in the structures of the neck. This difference is not always appreciated, so that erroneous diagnoses are made in ascribing a local origin to a cervical tumor and disregarding the probability that a primary lesion of cancer may be present in the mouth, pharynx, skin of the face or scalp or even in some viscus below the clavicle.

Although most malignant neoplastic disease in the neck is metastatic, there are several varieties of tumors which arise primarily in the cervical structures, namely, malignant lymphoma, thyroid cancer, tumors of parotid or submaxillary salivary glands and sarcoma of the soft parts (muscle, fascia, nerve). Among the less frequent primary growths arising in the neck are branchioma, tumor of the carotid body and cervical chordoma. These morphologic varieties will be discussed under separate headings.

METASTATIC CERVICAL CANCER

Asymmetric enlargement of the cervical lymph nodes in the adult is almost always malignant and usually due to metastasis from a primary lesion in the mouth or pharynx, and occasionally from a viscus below the level of the clavicle. Cervical metastatic cancer occurs more frequently than any other form of malignant neoplastic disease in this locality, so that no other diagnosis should be made except by exclusion of such a probability. When asymmetric enlargement of cervical lymph nodes is encountered in children, it may be due to metastasis, although this possibility is less likely than in adults.

The details of the lymphatics of the neck have been thoroughly investigated by anatomists. In certain sites nodes occur so consistently that they have been given definitive anatomic designations, such as the internal jugular chain, the subdigastric node, the spinal accessory chain, the prevascular and retrovascular submaxillary nodes and the preglandular node (fig. 11). Enlargements of cervical nodes in these specific areas, especially if asymmetric, always suggest the probability of metastatic cancer. It must be realized, however, that the diagnosis and treatment of such metastasis alone is entirely inadequate unless the primary lesion is also discovered and treated at the same time.

Diagnosis of Cervical Metastatic Cancer.—For practical purposes a lymph node cannot be considered abnormal unless it is enlarged, but a distinction must be made between enlargement and palpability. Lymph nodes are palpable in the majority of normal subjects. Asymmetry is the only truly significant clinical characteristic of enlargement of a lymph node.

One of the greatest errors in the diagnosis of cervical tumors or enlargement of lymph nodes is the immediate excision of a tissue specimen for biopsy, for even though the presence of malignant neoplastic disease in the neck is thereby proved, the diagnosis is incomplete, nevertheless, until the primary lesion is found. The local excision of a node in the neck as the primary procedure for cancerous lesions greatly decreases the prognosis for cure. If the physician eventually will have to refer a patient with a biopsy diagnosis of metastatic cervical cancer elsewhere for treatment, then logically he should make this disposition before rather than after the biopsy. If, on the other hand, he is willing to assume the entire responsibility for the management of the case, then he is obliged to make a thorough search for a primary lesion in the mouth or pharynx first, using incisional biopsy of the lymph node only as the last resort.

Aspiration Biopsy.—A useful diagnostic measure in tumors of the neck is aspiration biopsy. With this procedure the clinical picture is in no way altered and a positive microscopic diagnosis may be obtained in most cases. A histologic diagnosis established by aspiration biopsy will indicate tentatively whether the growth is primary or metastatic, will often yield clues as to the possible location of the primary lesion and occasionally disclose the presence of benign cysts and chronic inflammatory disease (tuberculosis, Boeck's sarcoid, etc.)

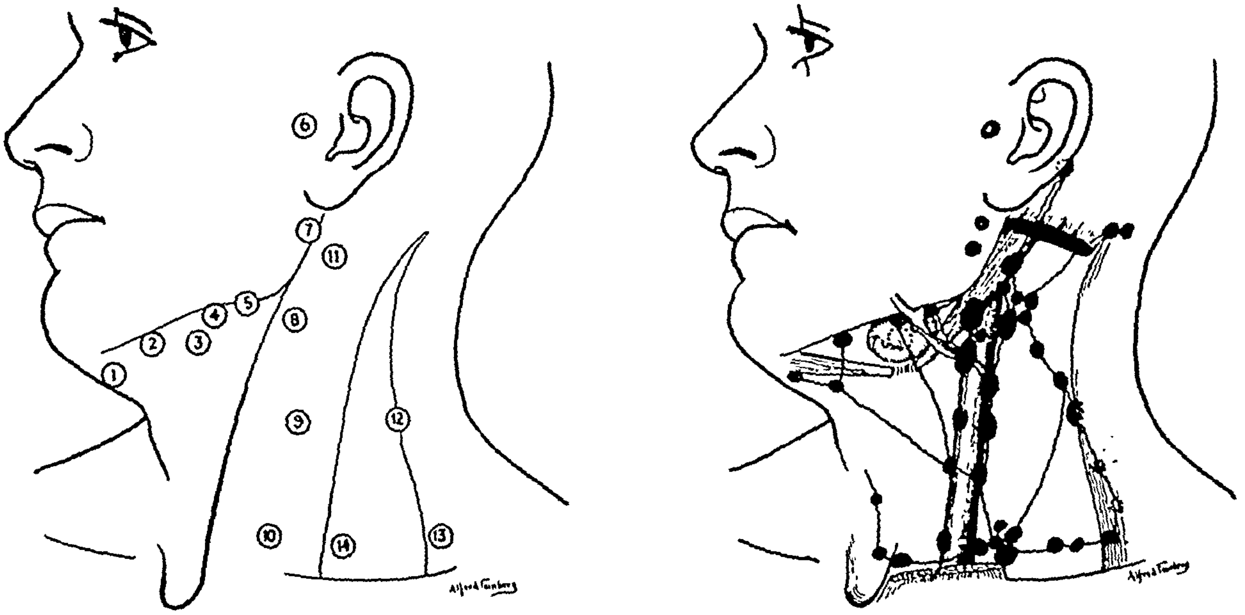

Fig. 11.—Deep lymphatics of the neck. Although the anatomy of the cervical lymphatics is somewhat variable there are, nevertheless, certain constant features; that is, lymph nodes are always present in certain areas and therefore these nodes or node groups can be assigned specific names. Index of main nodes and groups of nodes: (1) submental group: (2) preglandular, (3) intraglandular, (4) prevascular and (5) retrovascular; submaxillary group: (6) preauricular and (7) infra-auricular; parotid group; (8) subdigastric, (9) midcervical and (10) lower cervical; internal jugular chain; (11) upper, (12) middle and (13) lower spinal accessory chain; (14) transverse cervical chain.

Treatment of Cervical Metastatic Cancer.—The treatment is inescapably a part of the problem of management of the primary lesion and for that reason will not be discussed here.

MALIGNANT LYMPHOMA (LYMPHOSARCOMA AND HODGKIN'S DISEASE)

Malignant lymphoma of the cervical nodes may be divided into two general varieties—lymphosarcoma and Hodgkin's disease. The former occurs with considerably greater frequency in the head and neck than does Hodgkin's disease.

Lymphosarcoma is encountered in all age groups but is most commonly seen in the fifth and sixth decades of life. Males are affected as often as females. The most usual site for a primary lesion of lymphosarcoma in the upper respiratory and alimentary tracts is in the tonsil (50 per cent of cases).

Both lymphosarcoma and Hodgkin's disease may originate in the cervical lymphatics, or involvement of these nodes may be part of a generalized process. Lymphosarcoma may arise in any of the lymphoid structures of Waldeyer's ring (nasopharynx, base of tongue, tonsil) and is occasionally metastatic to the cervical nodes, taking the same route as epidermoid carcinoma. It is impossible to distinguish malignant lymphoma of the neck from metastatic cervical carcinoma by clinical examination alone, although lymphomatous tumors in general tend to be more rapid in growth, softer and bulkier than tumor metastasis of epithelial origin. The number of nodes involved by lymphosarcoma tend to be less than in Hodgkin's disease, and in the latter there is usually more induration. None of these clinical characteristics is constant enough to be of significant diagnostic value.

Diagnosis of Malignant Lymphoma.—The diagnosis of malignant lymphoma of the neck can be made only by the exclusion of other forms of cervical cancer and is based on a histologic study of tissue removed from the tumor. In some cases it may be possible to make a diagnosis on aspiration biopsy alone, but usually the pathologist, although suspecting malignant lymphoma, will request an incisional biopsy for this particular group of neoplastic diseases.

Treatment of Malignant Lymphoma.—Lymphosarcoma is one of the more radiosensitive of malignant tumors, and in most cases the initial response to radiation therapy will be good. Further, the uncertainty of the course of the disease makes surgical treatment undesirable, so that with the diagnosis of lymphosarcoma radiation therapy is the accepted treatment.

In the past it has been recommended by some that the dosage should be small or at least not more than moderate, both because the disease is radiosensitive and because of the widespread belief that lympsosarcoma is a constitutional disease from the beginning (heterotopic origin). Long range clinical observations and investigation in the treatment of lymphosarcoma of the head and neck do not support this concept. The cure rate of lymphosarcoma of the head and neck, whether primary in the cervical lymph nodes or metastatic from the tonsil or pharynx, gives even a better prognosis when treated with radiation therapy than epidermoid carcinoma (52 per cent five year cure rate), but the dosage must be maximal rather than minimal (the same as for epidermoid cancer).

When Hodgkin's disease involves the cervical nodes, there is usually clinical or roentgenographic evidence of disease elsewhere in the body, particularly in the thorax or abdomen. Since the lesions of this variety of malignant lymphoma are radiosensitive and frequently widespread on admission, these patients are best treated with radiation therapy, after the diagnosis has been confirmed histologically by aspiration or incisional biopsy. In an occasional case in which the disease in the neck is not too extensive or bulky (preferably unilateral) and careful physical and roentgenographic examination reveals no evidence of involvement elsewhere, treatment by neck dissection may be employed.

CANCER OF THE THYROID GLAND

Malignant tumors of the thyroid gland, though relatively uncommon, are among the most interesting in the field of oncology because of the wide variation and unpredictability of their behavior and their clinical resemblance to several more common benign forms of thyroid tumors and enlargements.

Cancer of the thyroid comprises about 0.4 per cent of all human cancer. Females are affected more often (65 per cent) than males. The median age is 52 years. Although the growth occurs most often in the 40 to 60 year age groups, thyroid cancer is more frequently encountered in children than most other varieties of malignant tumors in the head and neck.

Causative Factors in Thyroid Cancer.—Nothing is known as to the direct cause of thyroid cancer. Carcinoma is occasionally seen to originate in nodular (adenomatous) goiter and in fetal adenoma. Although a specific causal relationship between these lesions and thyroid cancer has not been conclusively demonstrated histologically, nevertheless, the occurrence of cancer in about 5 per cent of such thyroid lesions indicates that they play a significant role in its etiology.

Pathology of Thyroid Cancer.—In most cases the growth consists of low grade papillary adenocarcinoma, usually metastasizing to the cervical lymph nodes relatively late in the course of the disease. Other morphologic varieties of cancer which occur though rarely in the thyroid gland are spindle and giant cell, Hürthle cell and anaplastic carcinoma.

Symptoms and Clinical Course of Thyroid Cancer.—The symptoms of cancer of the thyroid gland are seldom pronounced in the beginning. The patient usually finds a "lump in the neck" and seeks medical advice after varying intervals with no other complaints. In a smaller proportion of cases the patient discovers "lumps in one or both sides of the neck," which are usually metastases from the primary growth in the thyroid, and seeks medical advice for this reason. In the latter instance, the alert physician may note a mass in the thyroid gland of which the patient was not aware, or physical examination may fail to disclose any thyroid tumor. Nevertheless, such a primary lesion will invariably be established at operation.[1]

The history of the cervical tumor, whether in the lymph nodes or in the thyroid itself, is fairly long (several months to three to five years). The clinical course of this disease is so slow that sometimes metastatic masses in the neck will have reached the size of 8 to 10 cm. in diameter before a physician is consulted, by which time such metastases may overlie one lobe of the thyroid, completely obscuring the presence of a primary thyroid neoplasm.

In other cases, the tumor apparently remains confined to the thyroid itself, and over a period of years undergoes steady growth to reach a size of 10 cm. or more in diameter; the mass, which is confined by the overlying strap muscles, produces gradual pressure, displacing the esophagus and trachea so that the first symptoms are progressive dyspnea and dysphagia. At this stage of the disease, the growth may or may not have actually invaded the trachea, esophagus or recurrent laryngeal nerve, or cervical lymph node or systemic metastases may have occurred. Occasionally, the tumor, confined beneath the strap muscles, will encounter less resistance to downward extension into the superior mediastinum. A malignant neoplasm of the thyroid which arises on the posterior aspect of one lobe may press on or invade the recurrent laryngeal nerve fairly early in the course of the disease, with hoarseness as the first serious symptom.

If thyroid cancer is uncontrolled, the most frequent cause of death is from the local effects of the disease, namely pressure on and invasion of the trachea and esophagus. As the disease in the neck or mediastinum advances, death will occur from respiratory obstruction, which is not readily relieved by tracheostomy since the trachea is markedly distorted or often directly invaded by the growth below the level of the manubrium. If the local tumor has been completely or partly removed and the serious effects of tracheal obstruction prevented or relieved, metastasis to bone, lungs or other viscera may take place at any time up to twenty years. In any case, the progress of the disease tends to be slow.

Diagnosis of Thyroid Cancer.—A tumor in the lower anterior portion of the neck which moves upward with the larynx and trachea on swallowing is almost always of thyroid origin. There are no distinguishing clinical characteristics, however, between early cancer of the thyroid and benign adenoma containing cancer.

A diagnosis of a malignant tumor in this gland is often made on routine histologic examination of the surgical specimen following the frequently performed procedure of partial thyroidectomy for nodular goiter (benign adenoma). When a mass in the thyroid resembling adenoma is found to be unusually hard and irregular in contour, rather than smooth or nodular, a tentative diagnosis of cancer should be made and steps taken to establish a histologic diagnosis by aspiration biopsy before deciding on the method of treatment, or at least a frozen section should be obtained at the time of operation.

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[1] It has not been definitely settled whether aberrant thyroid tissue in the neck can give rise to aberrant thyroid cancer or whether such masses outside the thyroid are actually metastatic from small primary growths in the thyroid. There is evidence to indicate that such an entity as aberrant thyroid cancer does exist, but the diagnosis is too frequently and loosely made. In most cases first considered as cancer of aberrant thyroid origin, a growth of similar histologic character can be found in the corresponding lobe of the thyroid if a careful search is made at operation, and in some of these the primary lesion in the thyroid can only be demonstrated microscopically.

The possibility of a malignant growth in the thyroid should be kept in mind in all cases of enlargement of cervical lymph nodes. In the search for a primary lesion; both before and after a histologic diagnosis of metastatic cancer in the cervical nodes has been established, a thorough search of the oral cavity and pharynx should be followed by palpation of the thyroid. Even the smallest nodular enlargement in any portion of the gland should be considered significant. An aspiration biopsy of a mass in the neck may suggest to the pathologist the most likely site of the primary lesion (thyroid, lung, pharynx, etc.).

In all instances of unilateral paralysis of the larynx (recurrent nerve) particular attention should be paid to the possibility of a thyroid neoplasm, palpating deeply in the region between the trachea and the spine. In some of these cases evidence of a substernal growth may be disclosed on roentgenographic examination of the chest which must be differentiated from other causes of recurrent nerve paralysis such as mediastinal tumors of nonthyroid origin or aneurysm of the aorta.

Treatment of Thyroid Cancer.—One of the basic principles underlying the treatment of thyroid cancer is the recognition that the growth may arise in or clinically resemble benign adenoma. That is the reason why all thyroid tumors should be excised, preferably by complete removal of the affected lobe or lobes. Furhermore, all excised thyroid adenomas should be subjected to histologic examination for the presence of unsuspected malignant neoplastic disease. If a small cancer is discovered in an excised adenoma after routine histologic examination of the surgical specimen and there is no clinical evidence of cervical metastasis, nothing further should be done except systematic follow-up examination of the patient.

When a definite diagnosis of thyroid cancer can be established preoperatively (aspiration biopsy), the treatment of choice is a wide resection of that portion of the gland containing the tumor (hemithyroidectomy) combined with a homolateral block dissection of the neck (removal of the internal jugular vein, sternomastoid and strap muscles, submaxillary salivary gland and accompanying lymph nodes). The removal of the internal jugular vein is a significant part of the surgical treatment of thyroid cancer, since metastasis so commonly invades veins.

As already mentioned, the average malignant tumor of the thyroid is not radiosensitive and if the growth is operable, radiation therapy should never be used as the primary method of treatment. In most cases neither preoperative nor postoperative radiation therapy is indicated. Cancer-lethal doses of radiation given to the thyroid will frequently produce edema of the larynx and increase the hazard of obstruction to the airway without appreciably affecting the local disease.

Due to the relatively benign course of early cancer of the thyroid many patients will be seen for the first time in the later stages of the disease. In these cases, there may be widespread visceral or skeletal metastasis. Nevertheless, the primary tumor in the thyroid should be excised as widely as possible for palliative reasons. If this can be done and the complications due to pressure on the trachea and esophagus relieved, the patient may live for a period of several years before succumbing to the effects of generalized metastasis.

In clearly inoperable cases a judicious amount of radiation therapy may be used if there is histologic or other evidence (absorption of radioactive iodine) of radiosensitivity. In all forms of painful osseous metastasis, radiation therapy may offer some measure of relief. Within recent years, it has been hoped that radioactive iodine might prove of value in the treatment and possibly the cure of thyroid cancer. Unfortunately, only about 15 per cent of malignant thyroid tumors will pick up this isotope, and only in this group can any favorable effect be expected. In an occasional case, the administration of radioactive iodine has brought about considerable amelioration of symptoms and regression of local recurrences, and it is hoped that in these some cures may eventually be obtained.

Prognosis and End Results of Thyroid Cancer.—As previously mentioned, the immediate prognosis in thyroid cancer is almost always good. In all comers, the cure rate is about 25 per cent, but if the disease can be discovered and adequately treated in the early stages it carries one of the best prognoses of any form of cancer.

SARCOMA OF THE SOFT PARTS OF THE NECK

Malignant tumors of the soft parts of the neck exhibit the same clinical and anatomic characteristics as soft part neoplasms in other parts of the body. Sarcoma may arise in almost any tissue—muscle (myosarcoma), nerve (neurogenic sarcoma), connective tissue (fibrosarcoma), fat (liposarcoma), blood vessels (angiosarcoma), etc. When the histogenesis cannot be established such growths are usually referred to by the over-all term "spindle-cell sarcoma."

Malignant tumors of the soft somatic tissues occur more often on the extremities and are encountered less frequently in the neck. This morphologic variety of cancer when it occurs in the neck is found in larger proportions among the younger age groups and in children.

Little can be said about their clinical characteristics. They may originate in any part of the neck (anterior, lateral, posterior) and grow outward to form bulky masses or inward to compress the trachea or esophagus. They are more infiltrating in nature than malignant tumors of epithelial origin and in most cases are radioresistant. Radical surgical removal offers the best chance of cure, although, as with sarcoma in general, pulmonary metastasis is a frequent occurrence.

BRANCHIOGENIC CANCER

Malignant branchioma (branchiogenic cancer) refers to those malignant tumors which are believed to arise in the vestigial remnants of the embryonal branchial apparatus. Such a diagnosis is too often made in the case of neoplasms appearing in the lateral aspects of the neck and presumably unassociated with a primary growth elsewhere.

Experience in cancer clinics has shown that the overwhelming majority of malignant tumors which arise in the neck are metastastic from a silent primary neoplasm somewhere in the mouth or pharynx, or even from a site below the level of the clavicle. Less often, such primary cervical neoplasms originate from one of the major salivary glands or other tissues in the neck (muscle, connective tissue, nerve, etc.). The diagnosis of malignant branchioma can rarely be justifiably made, since the primary lesion of cancer in the mouth or pharynx may remain silent or of such small size as to be undemonstrable for a period of several years. This diagnosis is not reasonable, therefore, except after an observation period of five years following treatment of the cervical tumor. Up to that time the diagnosis of malignant branchioma must remain tentative only.

Morbid Anatomy and Clinical Characteristics of Malignant Branchioma.—The vestigial remnants of the branchial apparatus are situated on a line extending just anterior to the tragus of the ear, downward along the medial border of the sternomastoid muscle to the clavicle. Anatomically, therefore, branchial cancer cannot occur in any other region of the neck. Histologically, the tumor should logically be epithelial cancer (epidermoid carcinoma, adenocarcinoma), but since the embryonal branchial apparatus also contains other tissue components (muscle, connective tissue, nerve, etc.), it is theoretically possible for branchial cancer to occur in the form of myosarcoma, fibrosarcoma, etc. In the cases finally diagnosed as malignant branchioma no clinical features have been found which differ from those of metastatic cancer or of primary soft part tumors occurring along this line.

In general, it might be said that the diagnosis of malignant branchioma is too often and too loosely made. There may even be some doubt as to whether there is justification for such a morphologic entity, since no definite evidence has ever been produced to show that such a specific tumor actually exists. Adequate proof could only be the demonstration of cancer arising in the walls of a branchial cyst. This, so far as can be learned, has never been demonstrated.

CANCER OF THE CAROTID BODY

There are several tiny seedlike structures belonging to the chromaffin system which are situated in the region of the bifurcation of the carotid artery and designated as the carotid bodies. Tumors arising in these structures are among the rarest in the realm of neoplastic disease. In one cancer clinic where about 2,000 patients with neoplasms in the head and neck are seen yearly only 15 cases were encountered during the past ten years.

These tumors usually arise after puberty, pursue a chronic, relatively benign course and do not produce remote metastasis. Although a tumor of the carotid body usually grows slowly, remaining about 3 cm. in diameter over a period of ten to fifteen years, it may on occasion grow more rapidly and reach a size of 8 to 10 cm. or even larger. This neoplasm produces little discomfort except in rare instances in which pain is a prominent factor.

A tumor of the carotid body is located either on or behind the bifurcation of the common carotid artery, which is often compressed or invaded by the growth. It may grow upward toward the skull, inward toward the tonsillar region and pharynx or outward, producing a bulge in the neck.

A diagnosis of this specific neoplasm can be made only on histologic examination of a biopsy specimen. It may be suspected, however, when a growth occurs just below the angle of the mandible and over which there can be felt a prominent arterial pulsation, indicating that the tumor lies at least partly beneath the great vessels at this point. Aspiration biopsy will in most instances establish a definite diagnosis.

In most cases of carotid body tumor the underlying principle of treatment should be that of *noli me tangere*, for so far as is known the clinical course of the growth is almost always benign (nonmetastasizing). In general, surgical removal should be considered hazardous, for it is not possible to determine beforehand whether the neoplasm is so closely attached to the carotid crotch that it can be removed without sacrificing the integrity of the vessel wall. When such an injury occurs, it is usually impossible to repair the artery and the common or internal carotids must be ligated. It is well known that ligation at these points is attended by an operative mortality rate of about 50 per cent. If a diagnosis of tumor of a carotid body, therefore, can be established by aspiration biopsy and if the growth is not causing any symptoms, no treatment whatever should be administered. If the tumor is producing symptoms (pain) and removal is attempted, it is more prudent to leave a portion of it attached to the great vessels than to subject the patient to any undue risk. No regression of this neoplasm can be obtained with radiation therapy.

CHORDOMA

Chordoma is a rare tumor. In the head and neck it may present at the base of the skull, in the nasopharynx, retropharyngeal and parotid areas or in the lateral and posterior aspects of the neck. There is usually a history of fairly long duration when the patient is first seen, and if the growth presents in the neck a diagnosis of parotid tumor may be erroneously made.

Although the clinical course of chordoma is usually slow, the neoplasm may become widely invasive and by pressure erode the bones of the spine or base of the skull. If a preoperative diagnosis of chordoma can be established histologically (aspiration biopsy), treatment should be planned on the basis of relief of current symptoms only. Due to its origin from embryonal notochord tissue, it is impossible to effect a complete removal surgically. Nevertheless, if the projecting portions of the tumor which are causing symptoms (especially pressure on nerves) are removed, healing will take place and the patient can be afforded considerable relief. Chordoma is generally a radioresistant growth.

V. CANCER OF THE MAJOR SALIVARY GLANDS

The major salivary glands consist of the paired parotid, submaxillary and sublingual glands. Tumors occur most frequently in the parotid (about 85 per cent), less often in the submaxillary (about 15 per cent) and rarely in the sublingual gland.

When a series of tumors of the salivary glands are reviewed from the pathologic standpoint their appearance will be found to vary from a relatively acellular structure of cartilage and mucin through the more cellular types, up to a picture of highly malignant carcinoma. The transition from one extreme to the other is a gradual one, so that in the middle range there will be found a considerable number of cases in which the opinions of individual pathologists will vary as to whether given tumors should be classified as malignant or benign. Although the same can be said of many forms of cancer, this morphologic problem is of particular significance in tumors of the major salivary glands.

All benign mixed tumors of the salivary glands have a tendency toward malignant degeneration. It has been repeatedly demonstrated that in mixed tumors of the parotid which have recurred after repeated surgical removal over a period of fifteen to twenty years and in which the original surgical specimen showed only a benign histologic pattern, a high incidence of malignant transformation finally occurred, resulting in the patient's death. Occasionally an initial surgical specimen of what appeared clinically to be a benign mixed tumor is found to show malignant changes.

In the majority of cancers of the salivary glands the malignant character of the growth is clinically apparent when the patient is first seen and it is plain that the tumor was cancer from the beginning, rather than originating in a benign tumor. In the parotid gland about 25 per cent of all tumors are malignant, and in the submaxillary gland the proportions are somewhat reversed (about 25 per cent benign). Neoplasms, either benign or malignant, rarely occur in the sublingual salivary gland.

MORBID ANATOMY AND CLINICAL COURSE

In tumors of th major salivary glands the symptom first noted by the patient is almost invariably a "lump" in the parotid or submaxillary region. In the average case, the patient has been aware of this abnormality for many months or even years before medical advice is sought. The clinical course is characteristically slow. When first seen by the examining physician, the growth may have advanced in size from a few millimeters to 8 or 10 cm. and is usually movable. The smaller tumors are smooth in contour, but in those over 5 cm. in diameter nodularity is a common feature. The growth is invariably unilateral and single; multiple tumors occur only as recurrences after incomplete surgical excision (seeding).

Most tumors of the salivary glands, even when malignant, tend to be noninvasive, so that as enlargement occurs they displace rather than infiltrate the adjacent structures. As a result, the branches of the facial nerve will usually be pushed aside as the growth advances in the parotid gland, and facial paralysis is rarely present in the early or uncomplicated cases. When the seventh cranial nerve is compressed or actually infiltrated by a malignant tumor of the parotid with resulting facial paralysis, the growth in most cases is relatively far advanced or recurrent. As the tumor grows it tends to migrate toward the outer surface of the parotid gland (the direction of least resistance). When the growth arises in the deep (retromandibular) portion of the gland, lateral extension is at least partially blocked by the ascending ramus of the mandible, and therefore it tends to advance mesially toward the pharynx and may even present as a bulge in the tonsillar area.

In general, cancer of the parotid tends to remain fairly well localized, eventually producing death mainly by local extension of the disease to the structures of the middle ear and mastoid, pharynx, neck and base of the skull with sepsis, malnutrition, pain and hemorrhage. Except in cases in which the primary growth in the parotid is controlled, metastases do not often play a large part in the cause of death. If the patient survives the local effects of the disease long enough after the disease is controlled, local metastasis occasionally occurs first to the cervical lymph nodes and then systemically.

Tumors of the submaxillary salivary gland resemble parotid growths in their symptoms and clinical course with few exceptions; that is, the patient complains of a slowly enlarging lump of several weeks' or months' duration in the submaxillary area. To palpation these tumors tend to be firm, discrete and often nodular. It has already been mentioned that there is a higher percentage of malignant tumors in the submaxillary gland as compared with the parotid. Although there are no symptoms referable to the seventh cranial nerve in cases of submaxillary tumors, this gland is closely associated with the lingual branch of the trigeminal nerve (sensory), so that pain is often a prominent early symptom, especially in the invasive malignant growths.

DIAGNOSIS

There are several neoplastic and chronic inflammatory lesions in or about the parotid and submaxillary glands which clinically may simulate a benign or primary malignant tumor in these structures and which must be considered in the differential diagnosis. These are chronic parotitis, inflammatory hypertrophy of the preauricular lymph nodes, lymphoma, Boeck's sarcoid, cervical neurofibroma or schwannoma, branchiogenic cyst, Warthin's tumor (papillary cystadenoma lymphomatosum) and metastatic cervical cancer (from the scalp or eye, especially melanoma). A calculus in the submaxillary salivary gland or Wharton's duct is frequently associated with chronic sialitis and clinically may resemble a growth in this structure in every way. A diagnosis of calculosis may be established by roentgenographic studies.

Although there are numerous features in the history and physical examination which help in the differential diagnosis of tumors of the major salivary glands a definite diagnosis can only be made by biopsy. Aspiration biopsy is of distinct value in establishing a histologic diagnosis of a neoplasm in the parotid or submaxillary gland, for if an incisional biopsy with subsequent postoperative scarring can possibly be avoided, exposure and excision of a tumor in the parotid or submaxillary regions can be technically more easily accomplished.

The occurrence of tumors in the sublingual salivary gland is rare, and the diagnosis invariably difficult. It must be distinguished from cancer of the floor of the mouth. Growths in the latter region, whether benign or malignant, will be found to extend into the floor of the mouth anteriorly. It may sometimes be difficult to differentiate clinically between sublingual and submaxillary tumors. If the mass is situated in the floor of the mouth but apparently not arising from mucous membrane, a tentative diagnosis of tumor of the sublingual salivary gland may be made.

TREATMENT

In general, tumors of the salivary glands are not radiosensitive and the only effective method of treatment is surgical. As already mentioned, the clinical course of these neoplasms is always progressive with a tendency toward malignant degeneration. In the parotid, paralysis of the facial nerve will eventually occur in most cases whether or not the tumor is malignant. For these reasons all tumors of the salivary glands should be excised and the earlier the neoplasm is removed the better the prognosis. The argument that parotid tumors should be allowed to "ripen" before they are excised is fallacious. If such a policy of procrastination is followed, nothing is accomplished except to permit the growth to progress and possibly undergo malignant changes

In considering the operative approach for parotid tumors, the surgeon should realize that these growths are often deceptive in that on clinical examination they appear to be more superficial and accessible than actually proves to be the case on operation. For this reason, many patients with parotid tumors are operated on in doctors' offices or in hospitals with incomplete preparation and limited surgical exposure, only to find a deep-seated growth of unanticipated proportions and extent which cannot be completely removed with such inadequate facilities.

The surgical exposure for excision of a parotid tumor should be liberal—usually in the form of a Y incision, two arms of which run up in front of and in back of the lobule of the ear and a third arm of which is extended downward and forward into the upper part of the neck. The surgeon should decide in the beginning whether in the given case adequate hemostasis requires preliminary ligation of the external carotid artery, which can be accomplished through the lower arm of the incision. One of the most important precautions in the removal of a parotid tumor is avoidance of injury to the seventh cranial nerve. The best way to prevent such an accident is first actually to expose the main trunk of the nerve where it emerges from the stylomastoid foramen and then to proceed to dissect out the growth. Exposure of the major branches of the facial nerve is essential for an adequately wide removal of a deeply seated tumor. Obviously, if the nerve or one of its major branches has been invaded by cancer, it must necessarily be sacrificed for the more important purpose of saving life. In general, it can be stated that a surgeon should not attempt the removal of a parotid tumor unless he has previously dissected out this gland in a cadaver with preservation of the facial nerve and its plexus. The undergraduate instruction on the anatomy of the facial nerve given in medical schools is inadequate preparation for one who is to cope with this operation.

The question of neck dissection at the time of removal of the parotid tumor must be determined on the basis of the morbid anatomy and histologic character of the growth.

The tumor of the submaxillary salivary gland offers no difficulty from the surgical standpoint. Its removal requires only complete dissection of the submaxillary triangle; this area contains no important structures except the hypoglossal nerve and the lingual branch of the fifth cranial nerve, which are readily accessible and easily preserved. If invaded by the growth, either one of these structures can be sacrificed. In the excision of a submaxillary tumor it is important to determine beforehand whether the lesion is benign or malignant. If the neoplasm is malignant (adenocarcinoma, adenoid cystic carcinoma, etc.), a block dissection of the neck should be done at the same time.

PROGNOSIS AND END RESULTS

So far as benign mixed tumors are concerned, the growth itself rarely results fatally. With proper treatment (complete surgical excision) a cure rate of 100 per cent should be obtained in previously untreated benign tumors, and almost 100 per cent even in previously treated patients, that is, in those with incomplete excision or pronounced scarring and fibrosis due to radiation therapy.

Nevertheless, these benign growths do constitute an eventual hazard to life, since they may undergo malignant transformation. While many tumors of the major salivary glands are malignant from their inception, others develop from preexisting benign mixed tumors. Just exactly at what point during this gradual transition a given growth should be classified as benign or malignant is difficult to specify. Since the morphologic composition of a series of tumors of the major salivary glands is so variable, the five year cure rate cannot be stated with certainty. It may be said, however, that in those tumors regarded as histologically malignant by the pathologist a 40 to 50 per cent five year cure rate may be expected with proper treatment.

In large tumor clinics it is found that about 50 per cent of patients with parotid tumors (both benign and malignant) give a history of inadequate surgical removal before admission. Even in these, the rate of cure with proper treatment should be relatively high. The dangers of such incomplete removal are (1) that later extension of the growth or subsequent surgical treatment may cause permanent injury to the facial nerve and (2) that over a period of years with repeated recurrences a benign tumor may become malignant.

VI. CANCER OF THE PARANASAL SINUSES

The paranasal (nasal accessory) sinuses consist of the paired maxillary antrums, ethmoids, sphenoids and frontal sinuses. This system of air-filled structures intercommunicate with one another and with the middle meatus of the nasal cavity.

When cancer occurs in the mucosa of these spaces or their extensions, the growth progresses toward and tends to extend into the nasal cavity. In a large proportion of cases more than one of the sinuses are involved. Tumors originating in the ethmoid cells tend to grow forward toward the nasal cavity and antrum, laterally into the orbit or backward into the sphenoids. When cancer of the maxillary sinus arises on the mesial and upper walls, there is frequently invasion of the ethmoids, so that it is often difficult to determine the exact anatomic site of the origin of the tumor. Growths of the frontal sinus occur so rarely that for practical purposes they may be disregarded in this discussion. Similarly, the frontal sinuses do not often become involved secondarily by extension from tumors of other paranasal sinuses.

Malignant tumors of the paranasal sinuses occur with relative infrequency, comprising about 0.2 per cent of all human cancer and about 3 per cent of cancer in the upper respiratory and alimentary tracts. Growths in this locality are encountered more often in males (65 per cent) than in females, and in the age group of 60 to 70 years; the median age is 54 years.

There are no known causative factors for this disease. Although one might expect such lesions as chronic sinusitis, hypertrophic changes in the mucosa and polyps to precede the formation of cancer in this region and possibly contribute to its etiology, no acceptable evidence has been advanced to support such a causal relationship.

PATHOLOGY

As with most forms of cancer in the upper respiratory and alimentary tracts, the predominant morphologic variety found in the paranasal sinuses is epidermoid or squamous carcinoma. This is to be expected, since the nasal accessory sinuses are lined with a pseudostratified columnar type of epithelium. Occasionally, adenoid cystic carcinoma arises in this area. Anaplastic carcinoma, spindle cell sarcoma, lymphosarcoma and malignant mucoepidermoid tumors are but rarely encountered in this region. There are numerous distinct morphologic varieties of benign and malignant neoplasms that occasionally involve the nasal accessory sinuses secondarily by extension, such as osteogenic sarcoma, ossifying fibroma, juvenile nasopharyngeal fibroma, adamantinoma and epidermoid carcinoma or adenocarcinoma originating in the nasal cavity, gum or hard palate.

SYMPTOMS, MORBID ANATOMY, AND CLINICAL COURSE

There is practically only one initial symptom in cancer of the paranasal sinuses—namely swelling, usually occurring externally in the cheek, floor of the orbit or bridge of the nose. If the growth arises in the floor of the antrum, swelling will often appear in the hard palate, the alveolar ridge or the gingival buccal gutter. Ordinarily, there is little pain or discomfort in the early stages. The second most frequent symptoms are nasal obstruction and a bloody discharge from the nose.

The occurrence of swelling (asymmetry) in the cheeks or palate as the initial symptom in cancer of the paranasal sinuses is always significant, since it indicates that in practically all cases the growth has already invaded bone at some point in order to have reached the subcutaneous tissues. In cancer of the ethmoid such erosion may occur in the nasal wall of the orbit, displacing the eye outward. When the floor of the orbit is the seat of tumor invasion, the eyeball is elevated with unilateral exophthalmos. Erosion of the anterior or nasal walls of the antrum is associated first with swelling of the cheek and nasal obstruction and later with enlargement of the hard palate and obliteration of the gingival buccal gutter.

As the disease progresses and a greater portion of the maxilla becomes invaded by tumor, enlargement of the face becomes considerable, with pronounced displacement of the eye. There is often associated cellulitis and sepsis. Eventually, death occurs mainly from local extension of the disease. Metastasis usually occurs during the late stages of the disease when the local growth has not been controlled, and seldom becomes an important clinical problem in the treatment of cancer of the nasal accessory sinuses. In fatal cases the patient usually succumbs from the local effects of the disease before metastasis becomes manifest.

TREATMENT

The surgical excision of the paranasal sinuses has always been regarded as a difficult and hazardous procedure. Complete removal of the frontal, ethmoid and sphenoid sinuses is practically impossible, since this procedure would involve the sectioning of a portion of the base of the skull. Extirpation of the antrum can be accomplished by total excision of the maxilla, including the floor of the orbit. For these reasons radiation therapy has been widely employed for many years in the treatment of cancer of the nasal accessory sinuses. The results from this method of treatment, however, have been disappointing.

Cancer-lethal doses of radiation in this region will invariably produce serious complications, such as ocular edema, panophthalmitis and edema of the mucous membranes of the nasal cavity with obstruction to drainage and pansinusitis. Like all surface cancers, growths arising in the mucosa of the paranasal sinuses are ulcerated and infected from the beginning, and when drainage is blocked suppuration must occur. For this reason radiation therapy, even though it may sterilize the cancer, is so frequently followed by pansinusitis and sepsis that wide surgical exposure and drainage are required eventually. If the latter procedure is to be adequate, it must be of such scope as to be a little short of a radical resection; in many cases the latter procedure would have been sufficient to effect permanent control if used in the beginning.

From past experience and a review of the literature, one cannot escape the conclusion that the salvage rate in cancer of the paranasal sinuses is disappointing and the complications of cancer lethal radiation in this region almost always call for radical surgery. These considerations certainly suggest a greater resort to radical surgery in the beginning with an attempt to remove the tumor completely, or, failing that, to provide adequate drainage and assure sufficient removal of the growth so that radiation therapy can be more effectively applied. Such a surgical approach to the problem with a greater degree of safety to the patient has been made possible since the advent of chemotherapy, antibiotics, blood banks, improved surgical and anesthesia technics and recent advancements in the problems of nutrition.

If the growth is confined to the antrum, especially at the floor and in its lower portion, wide resection of the maxilla can be carried out with little risk to the patient. If the floor of the orbit is involved by tumor, the operation should include exenteration of the orbit, since removal of its bony floor is commonly followed by herniation of the orbital contents. When the growth extends into the ethmoids or sphenoids, these structures can be thoroughly curetted. In brief, it seems reasonable to attempt the widest possible excision of the growth and to use radiation therapy later, usually through the maxillary defect, in the event that recurrences take place.

PROGNOSIS AND END RESULTS

Since cancer of the paranasal sinuses produces symptoms only after erosion of bone and extension into the nasal cavity or soft parts of the cheek or orbit, the growth is usually well advanced when the patient first seeks medical advice, that is, several centimeters in diameter with extension into the contiguous structures. From the standpoint of early diagnosis, the outlook is poor, since early cancer in these areas is silent in its symptoms, in contrast to growths in such areas as the lip, anterior portion of the tongue and vocal cords. As has already been mentioned, both radiation therapy and surgical treatment have been limited and hazardous in this particular region—radiation therapy because of its complications and surgical treatment because of the impossibility of an extensive resection at the base of the skull.

No figures have been published as to the over-all cure rate (all comers) in cancer of the nasal accessory sinuses. At the Memorial Hospital, the most recently calculated five year cure rate, both surgical treatment and radiation therapy being used, with the main and primary reliance on surgical treatment, is about 13 per cent.

Clinical Notes, Suggestions and New Instruments

RISK OF UREMIA DUE TO SODIUM DEPLETION

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It would be unfortunate if the comments of Allen[1] were widely interpreted as minimizing the risks inherent in sodium depletion. While it is true that observations of a large requirement of sodium and a dramatic rise of the level of blood urea in patients with nephritis who receive a diet restricted in sodium are somewhat unusual,[2] less rapidly developing, but equally dangerous, changes occur not infrequently when sodium depletion is employed routinely for congestive cardiac failure and for hypertension.

The case histories noted herein are only 3 of the many which have impressed me with the importance of observing the levels of blood urea or creatinine in any patient receiving such treatment.

Report of Cases

CASE 1.—R.M., a 38 year old bookkeeper, entered the hospital because of impaired vision of the left eye, which had occurred suddenly six days previously and had persisted until admission. He had relatively good health until this occurrence and then experienced anorexia, mild nausea and belching without hiccoughing, with one episode of vomiting on the night prior to entry. Nocturia, with urination on an average of three times during the night, had been present for an indefinite period.

Physical examination revealed blood pressure of 230 systolic and 160 diastolic, grade 4 hypertensive retinopathy, with a particularly large hemorrhage in the left fundus, the heart enlarged to the sixth intercostal space, with a gallop rhythm and a soft systolic murmur at the apex, and moist rales at the base of both lungs.

Examinations of the urine repeatedly yielded albuminuria (2 to 3 plus), occasional granular casts, red blood cells and white blood cells. The specific gravity was fixed at 1.011 and 1.012, and the hemoglobin varied from 9 to 11 Gm. A teleroentgenogram of the chest visualized an enlarged heart with congestive changes.

Because of the signs of mild congestive cardiac failure, the patient was given a Kempner diet (sodium 200 mg. per day). In addition, four injections of meralluride ("mercuhydrin sodium solution"), 2 cc., were given during the second week of hospitalization.

The blood urea, which was 37 mg. per hundred cubic centimeters (creatinine 1.9) on admission, rose steadily during the ensuing two weeks to a level above 200 mg. (creatinine 3.8), at which time the patient became clinically uremic and exhibited pericardial friction, which persisted for two and a half weeks. The urea remained at the elevated level for another week, at which time a regular diet was given. This was accompanied with an immediate and striking fall in the level of blood urea; by the end of the week it had fallen to 134 mg. per hundred cubic centimeters (creatinine 2.4) and the patient had improved.

The urea levels were followed up intermittently thereafter; two months later it was 44 mg. (creatinine 2.2) and another month later 87 mg. per hundred cubic centimeters (creatinine 2.1). However, during these months there was a steady downhill course, in which the patient experienced several episodes of cardiac failure (left); severe secondary anemia developed, and he died seven months after his first admission.

CASE 2.—B.S., a 57 year old Russian widow, entered the hospital because of symptoms of mild congestive cardiac failure. She had had diabetes mellitus for twenty-five years, requiring a maximum of 75 units of insulin in 1925; this amount was steadily diminished during later years, until on admission she was maintained free of urinary sugar without insulin. Hypertension, with the pressure above 200, was known to have existed since 1931. Two episodes of pyelitis or pyelonephritis had occurred. A gynecologic operation, presumably a complete hysterectomy, had been performed at the age of 22, a year following which she had reached her maximum weight of 300 pounds (about 136 Kg.).

For approximately one and a half years there had been progressive deterioration of vision, not improved with spectacles, and for the same period mild to moderate dyspnea on exertion, with several episodes of paroxysmal nocturnal dyspnea. It was because of a mild exacerbation of the latter that the patient sought admission. She now weighed 178 pounds (about 81 Kg.), and the blood pressure, which had been 170 systolic and 88 diastolic, fell to 120 to 140 systolic and 80 diastolic within one week and remained at that level. There was grade 3 retinopathy and an enlarged heart, with signs of mild congestive failure. Significant laboratory tests revealed a urinary output of fixed specific gravity, with 1 plus albuminuria and an occasional white blood cell and granular cast, and moderate secondary anemia, with a hemoglobin content of 8 Gm. A roentgenogram of the chest showed an enlarged heart with mild congestive changes. A roentgenogram of the skull revealed generalized hyperostosis, predominantly of the frontal and occipital bones. The basal metabolic rate was plus 1 per cent. Urinary ketosteroids were within normal limits. The glucose tolerance curve was normal.

Because of the signs of congestive failure a diet low in salt content was employed. However, by the ninth day the blood urea (90 mg. per hundred cubic centimeters on admission) had risen to 220 mg. and weakness and diarrhea had developed. On the eleventh day a diet containing 20 Gm. of protein and 9 Gm. of salt was given. The urea fell to 150 mg. after fourteen days of the high salt and low protein regimen and reached 85 mg. per hundred cubic centimeters after thirty-five days.

CASE 3.--Mrs. M.M., a 70 year old Scotswoman, entered the hospital because of an exacerbation of symptoms of congestive cardiac failure. Previous hospitalization had revealed a mitral valvular lesion, with auricular fibrillation associated with a patent intra-auricular septal defect. Hypertension (210 systolic and 140 diastolic and 180 systolic and 110 diastolic) had been noted on two previous admissions; with a regimen of bedrest and sodium depletion the blood pressure fell in the course of several weeks to 110 systolic and 80 diastolic and 138 systolic and 84 diastolic, respectively, paralleling improvement in the congestive failure, although it had been observed repeatedly that she had little cardiac reserve. At no time had a level of blood urea above 24 mg. per hundred cubic centimeters been noted. Examination of the urine had revealed a low specific gravity; with a trace of to 1 plus albumin and an occasional red blood cell seen microscopically. Examination at

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[1] Allen, F.M.: Hypertension, Correspondence, J.A.M.A. 136:202 (Jan. 17) 1948.

[2] Thorn, G.W.; Koepf, G.F., and Clinton, M., Jr.: Renal Failure Simulating Adrenocortical Insufficiency, New England J. Med. 231:76 (July 20) 1944.

the time of this entry revealed a blood pressure of 150 systolic and 90 diastolic, which fell to 130 systolic and 80 diastolic, and the signs of severe congestive failure.

The patient was again given a sodium depletion regimen, including mercurial diuresis, the house staff having taken into account previous responses and a level of urea of 40 mg. per hundred cubic centimeters on admission. Some improvement was noted, but the patient never again reached the ambulatory state. After three weeks of treatment the patient was noted to have become weak, anorexic, nauseated and drowsy. Two determinations of blood urea at this time were above 160 mg. per hundred cubic centimeters. She was given 9 Gm. of salt in the next twenty-four hours and 4 Gm. a day thereafter. Within six days the urea had fallen to 40 mg., and was only 50 mg. per hundred cubic centimeters several weeks later. The dosage of salt was lowered when the signs of congestive failure increased, but, despite efforts to maintain a balance in sodium administration, there was a steadily downhill course, and the patient died of cardiac failure about one month after her uremic episode.

Conclusions

The 3 cases reported herein (case 1, with malignant hypertension; case 2, with Morgagni-Moore-Morell syndrome and renal insufficiency secondary to either intercapillary glomerulosclerosis or chronic pyelonephritis with nephrosclerosis, and case 3, with rheumatic valvular disease, probably with nephrosclerosis) demonstrate the variety of diseases in which uremia may be encountered as a response to sodium depletion. It is again emphasized that these are not at all infrequent occurrences and that, in order to avoid such consequences, it is wise to watch carefully the levels of blood urea (or creatinine) in all patients on a sodium depletion regimen, especially in those in those in the older age groups and in those in whom renal disease is suspected or known to exist.

SEVERE ACUTE RENAL INSUFFICIENCY WITH RECOVERY

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Transurethral prostatectomy, with water as the irrigating fluid, is associated with prominent intravascular hemolysis, following which acute renal insufficiency develops in a proportion of cases.[1] This syndrome of acute renal insufficiency has been given various designations, such as the "renal anoxia syndrome,"[2] "lower nephron nephrosis"[3] and "hemoglobinuric nephrosis."[4] It has become apparent that the syndrome may result from a multiplicity of other causes, among which may be included prolonged hypotension (the shock state),[5] incompatible (hemolytic) blood transfusion reactions,[6] crush injuries,[7] carbon tetrachloride poisoning,[8] uteroplacental damage[9] and certain infections.[10] The clinical picture and renal lesions are similar, regardless of the causative background. An outstanding feature of this syndrome has been the high rate of mortality.

The methods of treatment for this condition have varied. The occasional spontaneous recovery in isolated cases has for some time demonstrated the reversible nature of the process involving the kidneys. Various forms of artificial measures for clearing waste products from the body have been attempted as means of sustaining patients through the critical period, until the kidneys initiate sufficient function once more. These artificial measures include gastric lavage,[11] peritoneal irrigation,[12] a combination of peritoneal irrigation and gastric lavage[13] and an artificial kidney for in vivo dialysis.[14] Renal decapsulation has been advocated by some[15] and rejected by others.[16] In reported cases generalized subcutaneous edema and pulmonary edema have been frequently mentioned complications. More recently, pleas for a con-

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servative consideration of the fluid intake in these cases have been expressed.[17]

The clinical course in patients with the acute renal insufficiency syndrome (lower nephron nephrosis) lends itself well to a division into three phases, namely: (1) the phase of renal damage, during which hypotension is frequently present, (2) the phase of renal insufficiency and (3) the phase of diuresis. The various features of these phases have been discussed elsewhere.[18]

The renal lesions are characterized by damage to renal tubules, which is reflected microscopically by degeneration and focal necrosis. The distal segment of the nephron apparently sustains the greatest damage. Regeneration and recovery of these tubules become evident after about eight to ten days and are well advanced in twelve to fourteen days. It is of correlative interest that patients sustained through these intervals usually recover.

The belief has been expressed that the high rate of mortality of the past seems due to the type of management[19] and that a type of treatment based on the main abnormalities exhibited during each of the three phases can reduce the rate to low levels. This conclusion was originally expressed[1c] following treatment in 11 cases of severe disease with the "three phase" management. At the present time the series includes 20 cases of severe renal insufficiency so managed by one of us (E.E.M.) The 2 fatalities resulted from diffuse damage to the brain demonstrated in autopsies.[1c] The 2 patients had entered the phase of diuresis, thus indicating satisfactory progress of the renal disease.

In the case herein presented the disease was severe, and the satisfactory recovery affords additional support to the expressed contention. There were several unique features involved. The patient was a paraplegic war casualty with a cord bladder. Hemoglobinemia was observed following the transurethral resection of a small amount of bladder neck tissue to improve drainage. Water was used as the irrigating fluid during the operation. Pyelonephritis was known to be a complicating condition. Since the patient had no sensations, no anesthesia was given. No blood or other fluids were administered during the operation. Therefore, except for the pyelonephritis this was a case of acute renal insufficiency following transurethral resection, that is, one without the possible complication of blood transfusion reaction or anesthesia.

REPORT OF A CASE

E.P., aged 33, had had a cord injury, with complete functional transection of the spinal cord in the lower dorsal area, while in the military service. A suprapubic cystostomy had been performed while he was in the army, but the incision had been healed for many months. He was admitted to the Veterans Hospital (Dallas) because of pain, swelling and redness at the site of the old cystostomy incision. Urine drained through a small sinus in the incision, but this sinus healed when a urethral catheter was left in for a few days. The old wound would reopen and drain whenever the catheter was removed. After cystoscopic examination it was decided to resect the bladder neck. Complete anesthesia from the costal margin down existed, and no anesthetic was needed. On May 9, 1947, the patient was allowed a light breakfast and was taken to the operating room after receiving 1.5 grains (0.1 Gm.) of pentobarbital sodium. No fluids of any sort were given intravenously during the operation. There was no difficulty in passing the 28 F McCarthy resectoscope, and 3 to 4 Gm. of tissue was easily removed. A slight amount of oozing of blood was easily controlled with the Foley bag. The patient left the operating room in good condition, with no bleeding. On being returned to the ward and being placed on his bed he stated that he felt a little chilly, but had no other complaints. One hour later the patient was in severe shock, with systolic blood pressure of 50 and diastolic pressure of 30 mm. of mercury, rapid and almost imperceptible pulsations, cyanosis and dyspnea. There had been no irrigation. The urine from the catheter was bloody in appearance, and irrigation was promptly started. There were no clots in the bladder and the catheter was not obstructed. It was thought at first that the patient was bleeding, and he was immediately returned to the operating room. While typing and crossmatching for transfusion were carried out, 500 cc. of normal plasma was given. The resectoscope was reinserted, but there were no bleeding points or clots in the bladder. It was then noted that the serum from the blood sample for the transfusion tests was dark red. Subsequent blood samples likewise demonstrated prominent hemoglobinemia. It was realized that the patient had had a hemolytic reaction of the type described by Creevy and Webb,[1] due to the distilled water used during resection. A transfusion of 1,000 cc. of blood and 1,000 cc. of 5 per cent dextrose in water was given, and the blood pressure rose to within normal limits in two hours. The patient was restless and cyanotic for the first few days, and hiccoughs developed, which persisted for ten days. With a closed irrigating system the bladder was continuously irrigated. The fluid remained slightly bloody at all times. Because of the irrigation, there was no record of the urinary output for the first three days. The first measure of urinary output was 60 cc. on the fourth day. Subsequently, all twenty-four hour volumes of urine were obtained by catheter and accurately measured.

The charts and the table depict the progress in this case. On the second day hyperbilirubinemia was definite (elevated serum bilirubin and icterus index), thus confirming the hemolytic episode. A severe grade of renal failure developed. The renal insufficiency was characterized by decided oliguria, sharp and prominent eleviation of blood nonprotein nitrogen and urea concentrations, decrease in the carbon dioxide combining power of plasma and decrease in the concentrations of blood chloride and serum sodium. The urine samples were of low specific gravity and contained a low concentration of urea, varying between 13 and 23 per cent of normal. The plasma protein concentration was moderately depressed, but remained near the same level throughout the course. The urinary urea output was negligible for ten days. After the fourth day the urinary drainage had a purulent appearance, but this cleared when the volume of urine subsequently increased.

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[17] Muirhead, Haley, Haberman and Hill.[1c] Landsteiner and Finch.[1d] Lattimer.: A Plan for the Management of Anuria, J. Urol. 54:312-317, 1945.

[18] Muirhead, Haley, Haberman and Hill.[1c] Muirhead, E. E., and Hill, J. M.: The Treatment of Acute Renal Insufficiency, Surg., Gynec. & Obst., to be published.

[19] Maegraith, Havord and Parsons.[2] Lucke.[3]

Treatment in this case was in accordance with the previously described "three phase" management.[1c] For the hypotension (shock state) of the first phase and the subsequent anemia that developed, blood transfusions were given. A total of 4,500 cc. of blood was given in eight days, 2,000 cc. being given during the first forty-eight hours. Initially, while blood was procured, 500 cc. of plasma was given. The following steps were observed during the second phase (renal insufficiency): (1) An attempt was made to maintain the state of hydration near normal, and an overload of salt and water was stringently averted; (2) the fluid allowed by mouth was given as a high caloric formula and as fruit juices; vitamin B complex was given parenterally, and, thus, complete starvation was prevented, and (3) the tendency toward acidosis was checked with sodium bicarbonate given by mouth.

The fluid-salt balance in this case posed a special problem not encountered in the earlier cases.[1c] Treatment was in May and June, which in Texas meant a relatively high environmental temperature. It was therefore considered that the daily insensible water loss and visible sweating amounted to 1,500 to 2,500 cc. (plus or minus). Diarrhea developed, and the stools were sufficiently liquid to be measured in volume. A rectal tube was inserted, and the liquid stools were collected. Moreover, edema of the paralyzed lower limbs became definite. With diarrhea, sweating and paralytic edema, the effective salt loss was increased over that in former cases. Therefore, an amount of salt greater than the urinary loss was given early (table). During the period of prescribed salt intake (fourth to fifteenth day) the salt loss by urine and stools was estimated to amount to over 100 Gm. The oral salt intake during this period amounted to 56 Gm. of sodium chloride and 66 Gm. of sodium bicarbonate. As the diuresis developed, toward the latter part of this period, and the patient exhibited clinical signs of extracellular fluid deficit, additional salt and water were given by vein (total of 59 Gm. of sodium chloride and 25 Gm. of sodium bicarbonate). It therefore follows that, with the losses through the urine, stool, skin and paralytic edema, the instituted salt therapy can be estimated to have approached a balance. This thinking applied at that time seems as reasonable in retrospect. It should be pointed out that, as on previous occasions,[1c] about half of the sodium bicarbonate was given to combat hyponatremia and acidosis. The latter is an empiric measure which seems to have merit. The apparent effectiveness of this measure was demonstrated by the elevation of the concentration of serum sodium and the maintenance of the carbon dioxide-combining power at the lower limits of normal.

Not only was there pronounced hyponatremia

Progress in the Case Reported

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	26	28
Urinary output (cc.)	?	?	?	60	180	300	430	625	660	860	1,000	1,325	2,050	2,660	3,750	5,475	5,400	5,400	5,220	5,000		3,000	2,850
Stool output (cc.)									645	1,100	1,380	500	585	425	225	125	300	300					
Total intake (cc.)	2,500	2,500	2,570	2,000	3,830	1,750	2,500	3,000	3,545	4,450	3,900	4,550	3,860	7,080	7,140	6,490	6,230	5,700	6,130	5,320			
Nonprotein nitrogen (mg./100 cc.)		67		107	128	140	155																
Blood urea (mg./100 cc.)					190	240	244	250	248	248	278	263	269	235	197	203	-	161	102	103	124	51	49
Carbon dioxide-combining power (vol./100 cc.)		59.8		56	41.2	48.6	52.3	55	52.3	52.3	50.4	52.3	50.4	54.1	52.3	46.6		54.1	54.1	56	54	56	56
Icterus index		21.4																					
Serum bilirubin (mg./100 cc.)		3.4																					
Plasma sodium chloride *(mg./100 cc.)*		462		429	388	393	417	425	421	437	440	454	462	458	452	478.5		503	519	515	495	578	525
Serum sodium (mEq./L.)				124		133		131		134			135	132		153			149				
Serum potassium (mEq./L.)				6.3		5.0		5.4		6.3			6.1	5.1		4.7			4.7				
Plasma protein (Gm./100 cc.)		5.8		5.0		4.9	4.9				5.4		4.4		5.5			5.4				6.3	
Albumin		3.8		3.3		3.3	3.4				3.0		3.7		3.4			3.6				3.6	
Globulin		2.1		1.7		1.6	1.5				2.4		0.7		2.1			1.8				2.7	
Urine sodium chloride *(mg./100 cc.)*					267	375	309	430	310	293	269	219	219	206	221	230		193	201	194	264	388	429
Urine chlorides (Gm.)					0.48	1.1	1.3	2.7	2.0	2.5	2.7	2.9	4.5	5.5	8.3	12.6		10.4	10.5	9.7		11.6	12.2
Urine urea (mg./100 cc.)					428	248	278	340	368	394	407	441	458	428	312	330		300	257	257	263	355	454
Urine urea (Gm.)					0.77	0.74	1.19	2.1	2.4	3.39	4	5.8	9.4	11.3	11.7	18		16.2	13.4	12.8		10.6	13
Blood (cc.)	1,000	1,000	500		500	5,000	500	500															
Plasma (cc.)	500	500																					
Dextrose 5% in water (cc.)	1,000	1,000	1,000													1,000							
*Solution I (cc.)**					1,000						1,000	1,000		2,000	2,000	400							
"Amigen 5%" in dextrose																1,000							
"Parenamine" (Gm.)†				15																			
Isotonic solution of sodium chloride				1,000																			
Hemoglobin (Gm./100 cc.)		10.8		11.6		11.6	13.2		14.4			13.2		11.2									
Red blood cells (millions)		3.9		3.85		3.7	4.2		4.8			4.1		3.6									
Sodium chloride (Gm.) by mouth						6	6	6	6		6		6	6	2								
Sodium bicarbonate (Gm.) by mouth					6	6	6	6	6	6	6	6	6	6	6	2							

*Solution I contained sodium chloride, sodium bicarbonate and calcium chloride.

†A casein hydrolysate prepared by acid digestion.

but also prominent hypochloremia. The dilution of these two ions in the extracellular compartment has been a constant observation in the syndrome of acute renal insufficiency. In the present case this abnormality was apparently aggravated by the salt loss via the bowels and the skin. The dilution of these ions occurs, however, even in the absence of such an outward exit. This hypotonicity cannot be ascribed to fluid dilution, as it can be observed in patients obviously exhibiting extracellular water deficit.[18] Internal ionic shifts, of a poorly understood nature, must be the basis for this abnormality. Moreover, this abnormality seems directly related to the renal insufficiency, as the return of these ions to normal concentration parallels the return of the renal function (fig. 1 and fig. 2).

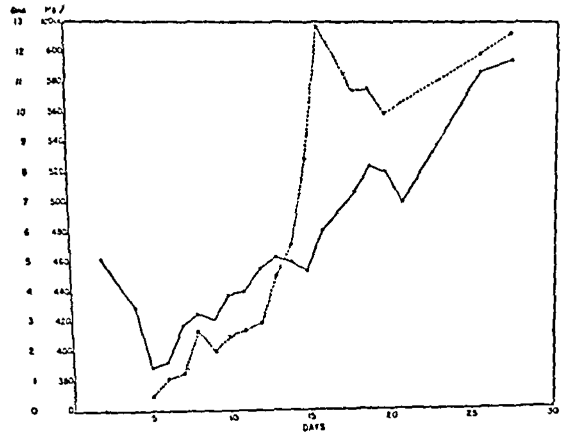


Fig. 1.—Chart showing determinations of urea in the blood (represented by the unbroken line, in milligrams per hundred cubic centimeters) and in the urine (represented by the unbroken line, in grams).

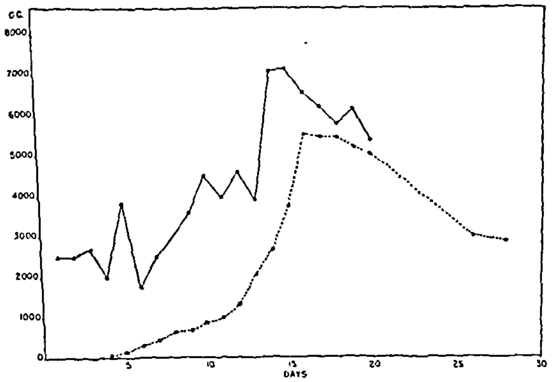


Fig. 2.—Chart showing the total intake of fluid (represented by the unbroken line) and the output of urine (represented by the broken line)

No positive measure was taken to lower the concentration of the blood urea and other accumulated wastes. Experience has indicated that the improvement of renal function occurs before these concentrations and the general backlog reach levels of an irreversible degree. In most cases the hypochloremia was not so severe as in this case, and no attempt was made to combat it as in this instance.

As on former occasions, no attempt was made to force the kidneys to produce urine. Attempts to replace the estimated daily water-salt loss (fig. 3 and fig. 4) were instituted, and renal regeneration was allowed to proceed without "prodding." There was no provision for weighing this patient, and during the second week a moderate extracellular water deficit (dry mouth, dry tongue, ropy saliva, dry skin and softened eyeballs) developed. This irregularity was rectified and did not appear to alter the improvement of the patient. The success of this regimen was attested to by the steady improvement of renal function followed by prominent diuresis and recovery.

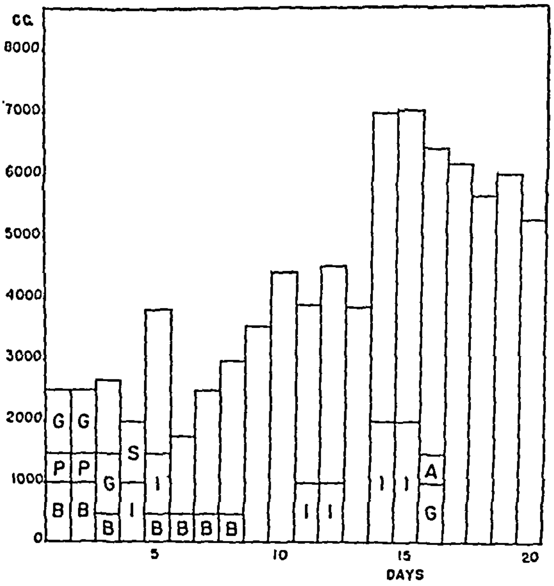


Fig. 3.—Chart showing the administered amounts of plasma (P), blood (B), sodium bicarbonate (I), 5 per cent "amigen solution" (a hydrolysate of casein prepared by digestion with porcine pancreas) (A), isotonic solution of sodium chloride (S), dextrose (G) and fluid by mouth (unlabeled part of bars).

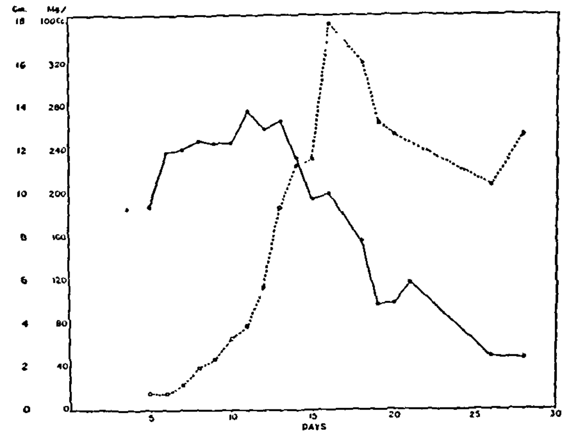


Fig. 4.—Chart showing determinations of sodium chloride in the plasma (represented by the unbroken line, in milligrams per hundred cubic centimeters) and in the urine (represented by the broken line, in grams).

During the diuresis the regimen of water-salt replacement was continued. The peak of the diuresis occurred on the sixteenth day, or later than in the average case (twelve and four-tenths days), as previously noted.[1c] Delayed diuresis has been noted in patients with a salt overload or with prior chronic renal damage. Thus, the chronic pyelonephritis may have accounted for the delayed diuresis. Certainly the combination of two renal complications tends to make for severer renal insufficiency.

On the sixteenth day a transient complication occurred. Sudden and decided gaseous distension developed. An enema and intramuscular injections of pituity ("pitressin") were given. The patient became weak and cyanotic. He was placed in an oxygen tent and given 7.5 grains of aminophylline intravenously. Large amounts of flatus and water were expelled, and improvement was immediate.

After the sixteenth day, with improvement of the appetite, the patient was able to adjust the water-salt intake himself. Recovery from renal insufficiency occurred satisfactorily. As of the time of writing, the patient had been followed up for ten months and was well so far as the renal function was concerned.

COMMENT

Acute renal damage with acute renal insufficiency is an entity which is not uncommonly encountered in a variety of conditions.[18] It is becoming apparent that the high rate of mortality ascribed to this condition in the past resulted mostly from the management. A water, water-salt, or salt intake far exceeding the capacity of the damaged kidneys has been frequently reported.

A high degree of success has been attained even in cases of severe disease with a regimen based on the main changes of the three phases of this syndrome. The first phase is frequently associated with hypotension, and blood transfusions have been given during this period. For hemorrhagic or severely anemic disease multiple transfusions may be required (2 to 4 liters or more, depending on the hemostasis and their factors). If blood is not available, plasma or albumin solutions may be used, but care should be taken not to overdilute the circulating red blood cells.[20] During the second, or renal insufficiency, phase, three main steps have been practiced: (*a*) A near normal state of hydration has been maintained by administered daily fluids equal to an estimated insensible loss (1,000 cc.) plus the volume equal to the urinary output; (*b*) the fluid has been given as a formula having roughly 1 calory per cubic centimeter, and (*c*) advanced acidosis has been averted by the use of sodium bicarbonate (4 to 6 Gm as indicated). No attempt has been made to force the kidneys to produce urine, and no attempt has been made to reduce the level of blood urea. During the third, or diuresis, phase water and salt have been replaced as indicated by the urinary output. The patients have been allowed early to regulate their own dietary and water-salt intake.

With this regimen it has not been necessary to resort to artificial measures, as peritoneal irrigation or in vivo dialysis. The dangers of peritoneal irrigation[12e] seem greater than those of this regimen. The ability of the kidneys to recover has been gratifying.

The complication of pyelonephritis in the case herein reported may have delayed the peak of the diuresis to the sixteenth day. Ordinarily there is no prominent avenue for the outward loss of salt, yet hypochloremia and hyponatremia develop. In the present case outward salt loss did occur, and it became necessary to institute active intake of salt during the renal insufficiency. The tendency toward acidosis is constant in this disease. It appears to be worth while to combat more advanced acidosis with a guarded intake of sodium bicarbonate (4 to 6 Gm. as indicated by the plasma bicarbonate concentration).

SUMMARY AND CONCLUSIONS

A case of severe acute renal insufficiency ("lower nephron nephrosis") is presented. Recovery was satisfactory with a regimen based on the main abnormalities of the three phases of this syndrome. Artificial measures for removal of waste products were not instituted and, for the period involved, did not seem indicated.

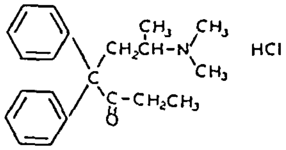
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

METHADON HYDROCHLORIDE. Adanon-Winthrop-Stearns.--6-Dimethylamino-4,4-diphenylheptanone-3-hydrochloride.--$C_{21}H_{27}NO\ HCl$.--M. W. 345.90. The structural formula may be represented as follows:



Actions and Uses.—Methadon hydrochloride possesses, in general, a pharmacologic action similar to that of morphine. It is claimed that methadon causes less nausea and emesis, except when given orally, and less respiratory depression than morphine, with minimal analgesic doses. As a preanesthetic agent methadon is inferior to morphine, since it is not a sedative.

Methadon hydrochloride has definite addiction liability. After its prolonged administration withdrawal symptoms have appeared; however their onset is more gradual, they reach their peak more slowly, and their maximum intensity is less than after similar administration of morphine. Methadon can be substituted for morphine to prevent or alleviate morphine withdrawal symptoms.

Methadon hydrochloride may be used as an analgesic agent for the relief of moderate to severe pain. It is not recommended for conditions in which the sedative effects of morphine and related drugs are of importance. The drug has a satisfactory pertussive action.

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[20] It is preferable not to allow a dilution beyond, 50 per cent.

Dosage.—Adults, 2.5 to 10 mg. depending on the intensity and nature of the pain. The usual dose is 7.5 mg. orally every three to four hours. For nonproductive cough, 1.25 to 2.5 mg. orally every three hours will usually be satisfactory.

Intramuscular injection is undesirable, but subcutaneous administration in doses of 2.5 to 10 mg. will usually be effective.

Tests and Standards

Methadon hydrochloride occurs as colorless crystals or as a white crystalline powder, odorless and possessing a bitter taste. It is soluble in water, freely soluble in alcohol and in chloroform, practically insoluble in ether and insoluble in glycerin. It is much more soluble in diluted sulfuric acid than in diluted nitric acid, but it is insoluble in diluted hydrochloric acid. It is incompatible with alkaline solutions and with syrup of wild cherry, U.S.P. It is precipitated from solution by the common alkaloidal reagents. The *pH* of a 1 per cent aqueous solution of methadon hydrochloride is between 4.5 and 6.5. It melts at 232-235 C. An aqueous solution of methadon hydrochloride, 30 mg. per 100 cc., exhibits an ultraviolet absorption maximum at 2,920 Angstrom units ($E^{1\%}_{1cm.} = 15.6 \pm 0.1$).

Dissolve about 0.1 Gm. of methadon hydrochloride in 10 cc. of water and add a clear, filtered solution of 0.125 Gm. of picrolonic acid dissolved in 50 cc. of boiling distilled water. Stir the mixture until the yellow precipitate is well formed. Allow the mixture to stand for 2 hours. Filter and recrystallize the residue from diluted alcohol. Filter and dry the residue: the product melts at 160-162 C.

Dissolve about 10 mg. of methadon hydrochloride in 2 cc. of water. Add 2 cc. of methyl orange T.S.: a yellow precipitate forms.

Dissolve about 10 mg. of methadon hydrochloride in 10 cc. of water, add 1 cc. of diluted nitric acid and 1 cc. of silver nitrate T.S.: a white precipitate forms which is soluble in excess ammonia T.S.

Dry about 1 Gm. of methadon hydrochloride, accurately weighed, for 24 hours at 100 C.: the loss in weight does not exceed 0.3 per cent.

Ignite about 0.1 Gm. of methadon hydrochloride, accurately weighed: the residue does not exceed 0.1 per cent.

Transfer about 0.5 Gm. of methadon hydrochloride, accurately weighed, to a 250 cc. flask and dissolve it in 50 cc. of water. Titrate with tenth-normal silver nitrate, using 10 drops of dichlorofluorescein T.S. as the indicator. Each cc. of tenth-normal silver nitrate corresponds to 3.546 mg. of chloride: the amount of chloride found is not less than 10.0 per cent nor more than 10.5 per cent, calculated to the dried substance. Transfer about 0.1 Gm. of methadon hydrochloride, accurately weighed, to a suitable Kjeldahl flask and determine the nitrogen content by the semimicro method (U.S.P. XIII, p. 672): the amount of nitrogen found is not less than 3.95 per cent nor more than 4.15 per cent, calculated to the dried substance.

Dissolve about 0.15 Gm. of methadon hydrochloride, accurately weighed, in 50 cc. of water in a separator. Add 20 cc. of ammonia T.S., and extract the methadon base with four successive portions of 40 cc., 20 cc., 20 cc., and 15 cc. of ether. Combine the ether extracts in a beaker and carefully evaporate the ether on a water bath in a stream of warm air. Dissolve the residue in 15 cc. of neutralized alcohol and titrate the solution with fiftieth-normal hydrochloric acid using methyl red T.S. as the indicator. Near the end of the titration add 50 cc. of water. Each cc. of fiftieth-normal hydrochloric acid is equivalent to 6.92 mg. of methadon base. The amount of methadon base found corresponds to not less than 88.5 per cent nor more than 90 per cent, calculated to the dried substance.

Tablets:

Weigh a counted number of not less than 20 methadon hydrochloride tablets and reduce them to a fine powder without appreciable loss. Weigh, accurately, a portion of the powder, equivalent to 30 mg. of methadon hydrochloride, and transfer it completely to a separator with the aid of 10 cc. of water. Make alkaline with 5 cc. of sodium hydroxide T.S., and mix well. Extract the methadon base with six successive 20 cc. portions of ether, filtering each ether extract through a pledget of cotton previously wetted with ether. Wash the separator and filter with 10 cc. of ether and add the washings to the filtered ether extracts. Wash the combined ether extracts with four 5 cc. portions of water, then extract the combined water extracts with 10 cc. of ether and add this ether extract to main ether extract. Extract the combined ether solution with exactly 20 cc. of hundredth-normal hydrochloric acid, followed by three 10 cc. portions of water. Warm the combined acid and water extracts on a water bath until the odor of ether is no longer perceptible. Cool and titrate the excess acid with hundredth-normal sodium hydroxide, using methyl red T.S. as the indicator. Each cc. of hundredth-normal hydrochloric acid is equivalent to 3.459 mg. of methadon hydrochloride, $C_{21}H_{27}NO \cdot HCl$: the amount of methadon hydrochloride found corresponds to not less than 93 per cent nor more than 107 per cent of the labeled amount of methadon hydrochloride.

Syrup, Elixir and Solutions:

Transfer to a separator an accurately measured volume of the syrup, or solution, equivalent to 30 mg. of methadon hydrochloride, and add 10 cc. of water. Follow the extraction procedure as directed in the assay of methadon hydrochloride tablets, beginning with, "Make alkaline with 5 cc. of sodium hydroxide T.S." The amount of methadon hydrochloride found corresponds to not less than 93 per cent nor more than 107 per cent of the labeled amount of methadon hydrochloride.

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Solution Methadon Hydrochloride: 10 mg. per cc. 1 cc. ampuls. Each cubic centimeter contains 10 mg. of methadon hydrochloride in isotonic solution with sodium chloride.

Solution Methadon Hydrochloride: 10 mg. per cc. 20 cc. vials. Each cubic centimeter contains 10 mg. of methadon hydrochloride in isotonic solution with sodium chloride. Preserved with 0.9 per cent benzyl alcohol.

Tablets Methadon Hydrochloride: 2.5 mg, 5 mg. and 7.5 mg.

WINTHROP-STEARNS, INC., NEW YORK

Elixir Adanon Hydrochloride: 5 mg. per 5 cc., 473 cc. bottles.

Solution Adanon Hydrochloride: 5 mg. per cc., 2 cc. ampuls and 10 mg. per cc., 20 cc. vials.

Syrup Adanon Hydrochloride: 0.33 mg. per cc., 473 cc. bottles.

Tablets Adanon Hydrochloride: 2.5 mg., 7.5 mg. and 10 mg.

U. S. trademark, 435,101.

ESTRONE-U.S.P. (See New and Nonofficial Remedies 1947, p. 341).

The following additional dosage form has been accepted.

ELI LILLY & COMPANY, INDIANAPOLIS

Aqueous Suspension Estrone: 1 mg., 2 mg., 5 mg. per cc., 1 cc. ampuls.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following reports. HOWARD A. CARTER, *Secretary.*

G-E VARIABLE FREQUENCY WAVE GENERATOR ACCEPTABLE

Manufacturer: General Electric X-Ray Corp., Electromedical Section, 4855 McGeoch Avenue (W), Milwaukee 14, Wisconsin.

The G-E Variable Frequency Wave Generator is a device intended for use in stimulating denervated muscle for the prevention of atrophy. It is housed in a console-type case that can be moved about on casters. The case measures 58 by 53 cm. (23 by 21 inches) and stands 112 cm. (44 in.) high. It weighs 103 Kg. (227 lbs.); the shipping weight is 113 Kg. (250 lbs.). It operates on 110 to 120 volt 60-cycle alternating current, and the maximum power consumption is 525 watts, corresponding to approximately 5 amperes at 110 volts. It is equipped with 1 pair color coded electrode cords; 1 felt disk electrode 38 mm. (1.5 inch) diameter; 1 felt button electrode - 13 mm. (0.5 inch) diameter; 1 electro-diagnostic handle; 1 handle for disk electrodes; 1 ground cord extension - 3 meters (10 feet) long; 1 dispersive electrode - 10 by 15 cm. (4 by 6 in.); 2 dispersive electrodes - 5 by 7.5 cm. (2 by 3 in.); 1 dispersive electrode - 15 by 20 cm. (6 by 8 in.), and 1 dispersive electrode - 20 by 30 cm. (8 by 12 in.).

For direct current the ripple does not exceed 0.15 per cent. The maximum output with 2,000 ohms resistance is 100 milliamperes, which is essential for all therapy or diagnosis utilizing direct current.

For sinusoidal current the deviation from the pure sine wave was plus or minus 2 per cent. The frequency of the sinusoidal current can be varied progressively from a range of 2 to 6,000 cycles per minute or 0.033 to 100 cycles per second.

When the sinusoidal current is used for therapeutic and diagnostic purposes one recommendation is for treatment of denervated or partially denervated muscle. These muscles require a wide range of frequencies for the varying stages of muscle irritability, namely, two cycles per minute to forty cycles per second (2,400 cycles per minute).

The longer the period of degeneration the lower the frequency required to stimulate the muscle with an unmodulated sinusoidal current. Thus, there are muscles that respond maximally to the very low frequencies of two per minute to one per second (60 per minute). This current is a sinusoidal current and hence should be so named. Each electrical cycle may produce two muscular contractions, one contraction for the positive phase, and another contraction for the negative phase.

Some muscles respond maximally to the higher frequencies, namely, from two to forty per second. When the frequency reaches a value of two cycles or more per second the resultant denervated muscle contraction is sustained and tetanic in character. Therefore, it is necessary to modulate this fundamental sinusoidal current in order to secure a graduated muscle contraction. The modulation is secured by means of a double sine wave and is at a rate of two to sixty per minute. This is an adequate range. In the opinion of the Council this form of the current should be termed a modulated sinusoidal current with carrier frequency of 2 to 40 cycles per second.

To stimulate the normal skeletal muscle the complete range of frequencies necessary extends from 40 to 100 cycles per second. At these frequencies the current must be modulated for the same reasons stated before. In the opinion of the Council this current then should be termed a modulated sinusoidal current with carrier frequency of 40 to 100 cycles per second. When and if a sustained tetanic form of contraction is desired, it can be secured by using a frequency of 40 to 100 cycles per second and eliminating the modulation control. This current is not a "Faradic" current, but physiologically it produces the same effects.

For diagnosis the intensity-frequency curve can be secured by plotting frequency on the horizontal axis, and current in milliamperes on the vertical axis. The current recorded is that strength required to secure the minimal muscle contraction at various frequencies.

The lower the frequency required for minimal current values, the greater the degree of degeneration. A muscle responding to a frequency of 15 cycles per second with a minimal current intensity has a better prognosis than one responding to a frequency of one cycle per second. As the muscle improves, there is a shift in the frequency requirement-it moves from a lower to a higher frequency range.

This apparatus is supplied with the following controls and meters:

1. A master switch, which also serves as the line switch, selects alternating or direct current and the proper meter as well as meter scale.
2. Stimulation frequency scales are provided, one graduated to 2 to 120 cycles per minute, the other to 2 to 100 cycles per second. The scale selection is made by means of a scale selector switch.
3. Contraction frequency control is provided with a scale graduated from 2 to 60 cycles per minute and an "On" and "Off" switch.
4. The a-c milliameter is provided with 1.5, 15, and 150 milliampere scales and reads peak values of the alternating current.
5. The d-c milliameter is provided with 20 and 200 milliampere scales.
6. The intensity control has an arbitrary 0 to 100 scale. It regulates the amount of current passing through the patient and incorporates a safety feature which assures that no current can flow to the patient unless the operator first places this control on zero position.

The receptacles into which the electrode cords are inserted are connected to a two prong twist lock plug.

The Council on Physical Medicine voted to include the G-E Variable Frequency Wave Generator in its list of accepted devices.

THE GYNOGRAPH ACCEPTABLE

Manufacturer: Goodman-Kleiner Co., Inc., 5 East 17th Street, New York 3, N. Y.

The Gynograph manufactured by the Goodman-Kleiner Co., Inc., is a device which makes it possible to inject measured volumes of liquid or gas, under controlled pressures into the uterus and uterine tubes; it is designed for use in tubal insufflations with carbon dioxide, in hysterosalpingography, and in viscerographic procedures such as pneumoperitoneum. It is arranged to utilize conveniently the small cartridges in which carbon dioxide is being sold at present. The gas expands into a pressure-reducing chamber, whence it can be led into cannulas or be used to force fluids like iodized oil into the passages connected with the uterus.

The apparatus is easily portable. It weighs less than 4.5 Kg. (10 pounds), and when it is in its case the over-all measurements are 40 by 19 by 18 cm. (15¾ by 7½ by 7 in.).

The Council on Physical Medicine voted to include the Gynograph in its list of accepted devices.

HOSPITAL SERVICE IN THE UNITED STATES

TWENTY-SEVENTH ANNUAL PRESENTATION OF HOSPITAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

F. H. Arestad, M.D., E. H. Leveroos, M.D., W. R. Albus, M.D., and W. W. Corbett, M.D.

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The Annual Report on Hospital Service in the United States is based on census reports submitted by registered hospitals in the United States, Alaska, Guam, Hawaii, Puerto Rico, the Canal Zone and the Virgin Islands. Census blanks are distributed to all registered hospitals annually, and these form the basis for official listings of registered hospitals, hospitals approved for internship and residency training, approved technical schools, as well as for special studies. The reporting period may represent a calendar year or the latest twelve month period for which statistics are available. Compilation and correction of the data continue to date of publication.

SUMMARY OF HOSPITAL DATA—1947

All Registered Hospitals		General Hospitals	
Number	6,276	Number	4,539
Bed capacity	1,425,222	Bed capacity	592,453
Bassinets	86,378	Bassinets	82,303
Patients admitted	15,829,514	Patients admitted	14,665,195
Births	2,837,139	Births	2,756,959
Average daily census	1,217,229	Average daily census	456,761
Patient days	444,288,585	Patient days	166,717,765

The current report for 1947 contains: (1) the official list of hospitals registered by the American Medical Association in accordance with standards formulated by the Council on Medical Education and Hospitals as adopted by the House of Delegates, including symbols designating those hospitals approved for internship and residency training by the Council on Medical Education and Hospitals, hospitals approved by the American College of Surgeons as meeting unconditionally its minimum requirements for standardization, and hospitals conducting accredited schools of nursing; (2) statistical tables together with textual material covering various aspects of hospital service and related subjects; (3) lists and general information on technical schools approved by the American Medical Association in cooperation with the several agencies concerned, and (4) tables relating to nursing service and education. Information covering approved internships and residencies was published in an earlier issue, (The Journal, May 1, 1948).

The trend toward increased use of hospital facilities is reflected in tables which follow. Notwithstanding an appreciable drop in total capacity, admissions to registered hospitals increased; this increase occurred largely in the nongovernmental group. A striking increase occurred in the number of hospital births, with a record figure reported. A further trend is seen in the continued reduction in the average hospital stay per patient.

Compilation of the following data is possible only through the cooperation of the hospitals which are represented. For their generous support of this annual survey, the Council on Medical Education and Hospitals wishes to express its gratitude to the Surgeons General of the Army, Navy and United States Public Health Service, to the Air Surgeon and the Administrator of the Federal Security Administration, to the Medical Director of the Veterans Administration and to hospital administrators and others who have assisted in the preparation of this survey.

Scope of Survey

All hospitals registered by the American Medical Association are represented in the 1947 survey; they include civilian hospitals, those under the control of the Army and Navy, United States Public Health Service and other units of the Federal Security Agency, the Veterans Administration, as well as other governmental hospitals. Registration lists cover hospitals in the United States and the possessions; the latter group, however, is not included in the tabular data, which reflect the status of hospitals within the continental United States. In the registered group, 807 hospitals are approved for internship training and 1,102 for residency training in the specialties; the majority of the hospitals so designated have approval for both types of graduate training. A total of 2,609 hospitals appearing in the official list are accredited by the American College of Surgeons as meeting unconditionally its minimum requirements for standardization. Since changes and corrections are made in the official list of registration up to the date of publication, totals taken directly from this source may vary slightly from those presented in the tables.

TABLE A.—*Summary of Growth of Hospitals, 1909 to 1947*

	Federal Hospitals		State Hospitals		All Other Hospitals		Total	
Year	Number	Capacity	Number	Capacity	Number	Capacity	Number	Capacity
1909	71	8,827	232	189,049	4,056	223,189	4,359	421,065
1914	93	12,602	294	232,834	4,650	287,045	5,037	532,481
1918	110	18,815	303	262,251	4,910	331,182	5,323	612,251
1923	220	53,869	601	302,208	6,009	399,645	6,830	755,722
1928	294	61,765	595	369,759	5,963	461,410	6,852	892,934
1931	291	69,170	576	419,282	5,746	485,663	6,613	974,115
1932	301	71,151	568	412,601	5,693	497,602	6,562	1,014,354
1933	295	75,635	557	459,646	5,585	491,765	6,437	1,027,046
1934	313	77,865	544	473,035	5,477	497,201	6,334	1,048,101
1935	316	83,353	526	483,994	5,404	507,792	6,246	1,075,139
1936	323	84,231	521	503,306	5,345	509,181	6,189	1,096,721
1937	329	97,951	522	508,913	5,277	517,684	6,128	1,124,548
1938	330	92,248	523	541,279	5,313	527,853	6,166	1,161,380
1939	329	96,338	523	560,575	5,374	538,113	6,226	1,195,026
1940	336	108,928	521	572,079	5,434	545,238	6,291	1,226,245
1941	428	179,202	530	600,320	5,400	544,859	6,358	1,324,381
1942	474	220,938	530	606,437	5,311	556,452	6,315	1,383,827
1943	827	476,673	531	610,115	5,297	562,466	6,655	1,649,254
1944	798	551,135	539	609,025	5,274	569,785	6,611	1,729,945
1945	705	546,384	519	619,642	5,287	572,918	6,511	1,738,944
1946	464	264,486	557	628,363	5,259	575,865	6,280	1,468,714
1947	401	213,204	563	626,648	5,312	585,370	6,276	1,425,222

TABLE B.—*Number of Hospitals According to Size*

Bed Capacity	General Hospitals	Nervous and Mental	Tuberculosis	Other Hospitals	Total Number
Below 25	988	30	25	142	1,185
26-50	1,083	85	78	205	1,451
51-100	977	71	125	182	1,355
101-200	788	46	94	110	1,038
201-300	322	31	17	41	444
Over 300	381	322	72	28	803
Totals	4,539	585	441	711	6,276

Number, Size and Classification of Hospitals

The number of registered hospitals, as compared with the previous year's report, remained about constant, with 6,280 registered in 1946 and 6,276 in 1947. There was a decrease of 45 hospitals in the governmental group, largely due to the continued drop in the number of federal hospitals reported. This loss was offset by a gain of 41 hospitals in the nongovernmental groups, representing increases in the nonprofit association hospitals and those controlled by corporations (profit unrestricted). While the federal hospitals continued to decrease in number, the decrease was relatively small as compared with the previous year's drop, when 241 less hospitals were reported. A summary of the changes in the number of registered hospitals and their bed capacities is found in table A, accompanying this text.

Table B gives a breakdown of registered hospitals on the basis of bed capacity. Relatively few changes occurred during the current period, as might have been expected in view of the relative constancy of the number registered. Hospitals of 100 bed capacity and under showed an increase from 3,969 to 3,991. Hospitals from 101 beds to 300 increased from 1,471 to 1,482, while hospitals of 301 bed capacity and over fell from 840 in 1946 to 803 in 1947; 34 of this 37 decrease was in the general hospital class. Tables C and D present summaries of hospital service from the standpoint of type of control and type of service primarily rendered. Governmental hospitals are classified on the basis of the political unit exercising control; nongovernmental are subdivided on the basis of incorporation as nonprofit or proprietary organizations.

Governmental hospitals declined in number from 1,962 to 1,917. This decrease occurred principally in the federally controlled group, which numbered 464 hospitals in the previous report and 401 in 1947; the city-county category also showed a decline, from 64 to 58. Total nonprofit hospitals increased by 24 during the reporting period and proprietary hospitals by 17, raising the total of nongovernmental units to 4,359, a gain of less than 1 per cent.

Little variation from last year's figures is observed in comparing the data based on type of service rendered.

TABLE C.—*Summary of Hospital Service Classified by Control*

	Hospitals	Beds	Average Census	Bassinets	Births	Admissions
Governmental						
Federal	401	213,204	168,133	2,444	46,081	1,285,126
State	563	626,648	585,747	1,932	51,700	737,402
County	526	101,402	82,568	4,352	119,620	784,499
City	369	78,181	60,498	5,968	191,576	1,208,546
City-county	58	10,767	7,657	1,028	32,605	188,771
Total governmental	1,917	1,0 0,205	904,633	15,724	441,582	4,204,344
Nongovernmental						
Church	1,051	141,920	118,780	27,145	969,653	4,524,859
Nonprofit associations	1,965	202,661	158,835	34,110	1,153,863	5,652,649
Total nonprofit	3,016	344,581	277,615	61,255	2,123,516	10,177,508
Individual and partnership	984	28,325	18,303	6,137	166,363	848,082
Corporations (profit unrestricted)	359	22,111	16,708	3,262	105,678	599,580
Total proprietary	1,343	50,436	35,011	9,399	272,041	1,447,662
Total nongovernmental	4,359	395,017	312,626	70,654	2,395,557	11,625,170
Total all hospitals	6,276	1,425,222	1,217,229	86,378	2,837,139	15,829,514

TABLE D.—*Summary of Hospital Data According to Type of Service*

	Hospitals	Beds	Average Census	Bassinets	Births	Admissions
General	4,539	592,453	456,761	82,303	2,756,959	14,665,195
N & M	585	680,913	651,578	259	3,082	291,954
Tuberculosis	441	81,328	62,575	32	176	99,080
Maternity	100	5,412	3,929	3,312	76,679	100,382
Industrial	33	2,914	1,869	....	......	57,110
E. E. N. T.	44	2,534	1,553	13	6	116,563
Children's	41	4,630	3,277	80	......	100,923
Orthopedic	82	6,519	4,738	23	......	28,124
Isolation	65	12,556	5,478	183	74	163,300
Conv. and rest	93	5,840	4,206	20	......	32,339
Institutions	194	22,516	14,739	151	163	140,276
All other hospitals	59	7,577	6,526	2	......	34,263
Total all hospitals	6,276	1,425,222	1,217,229	86,378	2,837,139	15,829,514

Neuropsychiatric hospitals increased from 575 to 585, while tuberculosis sanatoriums decreased by about the same number, from 450 in 1946 to 441 in 1947. General hospitals showed a gain of 18 over the previous report, perhaps fewer than would be anticipated. When the decrease in the number of federal hospitals is considered, however, this apparently slight increase appears more significant. General hospitals account for 70 per cent of all hospitals registered, neuropsychiatric for slightly over 9 per cent, tuberculosis sanatoriums for 7 per cent, and the remaining number is made up of several categories including maternal, industrial, eye, ear, nose and throat, children's, orthopedic, isolation, convalescent and rest, institutions, and an inclusive classification, "all other hospitals." The official list classifies those registered as hospitals and sanatoriums, and related institutions.

Bed Capacity

Comparative Totals
1946: 1,468,714
1947: 1,425,222

From the high point of 1,738,944 beds reported in 1945, the bed capacity in registered hospitals has declined to its present level of 1,425,222 beds, representing a further decline of 52,529 beds in the governmental group, primarily federal hospitals, and an increase of 9,037 in the nongovernmental category. This compares with a loss of 273,984 beds in governmental hospitals, reported last year and a gain in nongovernmental hospitals of 3,754 beds for the same period. With federal hospitals as a whole reporting the decrease noted, the bed capacities of hospitals under Veterans Administration control gained slightly, with 102,235 beds reported as of July 13, 1948. City hospitals showed an increase of 1,650 beds; state, county and city-county institutions, on the other hand, indicated small decreases in their capacities. On the basis of currently available statistics, governmental hospitals now control 72.3 per cent of all hospital beds and the nongovernmental group 27.7 per cent; this compares with 73.7 and 26.3 in 1946 and 78 per cent and 22 per cent in 1945. It should be noted that 626,648 of the 1,030,205 beds under governmental control are located in state hospitals, largely of special types.

Table E.—*Governmental and Nongovernmental Hospital Service*

	Hospitals	Beds	Average Census	Bassinets	Births	Admissions
Governmental						
General	969	257,884	191,676	14,773	429,658	3,580,422
N & M	371	662,452	635,702	186	1,332	217,360
Tuberculosis	315	70,041	53,102	31	173	83,302
Special	106	19,323	10,525	614	10,256	201,053
Institutions	156	20,505	13,598	120	163	122,207
Total governmental	1,917	1,030,205	904,603	15,724	441,582	4,204,344
Nongovernmental						
General	3,570	334,569	265,085	67,530	2,327,301	11,084,773
N & M	214	18,461	15,876	73	1,750	74,594
Tuberculosis	126	11,287	9,473	1	3	15,778
Special	411	28,689	21,051	3,019	66,503	431,956
Institutions	38	2,011	1,141	31	.....	18,069
Total nongovernmental	4,359	395,017	312,626	70,654	2,395,557	11,625,170
Total all hospitals	6,276	1,425,222	1,217,229	86,378	2,837,139	15,829,514

The bed capacity of general hospitals continued to decline, with 641,331 beds reported in 1946 and 592,453 the past year. This decrease, however, should be interpreted in the light of the increase of beds in the nongovernmental group; these latter rose from a figure of 324,211 for 1946 to 334,569 in 1947. General hospitals now represent 41.6 per cent of all beds, neuropsychiatric hospitals 47.9 per cent, tuberculosis sanatoriums 5.8 per cent and other institutions 4.7 per cent. There was an appreciable gain in the number of neuropsychiatric beds during the period, from 674,930 to 680,913; this amounts to only about one third the gain shown in these hospitals during the 1945-1946 period, however. A condensation of data presented above is found in table E, Governmental and Nongovernmental

Table F.—*Summary of Hospital Service in the United States According to Type of Service and Agencies Concerned from the 1947 Census of Hospitals Registered by the American Medical Association*

U. S. Totals	6,276	1,425,222	1,217,229	86,378	2,837,139	15,829,514
Type	Hospitals	Beds	Average Census	Bassinets	Births	Admissions
Federal						
Totals	401	213,204	168,133	2,444	46,081	1,285,126
General	317	132,258	96,291	2,427	46,048	1,170,560
N & M	36	68,057	62,638	.....	10	53,215
TB	23	8,858	7,112	.....	4	20,416
Special	4	1,780	858	9	1	18,756
Institutions	21	2,221	1,231	8	18	13,179
State						
Totals	563	626,648	585,747	1,932	51,700	737,402
General	57	21,599	15,484	1,542	50,134	353,899
N & M	281	562,678	542,624	169	1,239	151,554
TB	79	26,184	18,993	1	33	22,972
Special	38	7,816	4,468	118	149	122,154
Institutions	108	8,371	4,178	102	145	86,823
County						
Totals	526	101,402	82,568	4,352	119,620	784,499
General	267	43,994	32,662	3,904	109,332	717,921
N & M	49	26,808	25,926	10	83	10,714
TB	176	22,629	17,788	16	111	22,947
Special	20	3,703	2,664	422	10,094	19,455
Institutions	14	4,268	3,528	.....	......	13,462
City						
Totals	369	78,184	60,498	5,968	191,576	1,208,546
General	286	51,736	41,278	5,897	191,539	1,144,613
N & M	5	4,879	4,514	7	......	1,877
TB	25	10,155	7,706	14	25	15,051
Special	41	5,804	2,354	40	12	38,566
Institutions	12	5,610	4,646	10	......	8,439
City-County						
Totals	58	10,767	7,657	1,028	32,605	188,771
General	42	8,297	5,958	1,003	32,605	184,429
N & M	..	.....	.....	.....	......	....
TB	12	2,215	1,503	.....	......	1,916
Special	3	220	181	25	......	2,122
Institutions	1	35	15	.....	......	304
Church						
Totals	1,051	141,920	118,780	27,145	969,653	4,524,859
General	924	130,653	109,648	25,944	946,158	4,454,767
N & M	19	3,169	2,879	.....	......	6,467
TB	20	2,400	2,147	.....	2	3,461
Special	87	5,680	4,105	1,200	23,493	60,079
Institutions	1	18	1	1	......	85
Nonprofit						
Totals	1,965	202,661	158,835	34,110	1,153,863	5,652,649
General	1,578	167,390	131,686	32,553	118,280	5,297,145
N & M	38	6,201	5,356	52	1,589	21,599
TB	77	7,229	5,978	1	1	9,693
Special	235	19,848	14,675	1,474	33,093	206,228
Institutions	37	1,993	1,140	30	......	17,984
Individual and Partnership						
Totals	984	28,325	18,303	6,137	166,363	848,082
General	807	21,505	12,857	5,813	157,333	784,960
N & M	87	4,136	3,449	7	161	22,662
TB	20	850	676	8	64	1,734
Special	70	1,834	1,321	309	8,805	38,726
Institutions	..	.....	.....	.....	......	....
Corporations						
Totals	350	22,111	16,708	3,262	105,678	599,580
General	260	14,998	10,880	3,212	105,466	547,538
N & M	70	4,955	4,192	14	......	23,866
TB	10	831	686	.....	......	1,253
Special	19	1,327	950	36	212	26,923
Institutions	..	.....	.....	.....	......	....

TABLE 1.—HOSPITAL FACILITIES BY STATES AND BY CONTROL: A. GOVERNMENT HOSPITALS

Marginal No.		Federal					State					County				
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census
1	Alabama	7	4,010	35	[illegible]	3,318	9	8,357	91	44,309	7,496	6	331	34	3,744	289
2	Arizona	19	[illegible]	75	[illegible]	1,502	3	1,490	..	941	1,393	7	525	57	7,757	335
3	Arkansas	4	[illegible]	10	[illegible]	2,690	4	6,296	20	7,805	6,148	1	215	...	323	184
4	California	34	[illegible]	332	[illegible]	14,760	18	33,257	36	32,525	30,100	58	19,097	755	199,864	15,593
5	Colorado	7	[illegible]	28	[illegible]	14,241	8	6,096	25	6,917	5,693	7	297	65	9,898	194
6	Connecticut	3	[illegible]	...	[illegible]	347	13	13,078	10	6,915	12,089	..	.....	...	.....	...
7	Delaware	1	[illegible]	...	[illegible]	148	5	2,303	7	813	2,233	..	.....	...	.....	...
8	District of Columbia	7	[illegible]	105	[illegible]	9,186	..	.....	..	.....	.....	..	.....	...	.....	...
9	Florida	16	[illegible]	187	[illegible]	2,605	9	[illegible]	19	[illegible]	7,163	8	1,030	97	16,964	625
10	Georgia	10	[illegible]	72	[illegible]	5,397	6	[illegible]	20	[illegible]	10,759	10	495	107	20,011	375
11	Idaho	1	[illegible]	...	[illegible]	191	4	[illegible]	..	[illegible]	1,747	4	211	69	7,494	174
12	Illinois	11	[illegible]	56	[illegible]	8,831	20	[illegible]	58	[illegible]	38,097	26	7,748	268	78,278	6,065
13	Indiana	4	[illegible]	...	[illegible]	2,532	17	[illegible]	62	[illegible]	14,298	39	2,917	461	63,907	2,365
14	Iowa	3	[illegible]	...	[illegible]	2,112	14	[illegible]	60	[illegible]	11,217	8	539	44	7,565	370
15	Kansas	11	[illegible]	37	[illegible]	2,418	11	[illegible]	31	[illegible]	[illegible]	8	355	85	9,114	297
16	Kentucky	8	[illegible]	59	[illegible]	3,771	10	[illegible]	22	[illegible]	[illegible]	5	282	24	3,734	244
17	Louisiana	7	[illegible]	28	[illegible]	1,763	11	[illegible]	331	[illegible]	[illegible]	..	.....	...	.....	...
18	Maine	2	[illegible]	...	[illegible]	797	6	[illegible]	2	[illegible]	[illegible]	..	.....	...	.....	...
19	Maryland	8	[illegible]	95	[illegible]	4,333	13	[illegible]	84	[illegible]	[illegible]	3	178	48	5,836	132
20	Massachusetts	10	[illegible]	52	[illegible]	4,992	27	[illegible]	51	[illegible]	[illegible]	8	1,354	...	1,190	890
21	Michigan	7	[illegible]	31	[illegible]	5,674	21	[illegible]	61	[illegible]	[illegible]	29	12,079	119	24,265	9,307
22	Minnesota	8	[illegible]	26	[illegible]	2,247	17	[illegible]	44	[illegible]	[illegible]	16	1,663	28	5,871	1,326
23	Mississippi	5	[illegible]	25	[illegible]	1,801	12	[illegible]	60	[illegible]	[illegible]	3	138	29	5,283	70
24	Missouri	7	[illegible]	5	[illegible]	2,205	13	[illegible]	23	[illegible]	[illegible]	6	569	75	9,752	358
25	Montana	6	[illegible]	27	[illegible]	290	2	[illegible]	..	[illegible]	[illegible]	3	255	16	762	165
26	Nebraska	4	[illegible]	21	[illegible]	360	9	[illegible]	27	[illegible]	[illegible]	3	419	26	4,814	231
27	Nevada	4	[illegible]	20	[illegible]	83	1	[illegible]	..	[illegible]	[illegible]	4	404	51	7,897	297
28	New Hampshire	1	[illegible]	10	[illegible]	107	3	[illegible]	..	[illegible]	[illegible]	4	207	42	1,980	101
29	New Jersey	5	[illegible]	51	[illegible]	6,595	15	[illegible]	5	[illegible]	[illegible]	22	10,468	387	20,343	8,820
30	New Mexico	13	[illegible]	51	[illegible]	[illegible]	5	[illegible]	10	[illegible]	[illegible]	..	.....	...	.....	...
31	New York	24	[illegible]	118	[illegible]	12,123	47	[illegible]	83	[illegible]	[illegible]	35	6,416	179	36,563	4,921
32	North Carolina	6	[illegible]	77	[illegible]	[illegible]	12	[illegible]	5	[illegible]	[illegible]	17	1,135	140	23,035	872
33	North Dakota	5	[illegible]	25	5,156	256	3	[illegible]	..	[illegible]	[illegible]	1	40	3	247	18
34	Ohio	7	[illegible]	1	20,018	4,322	26	[illegible]	36	[illegible]	[illegible]	27	3,810	100	20,740	3,196
35	Oklahoma	15	[illegible]	104	21,091	1,070	14	[illegible]	74	[illegible]	[illegible]	2	120	23	4,239	71
36	Oregon	6	1,981	22	12,258	1,744	9	[illegible]	30	[illegible]	[illegible]	4	184	30	5,748	145
37	Pennsylvania	10	8,501	40	46,261	7,341	42	[illegible]	207	53,042	[illegible]	15	4,692	8	4,320	3,925
38	Rhode Island	2	1,000	14	9,686	667	4	5,624	24	1,719	[illegible]	..	.....	...	.....	...
39	South Carolina	5	1,900	38	22,601	1,255	4	5,762	41	8,905	[illegible]	11	1,174	241	40,163	1,157
40	South Dakota	10	1,369	50	7,911	1,155	4	2,835	..	893	[illegible]	..	.....	...	.....	...
41	Tennessee	11	6,697	71	44,838	5,066	12	7,705	..	12,840	[illegible]	7	2,181	46	5,923	1,752
42	Texas	23	12,653	151	87,041	9,552	21	19,815	24	36,483	[illegible]	25	1,405	261	40,458	954
43	Utah	2	234	6	3,167	179	3	1,896	..	602	1,861	4	312	54	5,951	189
44	Vermont	1	250	...	3,672	198	5	1,642	..	728	1,588	..	.....	...	.....	...
45	Virginia	14	8,272	129	65,392	5,519	15	13,728	161	36,108	13,535	2	56	15	2,272	30
46	Washington	14	7,375	111	53,145	4,926	7	8,998	2	4,200	8,323	17	2,165	155	27,373	1,707
47	West Virginia	3	1,019	8	6,355	713	13	6,107	27	11,339	5,793	3	192	29	4,873	137
48	Wisconsin	6	3,230	18	9,873	2,170	10	5,571	39	15,727	5,763	60	15,017	81	29,673	16,950
49	Wyoming	4	1,525	17	6,011	934	4	1,217	17	4,741	1,007	5	434	90	15,806	347
	Totals (1947)	401	213,204	2,414	1,285,126	168,133	563	626,618	1,932	737,402	585,747	526	101,402	4,352	784,459	82,568
	(1946)	464	261,486	2,692	1,949,711	213,246	557	628,363	1,876	618,538	579,782	514	102,071	4,315	704,772	79,758
	(1945)	705	546,384	3,823	[illegible]	391,935	549	619,612	1,746	559,352	580,783	508	102,121	4,291	614,468	77,510
	(1944)	798	551,135	3,462	[illegible]	393,875	539	609,025	1,650	556,224	570,411	501	102,544	3,889	571,381	77,856
	(1943)	827	476,673	2,396	[illegible]	265,746	531	610,115	1,623	543,258	571,376	511	100,151	3,763	581,706	77,789
	(1942)	474	220,938	1,206	[illegible]	147,094	530	616,437	1,618	601,481	566,437	505	98,997	3,512	626,200	76,948
	(1941)	428	179,202	1,006	[illegible]	118,890	530	606,320	1,572	620,231	561,620	512	95,227	3,288	613,740	83,214
	(1940)	336	108,928	1,059	[illegible]	86,694	521	572,079	1,347	583,274	559,994	514	102,310	3,097	615,247	87,029
	(1939)	329	96,338	823	[illegible]	80,692	523	569,575	1,234	588,907	527,900	501	100,946	2,748	589,289	86,177
	(1938)	350	92,248	772	[illegible]	75,470	523	541,279	1,127	549,637	512,899	490	96,621	2,581	552,666	80,262
	(1937)	320	97,951	731	[illegible]	80,819	522	538,913	1,111	511,808	485,891	484	93,379	2,641	519,332	80,575
	(1936)	323	84,234	675	[illegible]	68,752	524	503,306	1,136	534,652	478,776	481	87,541	2,388	497,766	76,277
	(1935)	316	83,353	604	[illegible]	61,795	526	484,994	1,186	513,345	462,070	490	90,904	2,375	476,275	79,290
	(1934)	313	77,865	560	[illegible]	58,209	514	473,045	1,151	474,539	447,014	496	83,010	2,404	453,425	71,157
	(1933)	295	75,635	502	[illegible]	56,726	537	450,616	925	483,118	435,527	511	80,410	2,220	406,921	69,047
	(1932)	301	74,151	461	[illegible]	57,054	568	442,691	1,014	461,752	417,232	514	81,531	2,110	384,265	71,089
	(1931)	291	69,170	391	[illegible]	52,681	576	419,232	846	388,984	394,938	508	77,373	1,932	345,230	62,862

	City					City-County					Total Governmental					Marginal No.
	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
Alabama	4	291	66	10,342	129	7	765	154	31,287	511	33	[illegible]	380	[illegible]	11,743	1
Arizona	1	15	5	363	4	..	...	..	.....	...	30	[illegible]	137	[illegible]	[illegible]	2
Arkansas	4	292	61	11,069	192	..	...	..	.....	...	13	[illegible]	91	[illegible]	[illegible]	3
California	4	150	44	7,766	117	3	2,368	50	18,942	1,940	117	[illegible]	1,217	[illegible]	[illegible]	4
Colorado	1	89	17	3,778	95	1	557	36	9,382	320	24	[illegible]	171	[illegible]	[illegible]	5
Connecticut	4	753	8	5,118	501	..	...	..	.....	...	22	[illegible]	18	[illegible]	[illegible]	6
Delaware	..	.....	...	.....	.....	..	...	..	.....	...	6	[illegible]	7	[illegible]	[illegible]	7
District of Columbia	5	2,981	135	23,216	2,252	..	...	..	.....	...	12	[illegible]	240	[illegible]	[illegible]	8
Florida	11	1,509	265	31,377	1,129	2	122	15	3,105	86	46	[illegible]	583	[illegible]	[illegible]	9
Georgia	7	1,615	231	50,780	1,188	7	604	136	23,630	435	40	[illegible]	566	[illegible]	[illegible]	10
Idaho	1	25	7	637	14	..	...	..	.....	...	10	[illegible]	76	[illegible]	[illegible]	11
Illinois	23	3,422	226	44,073	2,454	..	...	..	.....	...	80	[illegible]	608	[illegible]	[illegible]	12
Indiana	5	917	77	21,703	661	..	...	..	.....	...	65	[illegible]	600	[illegible]	[illegible]	13
Iowa	10	345	106	12,880	276	..	...	..	.....	...	35	[illegible]	210	[illegible]	[illegible]	14
Kansas	10	363	107	13,474	272	..	...	..	.....	...	40	[illegible]	260	[illegible]	[illegible]	15
Kentucky	5	312	76	12,379	212	4	1,050	79	15,315	707	32	[illegible]	260	[illegible]	[illegible]	16
Louisiana	1	100	..	317	34	..	...	..	.....	...	19	[illegible]	359	[illegible]	[illegible]	17
Maine	3	236	34	2,685	130	..	...	..	.....	...	11	[illegible]	36	[illegible]	[illegible]	18
Maryland	3	2,159	82	9,055	1,622	1	218	50	6,765	186	28	[illegible]	362	[illegible]	[illegible]	19
Massachusetts	26	6,393	530	89,497	4,159	1	25	..	301	15	72	[illegible]	[illegible]	[illegible]	[illegible]	20
Michigan	39	5,090	661	122,976	4,151	..	...	..	.....	...	96	[illegible]	872	[illegible]	[illegible]	21
Minnesota	24	1,382	271	26,636	1,156	4	1,012	72	9,769	647	69	[illegible]	441	[illegible]	[illegible]	22
Mississippi	3	92	26	2,056	47	2	164	45	5,686	95	25	[illegible]	195	[illegible]	[illegible]	23
Missouri	16	9,382	300	57,819	8,070	..	...	..	.....	...	42	[illegible]	403	[illegible]	[illegible]	24
Montana	..	.....	...	.....	.....	1	25	..	158	11	12	[illegible]	43	[illegible]	[illegible]	25
Nebraska	2	57	14	814	43	..	...	..	.....	...	18	[illegible]	88	[illegible]	[illegible]	26
Nevada	..	.....	...	.....	.....	..	...	..	.....	...	9	[illegible]	71	[illegible]	[illegible]	27
New Hampshire	2	130	15	3,213	72	..	...	..	.....	...	10	[illegible]	67	[illegible]	[illegible]	28
New Jersey	9	3,255	61	38,431	2,169	..	...	..	.....	...	51	38,537	507	[illegible]	[illegible]	29
New Mexico	1	50	20	3,018	43	..	...	..	.....	...	19	2,756	81	[illegible]	[illegible]	30
New York	48	22,938	1,009	302,346	19,507	..	...	..	.....	...	154	149,137	1,449	[illegible]	[illegible]	31
North Carolina	3	441	77	13,842	338	4	284	43	4,683	175	42	17,888	342	[illegible]	[illegible]	32
North Dakota	3	49	18	1,938	41	..	...	..	.....	...	12	3,917	46	[illegible]	[illegible]	33
Ohio	19	3,296	318	71,743	2,570	..	...	..	.....	...	79	44,659	335	[illegible]	[illegible]	34
Oklahoma	12	500	157	19,409	317	..	...	..	.....	...	43	12,308	358	[illegible]	[illegible]	35
Oregon	3	175	15	2,959	57	..	...	..	.....	...	22	8,625	97	[illegible]	[illegible]	36
Pennsylvania	8	4,421	87	50,392	2,605	1	56	..	77	51	76	65,057	342	[illegible]	[illegible]	37
Rhode Island	1	265	..	3,232	154	..	...	..	.....	...	7	6,889	38	[illegible]	[illegible]	38
South Carolina	3	531	66	17,730	425	1	31	11	856	11	27	9,698	397	[illegible]	[illegible]	39
South Dakota	3	72	24	2,774	55	..	...	..	.....	...	17	4,276	74	[illegible]	[illegible]	40
Tennessee	4	1,075	144	[illegible]	874	4	989	110	15,761	775	38	18,638	371	[illegible]	[illegible]	41
Texas	10	665	152	25,611	439	11	2,295	217	42,580	1,630	93	36,864	808	[illegible]	31,490	42
Utah	5	138	66	5,084	83	..	...	..	.....	...	14	2,580	126	[illegible]	2,315	43
Vermont	..	.....	...	.....	.....	..	...	..	.....	...	6	1,882	...	[illegible]	1,786	44
Virginia	6	1,082	49	8,414	810	1	31	10	900	16	38	23,160	364	113,086	19,943	45
Washington	1	80	..	40	11	..	...	..	.....	...	39	18,578	268	84,758	14,970	46
West Virginia	3	353	63	12,151	302	..	...	..	.....	...	22	7,977	127	31,738	6,945	47
Wisconsin	13	748	135	18,559	450	..	...	..	.....	...	89	24,556	273	73,832	21,713	48
Wyoming	..	.....	...	.....	.....	..	...	..	.....	...	13	3,176	124	26,561	2,338	49
Totals (1947)	309	78,184	5,968	1,208,346	63,498	58	10,767	1,028	188,771	7,657	1,917	1,030,205	[illegible]	4,201,314	904,603	
(1946)	303	76,534	5,836	1,109,378	57,283	61	11,291	1,009	185,569	7,863	1,962	1,082,734	[illegible]	4,798,163	937,932	
(1945)	259	77,365	5,637	1,011,874	56,418	62	11,266	966	162,410	7,768	2,183	1,356,718	[illegible]	6,399,113	1,114,414	
(1944)	265	79,687	5,491	[illegible]	57,417	56	9,887	737	133,721	6,594	2,262	1,352,278	[illegible]	6,515,220	1,016,183	
(1943)	351	77,879	5,215	912,628	57,848	61	11,321	842	162,628	7,773	2,284	1,276,189	[illegible]	6,262,827	983,732	
(1942)	351	79,252	4,847	999,687	63,982	61	10,157	645	126,395	7,157	1,924	1,015,781	[illegible]	4,069,675	858,638	
(1941)	337	78,060	5,015	999,539	61,019	57	9,702	583	130,960	7,149	1,864	965,511	[illegible]	3,662,602	831,892	
(1940)	332	79,045	4,390	986,859	61,641	61	11,297	676	126,487	7,401	1,767	873,689	[illegible]	2,863,004	781,672	
(1939)	320	77,231	4,210	951,295	61,766	67	10,026	589	127,886	7,513	1,740	845,146	[illegible]	2,731,375	764,048	
(1938)	317	75,180	4,089	928,924	61,006	65	9,808	542	130,762	7,110	1,728	815,136	[illegible]	2,607,280	736,687	
(1937)	321	79,308	3,937	897,685	64,928	63	9,138	499	111,619	6,667	1,722	788,749	[illegible]	2,509,925	718,880	
(1936)	332	78,950	3,947	885,058	65,508	61	9,809	496	108,873	7,320	1,721	763,840	[illegible]	2,452,859	696,835	
(1935)	328	73,322	3,742	809,051	60,551	64	10,139	510	111,398	8,025	1,724	741,712	[illegible]	2,293,052	674,921	
(1934)	328	71,931	3,650	792,887	59,891	68	11,138	548	113,860	8,729	1,719	717,888	[illegible]	2,159,065	645,000	
(1933)	314	69,639	3,627	762,613	57,865	69	9,143	541	172,696	6,909	1,776	691,473	[illegible]	2,155,638	626,074	
(1932)	358	69,551	3,529	767,096	57,582	63	8,530	510	106,812	6,281	1,804	679,367	[illegible]	2,049,333	610,168	
(1931)	301	61,351	3,478	680,529	40,851	77	11,318	615	108,150	11,766	1,816	641,524	[illegible]	1,833,078	569,301	

Hospital Service. Table F presents a complete statistical analysis from the standpoint of type of service and the agencies concerned, of the number of registered hospitals, their bed capacity, average daily census, number of bassinets and births, with total admissions to these hospitals.

Number of Patients Admitted

Comparative Totals
1946: 15,153,452
1947: 15,829,514

The trend toward increased use of hospital facilities is seen in the greater number of admissions to registered hospitals reported for 1947. Notwithstanding an appreciable drop in the bed capacity, 4.4 per cent more patients were admitted than during the 1946 period. If nongovernmental hospitals alone are considered, the increase is over 10 per cent. Excluding the federal hospitals, all other groups showed an increase in their rate. Admissions to nonprofit organization hospitals rose from 9,198,159 to 10,177,508, an increase of 979,349 patients; this category now accounts for 64.3 per cent of the total number of admissions. The federal hospitals reported a decrease of 664,585 in their admissions; neuropsychiatric hospitals and tuberculosis sanatoriums in the federal group, however, indicated 3 per cent and 22 per cent increases. Governmental hospitals, with 72.3 per cent of the bed capacity, had 4,204,344 admissions, or 26.5 per cent of the total; the nongovernmental hospitals, with 27.7 per cent of the beds, had 11,625,170 admissions, or 73.5 per cent. The

TABLE 1.—HOSPITAL FACILITIES BY STATES AND BY CONTROL: B. NONPROFIT ORGANIZATIONS

Marginal No.		Church Related (Nonprofit)					Nonprofit Associations					Total Nonprofit					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	11	1,113	231	50,492	837	16	1,415	185	33,692	1,035	27	2,528	416	84,184	1,872	1
2	Arizona	8	1,125	162	32,452	832	16	824	129	18,891	862	24	1,949	291	51,343	1,694	2
3	Arkansas	12	1,196	243	50,910	1,038	14	890	136	23,969	526	26	2,086	379	74,879	1,564	3
4	California	52	7,288	1,559	273,809	6,243	77	8,413	1,281	274,414	6,820	129	15,701	2,840	548,223	13,063	4
5	Colorado	29	2,799	508	95,079	2,339	24	2,247	129	29,123	1,497	53	5,046	637	124,202	3,836	5
6	Connecticut	7	1,850	359	51,780	1,103	39	6,054	972	159,799	4,770	46	7,904	1,331	211,579	6,173	6
7	Delaware	1	105	32	2,919	71	8	1,131	200	27,935	792	9	1,236	232	30,854	863	7
8	District of Columbia	4	884	167	34,834	712	10	1,899	384	80,738	1,461	14	2,783	551	115,572	2,173	8
9	Florida	9	1,218	293	41,537	896	37	2,295	409	61,949	1,544	46	3,513	702	103,486	2,440	9
10	Georgia	8	835	138	29,131	644	24	2,127	377	69,334	1,647	32	2,962	515	98,465	2,291	10
11	Idaho	12	902	222	33,228	730	6	137	36	3,038	92	18	1,039	258	36,266	822	11
12	Illinois	92	14,245	2,557	429,307	12,170	100	11,276	2,035	327,742	8,992	192	25,521	4,592	757,049	21,162	12
13	Indiana	29	5,181	1,061	171,937	4,331	20	1,663	337	56,080	1,322	49	6,844	1,398	228,017	5,653	13
14	Iowa	42	5,059	941	158,636	4,227	23	1,225	315	44,532	1,046	65	6,284	1,256	203,138	5,273	14
15	Kansas	39	3,706	797	118,318	3,141	26	1,201	239	34,825	839	65	4,907	1,036	153,143	3,980	15
16	Kentucky	16	2,192	417	76,554	1,871	32	2,063	339	59,517	1,482	48	4,255	756	136,071	3,353	16
17	Louisiana	11	1,832	358	82,590	1,563	23	1,877	249	53,060	1,240	34	3,709	607	135,650	2,803	17
18	Maine	7	551	101	16,325	427	31	1,974	401	55,145	1,508	38	2,525	502	71,470	1,935	18
19	[illegible]	9	1,891	262	45,712	1,565	31	4,828	630	107,887	3,841	40	6,719	892	153,599	5,406	19
20	[illegible]	16	3,743	523	79,907	3,113	111	11,833	2,090	303,387	8,947	127	15,576	2,613	383,294	12,060	20
21	Michigan	35	5,290	1,285	181,617	4,274	95	8,820	1,533	245,182	6,740	130	14,110	2,818	426,799	11,014	21
22	Minnesota	39	4,473	815	153,059	3,948	72	4,276	852	131,053	3,418	111	8,749	1,667	284,112	7,366	22
23	Mississippi	5	496	97	24,578	443	38	1,545	362	62,626	1,057	43	2,041	459	87,204	1,500	23
24	Missouri	39	6,822	1,137	192,739	5,895	35	2,993	474	70,733	2,378	74	9,815	1,611	263,472	8,273	24
25	Montana	25	2,054	411	65,166	1,624	9	362	89	10,710	278	34	2,416	500	75,876	1,902	25
26	Nebraska	30	2,785	570	89,686	2,301	12	643	146	23,889	503	42	3,428	716	113,575	2,804	26
27	Nevada	2	132	32	5,148	96	1	40	7	670	15	3	172	39	5,818	111	27
28	New Hampshire	4	461	76	14,855	361	24	1,529	346	45,361	1,119	28	1,990	422	60,216	1,483	28
29	New Jersey	17	3,529	598	95,012	2,853	79	9,405	1,861	245,250	6,933	96	12,934	2,459	340,262	9,786	29
30	New Mexico	14	946	176	27,322	677	8	401	46	8,236	207	22	1,347	222	35,558	884	30
31	New York	75	12,247	2,062	270,654	9,894	220	35,378	4,932	839,619	28,490	295	47,625	6,994	1,110,273	38,384	31
32	North Carolina	14	1,394	305	45,531	1,171	85	6,707	1,254	247,354	5,162	99	8,101	1,559	292,885	6,333	32
33	North Dakota	25	1,993	416	70,204	1,667	7	394	77	9,702	278	32	2,387	493	79,906	1,945	33
34	Ohio	46	8,067	1,470	278,172	7,185	96	9,873	1,843	333,612	8,129	142	17,940	3,313	611,784	15,314	34
35	Oklahoma	12	1,365	313	51,943	1,091	11	926	124	29,662	538	23	2,291	437	81,605	1,629	35
36	Oregon	18	2,518	508	88,861	2,131	15	908	173	30,141	688	33	3,426	681	119,002	2,819	36
37	Pennsylvania	39	5,802	1,055	144,225	4,873	203	30,039	4,887	777,825	25,017	242	35,841	5,942	922,050	29,890	37
38	Rhode Island	3	445	50	7,841	345	13	1,899	388	50,969	1,523	16	2,344	438	58,810	1,868	38
39	South Carolina	6	528	114	21,284	573	23	1,887	344	67,016	1,369	29	2,415	458	88,300	1,942	39
40	South Dakota	17	1,410	304	49,090	1,194	12	638	142	21,730	507	29	2,048	446	70,820	1,701	40
41	Tennessee	11	1,662	296	67,991	1,540	26	1,790	332	55,201	1,446	37	3,452	628	123,192	2,986	41
42	Texas	49	5,482	1,200	231,095	4,491	52	3,122	433	102,923	1,947	101	8,604	1,633	334,018	6,438	42
43	Utah	7	1,310	338	45,529	1,023	7	253	96	12,881	308	14	1,563	434	58,410	1,331	43
44	Vermont	3	230	48	7,468	239	19	1,902	269	34,796	1,597	22	2,132	317	42,264	1,836	44
45	Virginia	3	508	104	16,362	370	47	4,418	895	148,102	3,387	50	4,926	999	164,464	3,757	45
46	Washington	24	3,101	694	109,528	2,491	30	3,098	620	100,816	2,505	54	6,199	1,314	210,344	4,996	46
47	West Virginia	9	1,259	246	48,268	1,089	15	1,756	230	46,169	1,281	24	3,015	476	94,437	2,370	47
48	Wisconsin	63	7,831	1,475	244,047	6,752	39	2,173	454	70,595	1,688	102	10,004	1,929	314,642	8,440	48
49	Wyoming	3	65	19	2,157	33	4	114	28	4,769	64	7	179	47	6,926	97	49
	Totals (1947)	1,051	141,920	27,145	4,524,859	118,780	1,965	202,661	34,110	5,652,649	158,835	3,016	344,581	61,255	10,177,508	277,615	
	(1946)	1,050	138,096	26,256	4,098,042	115,358	1,942	198,885	33,120	5,100,117	153,580	2,992	336,981	59,376	9,198,159	268,938	
	(1945)	1,036	135,481	25,465	3,887,100	110,557	1,954	195,805	32,497	4,745,712	147,694	2,990	331,286	57,962	8,632,812	258,251	
	(1944)	1,020	133,030	24,948	3,707,991	105,940	1,961	195,624	31,854	4,596,048	144,328	2,981	328,714	56,802	8,304,039	250,268	
	(1943)	1,004	130,488	24,007	3,503,396	101,150	1,952	192,219	30,731	4,456,274	140,095	2,956	322,707	54,738	7,959,670	241,245	
	(1942)	977	126,141	22,262	3,211,162	94,521	1,949	190,150	29,154	4,252,486	141,633	2,926	316,291	51,416	7,463,648	236,154	
	(1941)	993	123,331	20,145	2,961,594	90,195	1,917	182,140	26,422	3,931,141	132,472	2,910	305,471	46,567	6,892,735	222,667	
	(1940)	998	120,809	18,561	2,679,876	85,007	1,903	177,681	24,978	3,574,974	125,757	2,901	298,490	43,539	6,254,850	210,764	
	(1939)	1,001	120,740	18,044	2,682,762	81,984	1,839	172,765	23,371	3,503,488	119,342	2,840	293,505	41,415	6,186,250	201,326	
	(1938)	981	119,521	17,320	2,531,796	80,576	1,776	169,980	22,523	3,316,310	117,558	2,757	289,501	39,843	5,848,106	198,134	
	(1937)	975	115,283	16,851	2,495,114	79,113	1,718	162,474	21,511	3,201,042	114,508	2,693	277,757	38,362	5,696,156	193,621	
	(1936)	969	113,288	16,360	2,286,064	74,037	1,742	162,586	21,238	2,972,708	107,510	2,711	275,854	37,598	5,258,772	181,547	
	(1935)	970	113,268	16,033	1,950,308	69,592	1,670	155,300	20,119	2,527,207	98,088	2,640	268,568	36,152	4,477,515	167,690	
	(1934)	970	113,263	16,067	1,786,522	63,851	1,676	154,449	20,184	2,377,213	93,216	2,646	267,712	36,251	4,163,735	157,067	
	(1933)	984	115,840	16,190	1,753,565	63,621											
	(1932)	1,001	117,555	16,125	1,918,214	70,119											
	(1931)	1,011	116,935	15,861	2,013,352	73,911											
	(1930)	1,017	116,846	15,615	....	75,162											
	(1929)	1,024	113,555	15,037	....	75,770											
	(1928)	1,056	114,613	13,190	....	......											
	(1927)	1,060	108,582	......	....	73,813											

corresponding percentages in 1946 were 33 and 67. These statistics should be considered on the basis of the type of service involved. For example, federal hospitals of the general type, with 9.2 per cent of the total number of beds, admitted 7.4 per cent of the total number of patients, a more equable proportion. When the type of service offered is considered, increases were noted in practically all categories. General hospitals increased the number of patients admitted from 14,051,508 to 14,665,195, a gain of 613,687 patients. Appreciable decreases were noted only in admissions to the group classified as institutional, from 144,664 in 1946 to 140,276 in 1947; a part of this decrease may be accounted for by change of classification of the reporting unit. Admissions to tuberculosis sanatoriums remained about constant, with 99,741 admissions for the previous period and 99,080 this year.

Of every 1,000 patients entering hospitals during the current reporting period, 926 were admitted to general hospitals, 18 entered neuropsychiatric institutions, 14 were admitted to related institutions including convalescent homes, 10 to isolation units, 7 to eye, ear, nose and throat, 6 to tuberculosis sanatoriums, 6 to maternity hospitals, 6 to children's, 4 to industrial and 3 to orthopedic hospitals. In considering the total volume of hospital service rendered, it should be noted that outpatient activities and newborn admissions are not included in the accompanying charts and tables. Comparative data will be found in tables 1 and 2 and other tables accompanying the text.

TABLE 1.—HOSPITAL FACILITIES BY STATES AND BY CONTROL: C. PROPRIETARY

TOTAL NONGOVERNMENTAL

Marginal No.		Individual and Partnership					Corporations (Profit Unrestricted)					Total Proprietary					Totals of Tables 1B and 1C					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	33	1,237	243	35,273	708	10	625	137	23,391	432	43	1,862	380	58,664	1,140	70	4,390	756	112,848	3,012	1
2	Arizona	1	250	160	8,110	162	1	28	..	60	20	2	278	160	8,170	182	26	2,227	451	59,513	1,576	2
3	Arkansas	26	780	192	26,603	425	1	10	10	2,166	39	27	820	202	28,769	464	53	2,966	581	103,648	2,028	3
4	California	90	3,014	504	90,564	2,356	42	2,264	369	68,582	1,772	132	5,278	873	159,146	4,128	261	20,979	3,713	707,369	17,101	4
5	Colorado	14	474	57	6,915	381	5	211	27	2,950	99	19	685	84	9,865	480	72	5,731	721	134,667	4,316	5
6	Connecticut	2	68	...	1,085	56	8	558	..	1,444	433	10	626	..	2,529	489	56	8,330	1,231	214,108	6,502	6
7	Delaware	..	.....	...	.....	...	1	15	6	290	7	1	15	6	290	7	10	1,251	238	31,144	570	7
8	Dist. Columbia	2	45	8	428	29	1	240	61	8,771	213	3	285	69	9,199	242	17	3,068	620	124,771	2,415	8
9	Florida	22	607	149	16,160	327	6	262	40	4,892	142	28	869	189	21,052	469	74	4,382	891	124,538	2,900	9
10	Georgia	40	1,231	206	37,546	775	10	430	116	20,819	314	50	1,661	322	58,365	1,089	52	4,623	837	156,840	3,280	10
11	Idaho	10	260	67	7,153	136	3	116	39	3,391	81	13	376	106	10,544	217	31	1,415	364	46,810	1,030	11
12	Illinois	31	962	113	12,817	691	11	1,205	77	19,016	961	42	2,167	190	31,833	1,652	237	27,638	4,782	758,882	22,514	12
13	Indiana	17	358	92	11,838	218	5	120	20	12,461	309	22	778	112	24,299	527	71	7,622	1,510	252,316	6,150	13
14	Iowa	28	588	191	17,052	403	5	171	33	3,913	125	33	762	224	20,965	528	98	7,016	1,480	221,103	5,860	14
15	Kansas	12	272	74	5,825	110	3	88	21	3,311	53	15	360	95	9,136	193	80	5,267	1,131	162,279	4,173	15
16	Kentucky	11	361	65	8,401	184	8	373	79	17,827	228	19	734	144	26,228	412	67	4,989	900	162,250	3,765	16
17	Louisiana	25	578	160	24,172	362	9	147	75	18,561	313	34	1,025	235	42,733	675	68	4,734	842	178,383	3,475	17
18	Maine	7	150	50	3,986	102	5	150	34	3,288	103	12	300	84	7,274	205	50	2,825	586	78,744	2,140	18
19	Maryland	11	396	9	2,751	327	3	120	30	2,482	80	14	516	39	5,233	407	51	7,235	931	158,532	5,813	19
20	Massachusetts	6	198	39	2,785	131	20	910	144	20,593	701	26	1,108	183	23,378	832	153	16,684	2,796	406,672	12,892	20
21	Michigan	22	477	118	10,299	321	7	418	..	3,465	352	29	895	118	13,764	673	159	15,005	2,936	440,563	11,057	21
22	Minnesota	18	300	90	7,550	198	8	773	18	21,582	673	26	1,073	108	32,132	871	137	9,822	1,775	316,244	8,237	22
23	Mississippi	23	831	147	28,435	467	1	18	..	321	10	24	849	147	28,756	477	67	2,890	606	115,960	1,977	23
24	Missouri	18	682	181	18,088	426	7	382	97	6,933	299	25	1,064	278	25,021	725	99	10,879	1,889	288,493	8,985	24
25	Montana	4	77	21	1,768	51	2	136	26	3,746	98	6	213	47	5,514	149	40	2,629	547	81,390	2,051	25
26	Nebraska	35	635	206	18,139	363	4	203	29	3,417	160	39	838	235	21,556	522	81	4,266	951	135,131	3,326	26
27	Nevada	2	73	16	2,509	35	..	.....	..	.....	...	2	73	16	2,509	35	5	215	55	8,327	146	27
28	New Hampshire	..	.....	...	.....	...	1	100	..	68	38	1	100	..	68	38	29	2,050	422	60,284	1,521	28
29	New Jersey	6	143	20	1,291	101	5	300	8	860	213	11	443	28	2,151	314	107	13,377	2,457	342,413	10,100	29
30	New Mexico	5	74	21	2,295	34	2	50	15	1,766	32	7	124	36	4,061	66	29	1,471	258	39,619	950	30
31	New York	41	1,599	337	32,097	1,197	33	3,679	635	89,202	2,756	74	5,278	972	121,299	3,953	369	52,903	7,966	1,231,572	42,437	31
32	North Carolina	19	528	98	15,130	400	4	298	18	4,964	216	23	826	116	20,094	616	122	8,927	1,675	312,979	6,919	32
33	North Dakota	2	33	12	1,286	25	..	.....	..	.....	...	2	33	12	1,286	25	34	2,420	505	81,192	1,370	33
34	Ohio	10	455	30	6,867	326	7	511	4	2,502	451	17	966	34	9,369	777	159	18,906	3,347	621,153	16,091	34
35	Oklahoma	43	1,245	324	47,355	729	8	279	46	10,223	209	51	1,524	370	57,578	938	71	3,815	807	139,183	2,567	35
36	Oregon	11	349	79	12,310	226	8	338	80	13,066	249	19	687	159	25,376	475	52	1,113	840	144,378	3,294	36
37	Pennsylvania	22	788	76	8,064	623	5	247	5	2,159	215	27	1,035	81	10,223	838	269	36,876	6,023	932,573	30,728	37
38	Rhode Island	..	.....	...	.....	...	..	.....	..	.....	...	..	.....	..	......	...	16	2,344	438	58,810	1,868	38
39	South Carolina	8	200	40	10,563	85	3	98	13	1,958	59	11	298	53	12,521	144	40	2,713	511	100,821	2,086	39
40	South Dakota	6	92	33	2,814	57	..	.....	..	.....	...	6	92	33	2,814	57	35	2,140	479	73,634	1,758	40
41	Tennessee	43	1,152	240	42,697	718	7	281	59	11,184	201	50	1,433	299	53,881	919	87	4,885	927	177,073	3,935	41
42	Texas	166	3,761	1,013	163,046	2,082	37	1,947	351	69,481	1,421	203	5,708	1,364	232,527	3,503	304	11,312	2,097	566,545	9,941	42
43	Utah	5	128	57	3,963	81	..	.....	..	.....	...	5	128	57	3,963	81	19	1,691	491	62,373	1,412	43
44	Vermont	2	41	16	205	7	..	.....	..	.....	...	2	41	16	205	7	24	2,173	333	42,400	1,843	44
45	Virginia	20	719	142	23,686	466	17	1,177	187	42,637	988	37	1,896	329	66,323	1,454	87	6,822	1,328	230,787	5,211	45
46	Washington	22	766	135	24,004	551	2	50	13	1,992	30	24	816	148	25,996	581	78	7,015	1,402	276,340	5,577	46
47	West Virginia	14	790	135	28,377	508	23	1,706	295	60,170	1,238	37	2,496	430	88,547	1,746	61	5,511	906	182,984	4,116	47
48	Wisconsin	21	400	118	10,629	221	7	425	37	5,679	363	28	825	155	16,308	587	130	10,829	2,084	330,950	9,027	48
49	Wyoming	8	158	53	5,151	61	1	19	8	697	12	9	177	61	5,848	73	16	356	108	12,774	170	49
	Totals (1947)	984	28,325	6,137	818,082	18,303	339	22,111	3,262	599,580	16,708	1,343	50,436	9,399	1,447,662	35,011	4,359	395,017	70,654	11,625,170	312,626	
	(1946)	980	28,116	6,114	817,301	17,114	346	20,883	2,927	539,829	15,470	1,326	48,999	9,041	1,357,130	32,584	4,318	385,980	68,417	10,555,289	301,522	
	(1945)	987	30,216	5,597	715,908	17,442	351	20,724	2,986	509,569	15,110	1,338	50,940	8,583	1,225,477	32,552	4,328	382,226	66,545	9,858,289	290,833	
	(1944)	1,011	27,301	5,648	678,965	16,972	357	21,652	3,052	508,624	16,031	1,368	48,953	8,700	1,187,589	33,023	4,349	377,667	65,502	9,491,628	283,291	
	(1943)	1,031	27,314	5,370	638,999	16,282	384	23,094	3,187	513,202	15,865	1,415	50,408	8,557	1,152,201	32,147	4,371	373,115	63,295	9,111,871	273,392	
	(1942)	1,089	27,996	5,147	576,466	15,715	406	23,759	3,057	495,821	15,521	1,495	51,755	8,204	1,072,287	31,236	4,421	368,016	59,620	8,535,935	267,590	
	(1941)	1,149	28,760	5,054	545,884	16,582	435	24,639	3,048	494,967	15,898	1,584	53,399	8,102	1,040,851	32,480	4,494	358,870	54,669	7,933,586	255,147	
	(1940)	1,174	28,958	4,820	500,040	15,049	449	25,108	3,021	463,654	15,686	1,623	54,066	7,841	963,694	30,735	4,524	352,556	51,380	7,218,544	241,499	
	(1939)	1,190	29,879	4,756	501,860	14,955	456	26,496	2,989	456,759	16,154	1,646	56,375	7,745	958,619	31,109	4,486	349,880	49,160	7,144,869	232,435	
	(1938)	1,188	30,193	4,557	495,553	15,255	493	26,550	3,236	470,136	15,630	1,681	56,743	7,793	965,689	30,885	4,438	346,244	47,636	6,813,795	229,019	
	(1937)	1,183	29,957	4,766	508,359	15,458	530	28,085	3,516	507,077	16,477	1,713	58,042	8,282	1,015,436	31,935	4,406	335,799	46,644	6,711,592	225,556	
	(1936)	1,204	28,496	4,356	437,797	13,672	550	28,511	3,629	497,457	16,462	1,754	57,007	7,985	935,254	30,134	4,465	332,881	45,583	6,194,026	211,681	
	(1935)	1,255	29,913	4,384	413,997	14,212	627	34,946	4,357	532,590	18,697	1,882	64,859	8,741	946,587	32,909	4,522	333,427	44,893	5,424,102	200,559	
	(1934)	1,310	29,429	4,391	366,313	12,046	629	33,072	4,038	458,303	15,985	1,939	62,501	8,429	824,616	28,031	4,585	330,213	44,680	4,988,351	185,093	
	(1933)	1,435	33,385	4,962	381,861	13,746											4,661	332,573	44,619	4,882,444	184,197	
	(1932)	1,522	25,759	5,094	428,256	16,309											4,758	334,987	44,572	5,178,598	198,277	
	(1931)	1,560	36,764	5,352	459,184	17,912											4,797	332,591	44,232	5,322,898	206,025	
	(1930)	1,620	38,557	5,233	....	19,948											4,907	330,143	43,281	....	212,615	
	(1929)	1,611	37,977	5,212	....	20,604											4,870	324,596	41,877	....	209,881	
	(1928)	1,699	39,710	4,843	....	......											5,039	325,500	37,641	....	......	
	(1927)	1,682	39,118	.....	....	21,779											4,998	308,149	.....	....	201,675	

TABLE 2.—HOSPITAL FACILITIES BY STATES AND BY TYPE OF SERVICE (Continued on next page)

Marginal No.		General					Nervous and Mental					Tuberculosis					Maternity					Industrial					Eye, Ear, Nose and Throat					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	76	[illegible]	1,055	[illegible]	3,984	8	10,325	51	21,492	9,724	8	627	2	1,207	530	3	83	67	1,659	35	..	...	..	....	...	..	...	..	....	...	1
2	Arizona	45	[illegible]	588	[illegible]	2,651	1	1,350	..	543	1,256	9	890	..	2,890	1,155	..	..	..	....	..	..	...	..	....	...	..	...	..	....	...	2
3	Arkansas	56	[illegible]	657	[illegible]	2,948	2	6,495	..	4,341	6,448	2	1,351	..	1,768	1,241	1	27	4	83	7	2	275	..	5,229	115	..	...	..	....	...	3
4	California	271	[illegible]	4,674	[illegible]	38,871	38	37,862	5	27,806	34,636	29	4,909	..	5,527	4,312	10	401	235	7,240	327	2	596	..	11,697	558	2	51	..	4,259	34	4
5	Colorado	66	[illegible]	858	[illegible]	8,349	8	14,405	..	7,044	15,388	12	1,106	..	803	852	2	85	10	247	31	2	47	..	792	17	..	...	..	....	...	5
6	Connecticut	40	[illegible]	1,331	[illegible]	5,837	16	12,070	1	5,417	11,551	7	1,708	..	1,360	1,287	1	140	6	96	32	..	...	..	....	...	..	...	..	....	...	6
7	Delaware	9	[illegible]	238	[illegible]	950	2	1,757	..	385	1,713	3	222	..	175	175	..	..	..	....	..	..	...	..	....	...	..	...	..	....	...	7
8	District of Columbia	17	[illegible]	722	[illegible]	5,871	2	7,219	6	1,420	6,769	1	532	..	500	507	2	181	132	5,786	110	..	...	..	....	...	1	100	..	6,919	66	8
9	Florida	96	[illegible]	1,423	[illegible]	6,859	5	6,305	5	4,367	5,964	6	1,365	..	1,686	1,094	2	55	40	1,269	37	..	...	..	....	...	..	...	..	....	...	9
10	Georgia	100	[illegible]	1,369	[illegible]	8,433	6	11,424	4	4,990	10,976	3	2,465	..	3,246	1,175	1	6	10	71	3	2	151	..	3,756	93	1	25	..	2,537	21	10
11	Idaho	36	[illegible]	426	[illegible]	1,403	3	1,836	..	360	1,711	1	42	.	36	36	1	26	14	105	15	..	...	..	....	...	..	...	..	....	...	11
12	Illinois	213	[illegible]	5,137	[illegible]	28,506	31	45,360	19	18,108	42,298	30	4,061	14	5,608	3,174	6	701	205	6,366	411	1	75	..	1,646	47	3	233	..	5,463	113	12
13	Indiana	98	[illegible]	2,110	[illegible]	8,867	14	15,831	..	4,542	15,317	10	1,561	..	1,942	1,301	..	..	..	....	..	1	50	..	478	24	1	12	..	1,376	3	13
14	Iowa	106	[illegible]	1,624	[illegible]	6,734	12	12,547	10	4,599	12,258	5	675	..	582	578	2	85	55	235	58	1	40	..	483	17	..	...	..	....	...	14
15	Kansas	101	[illegible]	1,344	[illegible]	6,256	8	8,870	..	5,470	8,137	2	451		383	398	2	70	46	178	35	2	190	..	4,160	122	..	...	..	....	...	15
16	Kentucky	72	[illegible]	1,118	[illegible]	5,328	10	11,089	2	8,283	9,505	6	1,241	..	1,786	910	2	51	40	668	48	1	90	..	2,511	46	1	38	..	155	20	16
17	Louisiana	69	[illegible]	1,185	[illegible]	7,345	6	8,314	1	3,286	8,044	5	478	..	568	299	1	61	15	114	58	1	60	..	872	30	1	85	..	5,855	62	17
18	Maine	49	[illegible]	604	[illegible]	2,916	6	4,041	12	2,266	3,839	4	457	..	482	340	1	16	6	22	12	..	...	..	....	...	..	...	..	....	...	18
19	Maryland	46	[illegible]	1,284	[illegible]	9,103	17	11,575	..	5,707	11,066	6	1,441	..	1,246	1,144	..	..	..	....	..	..	...	..	....	...	3	110	7	5,282	60	19
20	Massachusetts	137	[illegible]	3,045	[illegible]	17,838	31	32,856	14	12,817	32,807	22	4,315	1	5,019	2,838	6	414	334	8,427	298	..	...	..	....	...	1	201	..	6,372	137	20
21	Michigan	179	[illegible]	3,663	[illegible]	20,433	22	30,453	3	9,098	29,587	23	3,786	..	4,896	3,030	4	112	107	2,326	101	2	60	..	1,259	31	1	15	..	416	1	21
22	Minnesota	159	[illegible]	2,143	[illegible]	10,531	13	16,166	19	4,283	15,472	15	1,964	.	1,588	1,532	2	86	51	1,671	32	..	...	..	....	...	1	190	..	7,236	167	22
23	Mississippi	82	[illegible]	794	[illegible]	3,273	6	5,253	..	4,103	5,754	1	457	1	368	231	..	..	..	....	..	..	...	..	....	...	..	...	..	....	...	23
24	Missouri	90	[illegible]	1,934	[illegible]	10,637	16	15,925	1	4,334	15,042	6	2,394	..	3,010	1,673	8	501	352	6,572	329	3	141	..	9,717	289	1	65	..	443	45	24
25	Montana	47	[illegible]	573	[illegible]	2,417	1	1,850	..	220	1,853	1	250	..	233	216	..	..	..	....	..	1	85	..	2,226	61	..	...	..	....	...	25
26	Nebraska	86	[illegible]	996	[illegible]	3,991	6	5,990	6	1,263	6,005	1	200	..	254	147	1	45	25	192	48	..	...	..	....	...	..	...	..	....	...	26
27	Nevada	13	[illegible]	126	[illegible]	526	1	375	..	137	350	..	....	..	....	....	..	..	..	....	..	..	...	..	....	...	..	...	..	....	...	27
28	New Hampshire	33	[illegible]	489	[illegible]	1,731	2	3,247	..	979	3,128	2	188	..	146	118	..	..	..	....	..	..	...	..	....	...	..	...	..	....	...	28
29	New Jersey	85	[illegible]	2,559	[illegible]	14,993	23	25,834	12	9,599	24,852	15	3,770	..	4,214	2,889	3	435	416	11,045	337	..	...	..	....	...	1	65	..	2,841	38	29
30	New Mexico	35	[illegible]	338	[illegible]	1,344	4	1,170	..	456	1,066	6	839	1	1,744	611	..	..	..	....	..	2	104	..	1,631	42	..	...	..	....	...	30
31	New York	327	[illegible]	8,825	[illegible]	56,270	55	108,527	43	29,501	103,674	51	11,012	12	11,211	8,843	11	642	463	22,731	570	2	46	..	624	22	7	679	..	33,327	397	31
32	North Carolina	125	[illegible]	1,994	[illegible]	8,506	8	9,088	2	3,803	8,631	19	3,890	..	6,324	3,035	1	50	18	143	31	1	50	..	932	35	2	52	..	4,182	36	32
33	North Dakota	41	[illegible]	539	[illegible]	2,247	2	3,138	..	475	2,987	1	350	..	203	234	1	56	6	90	24	..	...	..	....	...	..	...	..	....	...	33
34	Ohio	152	[illegible]	3,715	[illegible]	19,429	26	34,184	1	11,716	30,971	23	3,237	..	3,747	2,522	7	200	166	6,908	222	1	18	..	248	8	..	...	..	....	...	34
35	Oklahoma	97	[illegible]	1,099	[illegible]	4,276	7	8,513	..	3,852	9,520	4	620	.	1,483	484	2	47	40	462	11	..	...	..	....	...	..	...	..	....	...	35
36	Oregon	58	[illegible]	926	[illegible]	4,483	5	6,456	..	2,541	6,073	4	498	..	567	360	1	7	9	143	6	..	...	..	....	...	..	...	..	....	...	36
37	Pennsylvania	226	[illegible]	6,187	[illegible]	36,446	40	47,340	..	11,702	46,037	15	4,958	..	3,478	3,333	8	452	134	3,380	371	..	...	..	....	...	3	323	6	10,468	239	37
38	Rhode Island	13	[illegible]	297	[illegible]	2,801	4	4,253	4	1,138	4,014	4	991	..	3,659	585	1	175	175	8,550	160	..	...	..	....	...	..	...	..	....	...	38
39	South Carolina	55	[illegible]	867	180,754	4,605	3	4,987	1	2,471	4,877	5	834	..	917	661	..	..	..	....	..	..	...	..	....	...	1	15	..	439	3	39
40	South Dakota	46	[illegible]	533	83,742	2,202	3	3,328	..	743	3,012	2	322	..	508	259	..	..	..	....	..	..	...	..	....	...	..	...	..	....	...	40
41	Tennessee	88	[illegible]	1,264	259,007	8,792	12	9,551	8	7,397	8,850	7	1,123	1	1,598	852	..	..	..	....	..	..	...	..	....	...	6	134	..	8,882	62	41
42	Texas	337	[illegible]	3,755	746,498	18,203	17	20,809	..	12,440	20,166	16	2,705		3,971	1,900	3	69	48	1,204	44	5	520	..	8,718	276	4	64	..	4,350	23	42
43	Utah	27	2,299	591	75,437	1,797	2	1,800	..	487	1,799	1	96	..	115	65	1	23	26	1,002	19	..	...	..	....	...	..	...	..	....	...	43
44	Vermont	23	1,629	333	45,831	1,310	3	2,258	..	647	2,181	3	156	..	268	134	..	..	..	....	..	..	...	..	....	...	..	...	..	....	...	44
45	Virginia	94	14,189	1,678	316,173	9,808	11	13,571	12	10,105	13,654	7	1,477	..	1,431	1,241	..	..	..	....	..	1	16	..	80	3	3	74	..	5,292	26	45
46	Washington	89	13,294	1,698	308,653	9,537	7	9,899	..	3,873	9,149	11	1,515	..	2,997	1,275	2	61	30	216	50	..	...	..	....	...	..	...	..	....	...	46
47	West Virginia	66	6,832	1,018	207,355	5,151	7	4,752	..	2,061	4,567	5	1,339	..	1,171	1,055	..	..	..	....	..	..	...	..	....	...	..	...	..	....	...	47
48	Wisconsin	138	13,551	2,325	384,992	11,171	50	18,672	17	8,138	17,208	21	2,417	..	2,141	1,909	1	76	15	251	51	..	...	..	....	...	..	...	..	....	...	48
49	Wyoming	25	1,535	232	38,162	802	3	1,963	..	1,149	1,683	1	34	..	24	23	..	..	..	....	..	..	...	..	....	...	..	...	..	....	...	49
	Totals (1947)	4,539	[illegible]	82,303	14,665,195	[illegible]	585	680,913	259	291,954	651,578	441	81,328	32	[illegible]	62,575	100	5,442	3,312	100,382	3,929	33	2,914	..	57,110	1,869	44	2,534	13	116,563	1,553	
	(1946)	4,523	[illegible]	79,534	14,051,508	[illegible]	575	674,930	322	271,209	635,769	450	83,187	36	[illegible]	61,931	101	5,392	3,426	82,191	3,777	34	2,950	..	56,061	1,838	46	2,749	16	111,417	1,710	
	(1945)	4,744	[illegible]	78,919	15,228,270	[illegible]	563	657,393	295	248,870	624,349	449	78,774	51	[illegible]	59,767	106	5,656	3,544	77,078	3,741	36	2,963	..	58,394	1,847	42	2,664	8	108,531	1,615	
	(1944)	4,833	[illegible]	76,570	15,060,403	[illegible]	566	648,745	206	226,393	618,951	453	79,848	38	[illegible]	63,025	107	5,762	3,708	81,964	3,805	39	2,893	6	55,974	1,789	42	2,695	6	102,898	1,489	
	(1943)	4,885	[illegible]	72,839	14,454,638	[illegible]	575	650,993	210	208,677	619,447	455	79,860	112	[illegible]	65,302	112	6,085	3,800	84,974	3,908	41	3,226	2	61,249	1,920	40	2,421	6	99,948	1,322	
	(1942)	4,557	[illegible]	67,115	11,634,288	[illegible]	580	640,118	216	214,117	609,773	468	82,372	116	[illegible]	70,005	113	5,903	3,777	80,375	4,171	36	2,896	2	46,723	1,608	42	2,546	10	100,544	1,397	
	(1941)	4,518	[illegible]	61,732	10,646,947	[illegible]	596	638,144	219	208,592	603,179	477	82,365	99	[illegible]	70,577	116	5,318	3,573	64,874	3,472	39	2,960	14	49,201	1,662	41	2,502	4	97,043	1,388	
	(1940)	4,432	[illegible]	58,073	9,219,496	[illegible]	602	621,284	161	190,376	590,712	479	78,246	44	[illegible]	67,007	116	5,047	3,380	60,518	3,534	33	2,792	3	41,835	1,504	41	2,470	4	97,853	1,343	
	(1939)	4,356	[illegible]	55,183	9,018,316	[illegible]	600	606,284	110	190,249	577,103	480	75,972	38	[illegible]	65,487	118	5,533	3,196	59,381	3,552	40	3,215	5	45,085	1,622	41	2,467	..	99,291	1,329	
	(1938)	4,286	[illegible]	52,924	8,545,930	[illegible]	592	591,822	137	198,703	562,337	493	76,022	41	[illegible]	66,242	120	5,969	3,361	66,145	3,699	37	2,992	2	42,666	1,482	38	1,992	..	90,863	1,080	
	(1937)	4,245	[illegible]	51,668	8,349,773	[illegible]	579	570,616	124	195,624	540,906	508	76,751	33	[illegible]	64,800	114	5,466	3,487	59,919	3,480	36	2,835	..	41,028	1,549	39	1,946	3	95,241	1,115	
	(1936)	4,207	[illegible]	49,604	7,755,848	[illegible]	584	548,952	109	184,936	524,993	500	73,692	36	[illegible]	63,266	125	6,402	3,846	67,925	4,065	44	3,159	10	41,862	1,536	43	2,118	32	99,273	1,113	
	(1935)	4,257	[illegible]	48,757	6,875,182	[illegible]	592	529,311	132	173,009	507,269	496	70,373	58	[illegible]	60,738	121	6,141	3,825	66,693	3,582	52	3,421	11	41,432	1,576	44	2,263	11	97,181	1,089	
	(1934)	4,198	[illegible]	47,856	6,201,556	[illegible]	614	518,845	84	172,415	488,481	495	70,063	..	[illegible]	59,689	130	7,625	4,131	76,980	4,647	113	5,575	343	69,609	2,423	55	2,793	19	103,720	1,265	
	(1933)	4,237	[illegible]	47,008	6,071,512	[illegible]	621	498,955	..	170,833	474,787	497	70,682	..	[illegible]	60,301	134	7,976	4,660	82,250	4,857	118	5,923	364	69,748	2,620	56	2,622	20	108,565	1,195	
	(1932)	4,305	[illegible]	46,588	6,303,573	[illegible]	624	479,548	..	169,851	455,473	512	69,676	..	[illegible]	59,522	136	7,558	4,696	93,459	4,810	122	6,078	390	79,715	2,883	58	2,718	29	116,527	1,357	
	(1931)	4,309	[illegible]	45,434	6,321,861	[illegible]	587	451,245	..	....	427,135	509	65,923	..	[illegible]	56,088	145	8,078	5,032	91,496	4,737	142	6,476	438	93,415	3,118	64	2,774	27	113,762	1,444	

TABLE 2.—HOSPITAL FACILITIES BY STATES AND BY TYPE OF SERVICE—(Continued)

Marginal No.		Children's					Orthopedic					Isolation					Convalescent and Rest					Hospital Departments of Institutions					All Other Hospitals					Totals					Marginal No.
		Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1	Alabama	1	62	..	1,778	42	1	50	..	179	37	1	900	..	15,734	350	1	16	..	400	10	4	119	1	2,671	34	..	...	..	....	...	103	18,144	1,176	2	14,755	1
2	Arizona	..	...	..	....	...	1	50	..	295	48	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	56	6,342	588		5,110	2
3	Arkansas	1	76	7	743	64	..	...	..	....	...	1	900	4	10,038	235	..	...	..	....	...	..	...	..	....	...	1	215	..	323	184	63	13,084	672	1	11,242	3
4	California	4	389	..	9,225	284	2	125	..	2,422	121	2	151	15	255	59	7	224	..	884	182	9	925	1	14,412	553	2	142	..	91	134	318	94,607	4,930	1,1	80,081	4
5	Colorado	1	190	15	9,507	148	..	...	..	....	...	..	...	..	....	...	1	23	..	74	23	4	125	..	1,439	51	..	...	..	....	...	96	25,469	892	2	24,859	5
6	Connecticut	..	...	..	....	...	1	175	..	221	114	..	...	..	....	...	1	110	..	952	78	8	792	9	5,169	384	4	417	2	851	316	78	22,855	1,349	2	19,599	6
7	Delaware	..	...	..	....	...	1	85	..	156	48	..	...	..	....	...	..	...	..	....	...	1	378	7	265	365	..	...	..	....	...	16	3,734	245		3,251	7
8	District of Columbia	1	222	..	7,731	169	..	...	..	....	...	..	...	..	....	...	1	22	..	65	15	3	300	..	2,448	174	1	172	..	39	172	29	16,321	869	1	13,853	8
9	Florida	..	...	..	....	...	3	210	..	914	148	1	350	6	2,300	250	3	126	..	845	75	3	143	..	2,400	55	1	62	..	61	35	120	18,189	1,474	2	14,517	9
10	Georgia	1	40	4	1,104	33	2	229	..	1,110	197	1	846	16	13,766	411	1	70	..	585	59	3	235	..	4,770	82	1	80	..	264	51	122	27,228	1,403	3	21,534	10
11	Idaho	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	41	3,795	440		3,165	11
12	Illinois	3	412	..	4,450	221	4	180	..	381	147	3	648	..	8,095	219	11	528	..	2,645	403	9	3,655	15	9,876	2,307	3	446	..	4,032	322	317	91,733	5,390	9	78,171	12
13	Indiana	..	...	..	....	...	..	...	..	....	...	1	112	..	1,860	48	3	300	..	7,423	200	7	639	..	4,176	243	1	22	..	214	16	136	29,449	2,110	3	26,030	13
14	Iowa	..	...	..	....	...	..	...	..	....	...	1	26	1	291	6	1	18	..	51	13	4	270	.	3,109	110	1	30	..	422	10	133	22,188	1,690	2	19,775	14
15	Kansas	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	4	189	1	2,454	37	1	60	..	857	10	120	18,362	1,391	2	14,998	15
16	Kentucky	1	75	..	1,597	45	2	125	..	275	114	1	150	..	3,304	93	..	...	..	....	...	2	170	..	1,794	87	1	100	..	100	98	99	20,662	1,160	2	16,291	16
17	Louisiana	..	...	..	....	...	1	60	..	102	35	..	...	..	....	...	1	33	..	145	10	1	110	..	1,167	47	1	558	..	80	379	87	20,555	1,201	2	16,309	17
18	Maine	1	90	..	380	58	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	61	8,400	622		7,165	18
19	Maryland	..	...	..	....	...	2	215	..	735	166	1	110	2	1,110	62	2	111	..	277	84	4	274		1,093	190	1	152	.	22	130	82	26,032	1,293	2	22,014	19
20	Massachusetts	4	551	28	10,605	372	5	535	..	611	299	4	139	..	737	37	2	52	..	56	36	9	645	10	6,143	458	4	410	.	1,129	350	225	64,774	3,432	5	55,470	20
21	Michigan	1	225	..	5,577	166	2	146	4	452	93	4	293	31	4,577	138	7	415	..	1,390	195	7	838	..	5,462	677	3	150		3,421	128	255	64,004	3,808	6	54,583	21
22	Minnesota	1	82	..	2,260	66	4	454	..	1,181	390	..	...	..	....	...	5	368	..	2,313	301	6	252	..	2,541	122	..	...	..	....	...	206	32,448	2,216	3	28,613	22
23	Mississippi	..	...	..	....	...	..	...	..	....	...	2	750	6	15,440	597	..	...	..	....	...	1	75	..	973	3	..	...	..	....	...	92	11,565	801	1	9,661	23
24	Missouri	2	274	..	5,397	267	2	150	..	512	105	1	142	5	3,945	105	2	60	..	273	34	8	3,256	..	5,110	2,403	2	123	..	784	93	141	36,317	2,292	3	31,682	24
25	Montana	..	...	..	....	...	1	24	17	304	28	1	25	..	158	11	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	52	5,502	590	.	4,586	25
26	Nebraska	..	...	..	....	...	1	110	..	852	79	..	...	..	....	...	2	84	..	175	76	2	35	12	357	11	..	...	..	....	...	99	11,642	1,039	1	10,357	26
27	Nevada	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	14	1,133	126		876	27
28	New Hampshire	..	...	..	....	...	..	...	..	....	...	1	51	..	265	23	..	...	..	....	...	1	53	..	589	9	..	...	..	....	...	39	5,912	489		5,009	28
29	New Jersey	1	70	..	1,908	36	7	484	..	2,559	290	6	1,240	4	3,736	553	5	330	..	674	246	10	480	3	3,873	310	2	61	..	298	45	158	51,034	2,994	4	44,589	29
30	New Mexico	..	...	..	....	...	1	100	..	412	65	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	48	4,227	339	.	3,128	30
31	New York	5	578	..	2,656	311	10	1,084	..	4,567	885	7	1,225	2	12,304	516	12	1,269	..	8,551	825	20	4,513	70	14,636	3,451	16	2,570	..	11,781	2,500	523	202,040	9,415	1,6	178,268	31
32	North Carolina	1	40	..	1,414	23	2	188	..	555	176	2	401	3	9,288	271	..	...	..	....	...	3	249	..	2,278	67	..	...	..	....	...	164	26,765	2,017	396,987	20,811	32
33	North Dakota	..	...	..	....	...	..	...	..	....	...	1	8	6	66	14	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	46	6,337	351	80,211	5,506	33
34	Ohio	3	477	..	15,623	308	3	134	..	300	88	..	...	..	....	...	7	129	..	1,062	303	12	972	..	9,719	468	4	744	.	3,309	639	238	63,565	3,882	760,287	55,159	34
35	Oklahoma	..	...	..	....	...	2	75	..	1,328	68	1	160	12	4,657	111	..	...	..	....	...	4	223	14	4,798	45	..	...	..	....	...	117	16,123	1,165	204,968	14,527	35
36	Oregon	..	...	..	....	...	1	60	..	332	58	2	161	2	1,200	64	..	...	..	....	...	3	92	..	1,681	21	.	...	..	....	..	74	12,738	937	175,690	11,068	36
37	Pennsylvania	5	497	1	12,383	363	4	495	..	551	261	6	1,546	17	5,905	337	14	789	20	2,975	508	17	1,062	..	8,318	691	7	927	..	2,480	779	345	101,933	6,365	1,066,665	89,368	37
38	Rhode Island	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	1	70	..	50	60	23	9,233	476	73,447	7,629	38
39	South Carolina	..	...	..	....	...	2	78	..	495	65	1	250	40	6,000	180	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	67	12,411	908	191,076	10,391	39
40	South Dakota	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	1	35	..	219	18	..	...	..	....	...	52	6,416	553	85,212	5,491	40
41	Tennessee	1	60	25	1,867	48	5	216	..	2,009	172	2	450	..	9,359	193	..	...	..	....	...	4	844	..	1,406	563	.	...	..	....	..	125	23,523	1,298	292,125	19,532	41
42	Texas	1	37	..	299	17	3	127	2	826	82	3	525	..	15,254	407	2	165	..	105	125	5	365	..	4,174	170	1	18	..	780	15	397	51,176	3,805	798,718	41,431	42
43	Utah	1	33	..	104	27	1	20	..	32	20	..	...	..	....	...	..	...	..	....	...	..	...	.	....	...	..	...	..	....	...	33	4,271	617	77,177	3,727	43
44	Vermont	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	..	..	....	...	1	12	..	123	4	..	...	..	....	...	30	4,055	333	46,869	3,629	44
45	Virginia	..	...	..	....	...	2	134	..	185	88	2	250	2	7,047	189	..	...	..	....	...	5	259	..	3,560	145	..	...	..	....	...	125	29,901	1,692	343,873	25,154	45
46	Washington	..	...	..	....	...	2	156	..	1,751	136	2	160	2	1,000	42	1	275	..	589	261	3	233	..	2,019	94	..	..	..	....	...	117	25,593	1,730	321,098	20,547	46
47	West Virginia	..	...	..	....	...	2	245	..	920	115	1	207	7	4,359	139	..	...	..	....	...	2	113	8	1,856	43	..	...	..	....	..	83	13,488	1,033	217,722	11,061	47
48	Wisconsin	1	150	..	4,915	119	..	...	.	....	...	3	305	..	1,370	50	1	83	..	40	83	4	171	..	2,935	149	..	...	..	....	...	219	35,425	2,357	404,782	30,740	48
49	Wyoming	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	..	....	...	..	...	.	....	...	..	...	..	....	...	29	3,532	232	39,335	2,508	49
	Totals ([illegible])	41	4,630	80	[illegible]	3,277	82	6,510	23	28,124	4,738	65	12,556	183	163,300	5,478	93	5,840	20	[illegible]	4,206	104	22,516	151	[illegible]	[illegible]	59	7,577	[illegible]	34,268	[illegible]	6,276	1,425,222	86,378	15,[illegible]	1,217,229	
	([illegible])	42	4,490	110	[illegible]	3,257	82	6,518	19	26,960	4,700	70	11,497	220	146,836	5,249	97	6,579	30	[illegible]	3,852	202	21,253	128	[illegible]	[illegible]	58	7,808	4	34,231	[illegible]	6,280	1,468,714	84,145	15,[illegible]	1,239,454	
	([illegible])	44	4,770	81	[illegible]	3,495	83	6,679	19	29,154	4,781	63	8,406	87	99,509	3,223	102	9,556	32	[illegible]	7,009	165	17,720	52	[illegible]	[illegible]	111	21,614	40	61,621	[illegible]	6,511	1,738,914	83,131	16,[illegible]	1,405,247	
	([illegible])	44	4,459	39	[illegible]	3,096	84	6,861	10	29,435	4,673	61	8,300	67	45,357	2,564	109	13,825	31	[illegible]	7,003	216	24,484	97	[illegible]	[illegible]	57	6,252	10	43,265	[illegible]	6,611	1,729,915	80,791	16,[illegible]	1,299,474	
	([illegible])	40	4,194	19	[illegible]	2,705	84	7,025	..	34,871	5,020	55	8,313	44	49,570	3,219	126	12,453	42	[illegible]	8,211	203	20,224	56	[illegible]	[illegible]	39	3,884	4	28,188	[illegible]	6,655	1,649,254	77,134	15,[illegible]	1,257,124	
	([illegible])	43	4,314	44	[illegible]	2,908	79	7,313	29	36,178	5,516	52	6,279	33	37,936	2,087	139	9,793	40	[illegible]	8,011	191	18,532	61	[illegible]	[illegible]	30	3,501	2	27,370	[illegible]	6,345	1,383,827	71,448	12,[illegible]	1,126,028	
	([illegible])	52	6,067	337	[illegible]	4,130	82	7,382	10	38,270	5,691	52	6,356	21	36,399	2,093	136	9,630	36	[illegible]	7,967	219	27,037	118	[illegible]	[illegible]	30	3,122	..	22,761	[illegible]	6,358	1,324,381	66,163	11,[illegible]	1,087,039	
	([illegible])	46	4,781	137	[illegible]	3,263	84	7,062	15	37,294	5,858	57	7,350	25	40,513	3,114	142	8,721	35	[illegible]	6,776	226	21,702	62	[illegible]	[illegible]	33	3,230	..	23,463	[illegible]	6,291	1,226,245	61,939	10,[illegible]	1,026,171	
	([illegible])	48	5,151	146	[illegible]	3,524	82	7,706	..	36,891	5,752	60	7,100	6	30,279	2,655	139	8,521	36	[illegible]	6,918	232	25,014	40	[illegible]	[illegible]	30	2,790	4	18,882	[illegible]	6,226	1,195,026	58,764	9,[illegible]	996,483	
	([illegible])	52	5,410	115	[illegible]	3,761	75	7,125	..	33,386	5,620	54	6,145	17	34,017	2,511	121	5,846	34	[illegible]	4,305	235	21,808	112	[illegible]	[illegible]	63	10,925	4	36,165	[illegible]	6,166	1,161,380	56,747	9,[illegible]	965,706	
	([illegible])	51	5,359	111	[illegible]	3,714	75	6,880	10	33,015	5,563	50	6,187	23	37,295	2,633	120	5,566	38	[illegible]	3,965	240	21,821	61	[illegible]	[illegible]	65	9,000	8	44,569	[illegible]	6,128	1,124,518	55,566	9,[illegible]	944,436	
	([illegible])	52	5,279	150	[illegible]	3,422	71	6,333	10	30,199	5,127	61	6,896	84	37,053	2,886	130	6,059	38	[illegible]	4,191	282	25,213	299	[illegible]	[illegible]	84	10,033	17	50,608	[illegible]	6,189	1,096,721	54,225	8,[illegible]	908,516	
	([illegible])	51	4,874	116	[illegible]	3,115	68	6,394	12	28,280	5,010	66	7,384	70	47,001	3,301	135	6,233	34	[illegible]	4,137	275	20,793	231	[illegible]	[illegible]	89	11,778	48	47,593	[illegible]	6,246	1,075,139	53,310	7,[illegible]	875,510	
	([illegible])	58	5,386	146	[illegible]	3,629	69	6,359	12	28,076	5,003	71	7,430	43	38,949	2,931	125	5,456	45	[illegible]	3,380	312	21,982	310	[illegible]	[illegible]	94	8,132	35	36,730	[illegible]	6,334	1,048,101	52,026	7,1[illegible]	830,098	
	([illegible])	58	5,486	136	[illegible]	3,618	69	6,461	10	26,530	4,964	71	6,789	16	40,604	2,801	130	5,489	50	[illegible]	3,802	343	21,582	152	[illegible]	[illegible]	103	8,368	18	114,849	[illegible]	6,437	1,027,046	52,464	7,0[illegible]	810,271	
	([illegible])	58	5,353	172	[illegible]	3,629	69	6,582	..	31,862	5,229	79	7,311	33	41,874	2,858	132	5,867	53	[illegible]	3,931	393	23,924	133	[illegible]	[illegible]	74	4,193	12	38,962	[illegible]	6,562	1,014,354	52,232	7,2[illegible]	808,445	
	([illegible])	60	5,463	273	[illegible]	3,823	68	6,563	..	37,842	5,131	86	7,603	50	40,210	2,837	133	6,123	43	[illegible]	4,429	431	25,421	137	[illegible]	[illegible]	70	4,107	19	35,604	[illegible]	6,613	974,115	51,494	7,1[illegible]	775,396	

Average Daily Census

Comparative Totals
1946: 1,239,454
1947: 1,217,229

Following the decrease in bed capacity, the average daily census for 1947 fell off by 22,225 patients. The decline in bed capacity, as previously noted, was 23,492. Again, the loss was restricted to governmental hospitals, with the federal group showing a daily census of 168,133 in comparison to 213,246 for 1946. The city-county category also showed a decrease, from 7,863 to 7,657. All other hospitals, governmental and nongovernmental, reported an increase roughly paralleling the rise in bed capacity. The governmental hospitals, with 72.3 per cent of the bed capacity and 26.5 per cent of the total admissions, had an average daily census of 904,603, or 74.3 per cent of the daily patient load in all registered hospitals. In the nongovernmental classification, the church and other nonprofit hospitals reported an average of 277,615, or 22.8 per cent, while the proprietary hospitals, with a census of 35,011, had 2.9 per cent of the patient load. The general hospitals as a group reported an average census of 456,761 as compared with 496,527 for 1946, including 191,676 in the government division and 265,085 in the nongovernmental hospitals. There was a reduction of 50,648 in the governmental general hospitals, with the federal group responsible for 45,113 of the decrease. Nongovernmental general hospitals, on the other hand, showed an increase of 10,882 in the average daily census, a figure closely approximating the rise in bed capacity. The average daily census in neuropsychiatric hospitals continued to rise, with an increase of 15,809 over

TABLE G.—*Percentage of Beds Occupied*

	1945	1946	1947
According to Ownership or Control:			
Federal	71.7	80.6	78.9
State	93.7	92.3	93.5
County	75.9	78.1	81.4
City	72.9	74.8	77.4
City-county	69.3	69.7	71.1
Total governmental	82.1	86.6	87.8
Church	81.6	83.5	83.7
Nonprofit associations	75.4	77.2	78.4
Total nonprofit	77.9	79.8	80.6
Individual and partnership	57.7	60.9	61.6
Corporations (profit unrestricted)	73.0	74.1	75.6
Total proprietary	63.9	66.5	69.4
Total nongovernmental	76.0	78.1	79.1
According to Type of Service:			
General	72.0	77.4	77.1
Nervous and mental	94.9	94.2	95.7
Tuberculosis	75.8	74.4	76.9
Maternity	66.1	70.0	72.2
Industrial	62.3	61.7	64.1
Eye, ear, nose and throat	60.6	62.2	61.3
Children's	73.2	72.5	70.8
Orthopedic	71.5	72.1	72.7
Isolation	38.3	45.7	43.6
Convalescent and rest	73.3	58.5	72.0
Hospital departments of institutions	62.6	63.8	65.5
All other hospitals	88.1	93.2	86.1
Total all hospitals	80.8	84.4	85.4

TABLE H.—*Average Length of Stay per Patient in General Hospitals, 1945, 1946 and 1947*

	1945	1946	1947
According to Ownership or Control:			
Federal	31.1 days	30.3 days	29.8 days
State	18.7 days	17.6 days	16.0 days
County	19.1 days	17.3 days	16.6 days
City	14.4 days	13.6 days	13.2 days
City-county	13.4 days	12.1 days	11.7 days
All governmental general	26.2 days	22.1 days	19.5 days
Church	9.6 days	9.6 days	9.0 days
Other nonprofit associations	9.9 days	9.7 days	9.1 days
All nonprofit general	9.8 days	9.6 days	9.0 days
Individual and partnership	6.6 days	5.7 days	6.0 days
Corporations (profit unrestricted)	7.8 days	7.4 days	7.3 days
All proprietary general	7.1 days	6.3 days	6.5 days
All nongovernmental general	9.5 days	9.2 days	8.7 days
All general hospitals	15.9 days	12.9 days	11.4 days

TABLE J.—*Births in Hospitals According to Ownership or Control and According to Type of Service*

	1929	1945	1946	1947
According to Ownership or Control:				
Federal	2,296	61,874	42,674	46,081
State	9,125	32,075	38,877	51,700
County	17,527	75,133	88,702	119,620
City	45,787	125,011	139,753	191,576
City-county	8,806	20,756	24,940	32,605
Total governmental	83,541	315,149	334,946	441,582
Church	209,726	665,153	727,092	969,653
Fraternal	1,730	......	......	......
Nonprofit associations	.....	793,220	867,560	1,153,863
Industrial	4,327	......	......	......
Independent	283,136	......	......	......
Total nonprofit	.....	1,458,373	1,594,652	2,123,516
Individual and partnership	39,436	122,582	130,762	166,363
Corporations (profit unrestricted)	.....	73,563	76,013	105,678
Total proprietary	.....	196,145	206,775	272,041
Total nongovernmental	538,355	1,654,518	1,801,427	2,395,557
According to Type of Service:				
General	566,177	1,907,772	2,070,318	2,756,959
Maternity	53,019	60,445	60,298	76,679
Children's	862	.....	.....	.....
Hospital departments of institutions	277	135	126	163
All other hospitals	1,561	1,315	5,631	3,338
Total births in all hospitals	621,896	1,969,667	2,136,373	2,837,139

TABLE K.—*Hospital Births Classified by States*

	Births		Births
Alabama	39,489	Nebraska	26,410
Arizona	17,579	Nevada	2,513
Arkansas	21,102	New Hampshire	13,006
California	194,136	New Jersey	97,416
Colorado	27,947	New Mexico	9,152
Connecticut	44,729	New York	294,633
Delaware	6,856	North Carolina	67,708
District of Columbia	28,459	North Dakota	14,592
Florida	39,853	Ohio	170,694
Georgia	49,000	Oklahoma	36,355
Idaho	11,713	Oregon	30,540
Illinois	177,330	Pennsylvania	218,772
Indiana	84,399	Rhode Island	17,847
Iowa	49,966	South Carolina	28,177
Kansas	36,603	South Dakota	12,509
Kentucky	41,052	Tennessee	46,624
Louisiana	45,719	Texas	133,448
Maine	17,205	Utah	19,218
Maryland	43,193	Vermont	7,752
Massachusetts	94,469	Virginia	50,796
Michigan	134,498	Washington	52,653
Minnesota	69,511	West Virginia	30,526
Mississippi	23,309	Wisconsin	74,015
Missouri	65,416	Wyoming	5,549
Montana	12,701		
		Total	2,837,139

the previous year. Of the total number, 651,578, governmental hospitals reported 635,702 or 97.5 per cent and the nongovernmental 15,876 or 2.5 per cent. Federal hospitals showed an increase of 10,468, state institutions 3,995, county hospitals 653 and city hospitals 29. The average daily census in nongovernmental hospitals of this type remained about constant, 15,122 in 1946 and 15,876 in 1947. The neuropsychiatric hospitals have 42.1 per cent of the total number of beds and less than 2 per cent of admissions, but care for 52.7 per cent of the average daily patient load, as reflected by the daily census. Census figures indicate that there were on the average 53,102 patients in governmental type tuberculosis hospitals during the reporting period with an additional 9,473 in nongovernmental sanatoriums. This represents a minor increase of 644 patients over the 1946 figure, divided proportionately between the governmental and nongovernmental groups. No significant changes are noted in comparing average daily census figures for 1946 and 1947 in the other classifications, which account for less than 4 per cent of the total census figure.

NURSING PERSONNEL AND SCHOOLS OF NURSING EDUCATION

State	Student Nurses	Accredited Schools of Nursing	Schools Offering Affiliating Courses Only: Schools	Schools Offering Affiliating Courses Only: Students	Administrative Nursing Personnel	Full Time Instructors	Supervisors and Asst. Supervisors	Head Nurses and Asst. Head Nurses	General Duty Nurses: Full Time	General Duty Nurses: Part Time	Nurses Not Classified	Total Graduate Nurses	Private Duty Nurses	Practical Nurses and Attendants	Volunteer Nurses' Aides	Orderlies	Ward Maids
Alabama	790	16	2	25	135	43	222	271	870	63	50	1,657	305	1,896	128	152	596
Arizona	315	5	1	35	12	10	50	121	515	31	17	794	158	470	5	139	263
Arkansas	529	8	1	27	70	17	113	132	378	13	58	781	121	1,703	25	150	284
California	3,116	41	12	217	189	167	1,089	1,831	8,062	857	526	11,014	1,939	9,978	558	2,093	1,926
Colorado	1,057	17	3	76	118	75	232	376	1,147	151	77	2,176	246	956	37	400	310
Connecticut	1,982	18	1	111	131	111	293	553	1,660	165	220	3,382	883	1,793	152	451	565
Delaware	473	7	..	...	25	19	61	70	171	18	17	381	126	294	11	51	106
District of Columbia	785	9	1	179	61	52	191	368	1,247	179	66	2,167	417	1,970	224	649	591
Florida	878	14	2	11	151	14	206	403	1,361	163	112	2,448	510	1,393	187	652	573
Georgia	1,180	13	1	81	156	58	257	410	1,095	58	62	2,076	158	1,700	81	915	530
Idaho	382	8	..	...	10	17	58	95	177	46	18	451	61	323	6	81	126
Illinois	6,843	93	13	548	500	319	1,568	1,583	5,312	1,045	286	10,592	1,858	6,548	858	1,529	2,193
Indiana	2,248	27	..	...	176	97	310	548	1,729	343	48	3,281	598	1,780	284	519	810
Iowa	2,018	30	2	250	151	75	418	306	1,348	358	72	2,731	309	1,353	75	540	600
Kansas	1,315	34	2	10	155	63	360	371	889	189	94	2,121	244	2,073	60	259	380
Kentucky	979	13	1	29	115	46	210	259	979	63	105	2,077	293	1,825	278	609	474
Louisiana	1,585	16	1	82	99	67	283	108	970	78	77	1,982	359	1,182	87	584	682
Maine	775	12	1	18	88	30	138	172	534	163	56	1,121	236	507	60	233	202
Maryland	1,596	22	1	345	154	91	327	514	1,208	186	121	2,601	594	2,133	312	810	1,015
Massachusetts	5,266	60	15	966	433	237	1,022	1,674	3,591	602	510	8,109	1,868	4,788	502	1,461	1,372
Michigan	3,376	31	10	352	319	190	659	1,039	3,694	924	237	7,062	707	6,019	406	1,228	1,932
Minnesota	3,128	31	9	113	303	176	504	824	2,595	969	177	5,518	636	2,413	722	567	1,227
Mississippi	571	20	..	...	87	29	158	130	431	26	35	896	178	1,108	117	270	197
Missouri	2,197	28	13	225	207	81	511	649	1,641	341	244	3,674	723	3,151	209	485	823
Montana	601	11	2	57	59	21	101	121	363	93	39	797	105	117	15	28	93
Nebraska	1,068	13	4	86	100	39	212	167	611	186	55	1,370	171	1,363	58	179	170
Nevada	....	...	..	...	12	...	21	19	147	6	11	219	61	120	...	57	51
New Hampshire	531	13	..	...	51	28	127	144	368	92	35	848	139	111	27	129	260
New Jersey	3,152	42	5	210	234	153	587	942	2,672	592	200	5,380	1,214	2,994	163	747	873
New Mexico	67	2	..	...	13	8	52	61	305	31	15	515	47	249	18	193	265
New York	9,201	100	23	1,926	937	486	2,186	4,501	12,887	2,135	1,074	21,206	5,019	21,711	1,205	3,406	4,592
North Carolina	2,193	14	1	12	203	101	123	535	1,167	100	125	2,054	653	1,740	168	1,162	793
North Dakota	833	13	..	...	53	21	119	112	297	47	22	701	64	191	52	28	142
Ohio	5,778	61	10	112	351	286	860	1,403	4,066	1,110	165	8,214	1,665	5,910	411	1,806	2,421
Oklahoma	770	12	..	...	118	31	213	214	568	83	50	1,277	241	1,140	75	328	325
Oregon	851	11	2	72	95	39	207	181	937	191	112	1,762	246	1,113	22	198	233
Pennsylvania	11,126	118	17	898	485	447	1,422	2,070	6,695	920	350	12,389	3,211	5,990	623	1,560	1,863
Rhode Island	456	5	1	408	46	35	105	181	443	177	84	1,071	92	752	55	84	157
South Carolina	1,042	16	..	...	80	39	177	239	588	46	36	1,205	241	546	79	476	209
South Dakota	630	10	..	...	53	20	113	123	269	53	14	675	59	392	18	221	136
Tennessee	1,601	15	4	14	116	62	216	341	1,202	117	62	2,146	424	2,752	79	448	800
Texas	2,721	33	..	...	101	146	791	787	2,579	226	317	5,247	1,335	1,675	825	1,790	1,212
Utah	473	6	..	...	37	26	90	100	380	105	16	754	49	118	12	64	132
Vermont	387	9	..	...	12	13	81	51	246	70	71	577	128	336	17	20	90
Virginia	1,813	30	3	118	176	73	335	584	1,363	136	108	2,775	754	2,265	80	909	522
Washington	1,579	20	7	313	169	89	329	569	2,289	289	101	3,829	313	1,882	83	780	1,013
West Virginia	1,262	26	..	...	119	59	233	260	804	57	82	1,614	385	935	80	636	472
Wisconsin	1,768	24	6	431	216	77	186	191	2,169	607	138	4,178	403	3,229	98	569	832
Wyoming	23	2	1	...	27	6	42	38	238	31	7	389	27	379	8	90	78
Totals	94,133	1,212	193	9,083	8,509	4,428	18,801	27,387	86,218	15,041	6,970	167,351	30,996	119,746	9,688	31,813	35,630

Percentage of Beds Occupied

Comparative Totals
1946: 84.4
1947: 85.4

The accompanying table gives comparative data relating to bed occupancy for the past three years on the basis of hospital control and type of service. A slight rise, from 84.4 per cent to 85.4 per cent, is noted for the entire group. The range begins at 64.6 per cent in the individual and partnership group and rises to 93.5 per cent in state-controlled hospitals. Governmental hospitals as a group reported a percentage of 87.8, while that in the nongovernmental hospitals was 79.1. The difference between these figures is accounted for largely by the higher proportion of neuropsychiatric beds in the governmental category.

In considering bed occupancy from the standpoint of type of service, the range starts at 43.6 per cent for isolation hospitals, with the upper level 95.7 in the neuropsychiatric group. The comparatively low rate of admissions and long periods of hospitalization in the latter type of cases should be taken into consideration in evaluating these percentages. A range of 80 to 85 per cent probably represents the maximum limit of operating efficiency in a general hospital. Patient turnover, repairs, remodeling and reallocation preclude the possibility of a much higher proportion of beds being available. For practical purposes, a hospital indicating 80 to 85 per cent occupancy can be said to be operating at capacity. The low percentage of occupancy in the isolation group can be expected in view of the seasonal demand for beds of this type.

Average Length of Stay

Comparative Totals
1946: 12.9 days
1947: 11.4 days

The length of stay per patient in all general hospitals was reduced by 1.5 days from the 1946 average. The greatest reduction came in the governmental group, where a decrease of 2.6 days was noted. This reflects the reduced proportion of federal hospital beds, the stay in this type of hospital exceeding the other governmental classifications by 13.2 to 18.1 days. Nonprofit general hospitals reduced their average stay from 9.6 days to 9.0, while the proprietary general class showed a slight increase, from 6.3 in 1946 to 6.5 in 1947. Nongovernmental general hospitals continued their downward trend in this respect with the average patient remaining 8.7 days. The stay in governmental general exceeded that in nongovernmental hospitals by 10.8 days, and that in federal general hospitals exceeded the stay in the same group by 21.1 days. Comparative data for the past three years based on the type of control are given in detail in table H accompanying the text.

Births in Hospitals

Comparative Totals
1946: 2,136,373
1947: 2,837,139

A striking increase in the number of births in registered hospitals occurred during the 1947 reporting period. The 1946 report on hospital service indicated that, for the first time, hospital births reached the two million mark. Hospitals this year reported a total of 2,837,139 births, a record figure, representing an increase of 32.8 per cent. Births in governmental hospitals increased from 334,946 to 441,582 or 31.8 per cent; those in nonprofit association hospitals from 1,594,652 to 2,123,516, a gain of 33.1 per cent, and in the proprietary group from 206,775 to 272,041, or a 31.5 per cent gain. Over 97 per cent of the total hospital births reported occurred in general hospitals, with an additional 2.6 per cent taking place in maternity hospitals. Nongovernmental hospitals report over 84 per cent of hospital births, with the governmental group accounting for slightly less than 16 per cent. Complete statistics covering this aspect of hospital service is found in the accompanying table listing all reported births for the past three years and for the year 1929. The tremendous gain in the number of hospital births during the past 18 years is an outstanding example of the increased utilization of hospital facilities in the United States.

Nursing Service

A comparison of the data presented in the accompanying table on Nursing Personnel and Schools of Nursing with similar statistics for previous years, is of considerable interest. In 1941 there were 93,977 student nurses enrolled in accredited schools of nursing; a gradual yearly increase brought this figure to a peak total of 130,909 in 1945. In 1946 there was a decrease in the enrolment, and again in 1947 a further drop, to 94,133 students. There was also a slight drop in the number of accredited schools of nursing, from 1,229 to 1,212, during the past year.

On the other hand, it will be seen that the number of graduate nurses in hospital positions has continued to rise, with 167,354 reported in 1947, an increase of 20,752 over 1946. The classification General Duty Nurses, Full Time, accounts for 14,871 of this increase, and reference to the table Professional and Auxiliary Nursing Personnel will show that this increase was limited to nonfederal hospitals.

It was to be expected that the number of volunteer nurses' aides should continue to decrease, with 3,116 fewer reported in 1947. It is interesting to note that hospitals are making more and more use of those persons falling into the general classification of practical nurses and attendants, the figure for this group being 23,654 greater than in 1946.

PROFESSIONAL AND AUXILIARY NURSING PERSONNEL

		Nonfederal Hospitals					
	Federal Hospitals	General	Nervous and Mental	Tuberculosis	Others	Totals	Totals All Hospitals
Number of hospitals	401	4,222	849	118	686	5,875	6,276
Number of beds	213,204	460,195	612,826	72,470	66,527	1,212,018	1,425,222
Number of admissions	1,285,126	13,485,635	238,739	78,664	741,350	14,544,383	15,829,514
Average daily census	168,133	360,467	588,940	55,463	44,226	1,049,096	1,217,229
Professional Nursing Personnel							
Administrative nursing personnel	519	6,366	482	490	652	7,990	8,569
Full time instructors	209	3,856	190	62	111	4,219	4,428
Supervisors and assistant supervisors	990	15,272	1,154	559	826	17,811	18,801
Head nurses and assistant head nurses	3,506	19,900	2,031	851	1,099	23,881	27,387
General duty nurses:							
Full time	12,013	66,169	1,727	2,574	3,735	74,205	86,218
Part time	72	13,672	179	534	584	14,969	15,041
Nurses not classified	384	5,902	176	166	342	6,586	6,970
Total graduate nurses employed	17,693	131,137	5,939	5,236	7,349	149,661	167,354
Private duty nurses	63	29,882	289	240	522	30,933	30,996
Auxiliary Nursing Personnel							
Practical nurses and attendants	16,448	49,609	43,408	5,474	4,807	103,298	119,746
Volunteer nurses' aides	539	7,146	304	797	902	9,149	9,688
Orderlies	13,235	13,572	2,299	1,441	1,266	18,578	31,813
Ward maids	2,342	27,732	2,327	1,426	1,803	33,288	35,630

HOSPITALS REGISTERED BY THE AMERICAN MEDICAL ASSOCIATION

The following list contains the names of 6,276 hospitals, sanatoriums and related institutions that are located in the United States and 124 in Alaska, Canal Zone, Guam, Hawaii, Puerto Rico and Virgin Islands. The list for each state is presented in two groups: (1) hospitals and sanatoriums, and (2) related institutions. The related institutions include infirmaries, nursing homes and other institutions designed to give certain medical and nursing care in an ethical and acceptable manner, without giving a full hospital service.

Registration is a basic recognition extended to all hospitals and related institutions in accordance with the requirements outlined in the Essentials of a Registered Hospital officially adopted by the House of Delegates of the American Medical Association in 1928 and revised in 1947. *Approval,* on the other hand, is a designation extended by the Council on Medical Education and Hospitals to certain registered hospitals which meet the requirements for internship, residency or fellowship training; approval is also extended by the American College of Surgeons to those hospitals which unconditionally meet its minimum requirements for general standardization.

KEY TO SYMBOLS AND ABBREVIATIONS

★ Approved for training interns by the Council on Medical Education and Hospitals. List with detailed information is sent on request.

+ Approved for residencies or fellowships in the specialties. List with detailed information is sent on request.

▲ Approved by American College of Surgeons as meeting unconditionally its minimum requirements for general standardization.

○ School of nursing accredited by state board of nurse examiners.

⊙ Affiliated for nurse training on state accredited basis.

† Figures for "average census" and "admissions" are exclusive of newborn infants.

The column headed "Type of Service" indicates the general categories of patients treated:

Card	Cardiac
Chil	Children
Chr	Chronic
Conv	Convalescent and rest
Drug	Drug and alcoholic
Epil	Epileptic
ENT	Eye, ear, nose and throat
Gen	General
Incur	Incurable
Indus	Industrial
Inst	Institutional
Iso	Isolation
Mat	Maternity
MatCh	Maternity and children
MeDe	Mentally deficient
Ment	Mental
N&M	Nervous and mental
Orth	Orthopedic
SkCa	Skin and cancer
TB	Tuberculosis
Ven	Venereal

The column headed "Control" indicates control, or auspices under which the institution is conducted:

GOVERNMENTAL

Fed	Federal
IA	Indian Affairs
Army	United States Army
Navy	United States Navy
USPHS	United States Public Health Service
Vet	Veterans Administration
State	
City	
County	
City-County	
CyCo	

NONPROFIT ORGANIZATIONS

Church	
NPAssn	Nonprofit Association

PROPRIETARY.

Indiv	Individual
Part	Partnership
Corp	Corporation (unrestricted as to profit)

Corrections were made in the list to the time of going to press. Totals of the list, therefore, may vary from totals in Tables 1 and 2 which were necessarily compiled earlier.

ALABAMA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Albertville, 3,651—Marshall							
Sand Mountain Infirmary	Gen	Part	28	8	8	162	781
Alexander City, 6,640—Tallapoosa							
Russell Hospital	Gen	Corp	54	28	12	566	1,701
Altoona, 995—Etowah							
Klein Hospital	Gen	Indiv	27	20	3	58	821
Andalusia, 6,886—Covington							
Covington Memorial Hospital	Gen	Part	50	21	14	244	1,922
Hillcrest Infirmary	Gen	Corp	84	45	10	180	1,564
Anniston, 25,523—Calhoun							
Anniston Memorial Hosp.▲○	Gen	City	105	65	24	1,418	5,822
Atmore, 3,200—Escambia							
Atmore General Hospital	Gen	Indiv	21	7	7	99	563
Auburn, 4,652—Lee							
John Hodges Drake Hospital	Gen	State	65	19	9	173	1,321
Battles Wharf, 50—Baldwin							
Bayview Infirmary	Gen	Indiv	24	17	7	112	966
Bellamy, 450—Sumter							
Bellamy Hospital	Gen	NPAssn	16	3	2	33	166
Bessemer, 22,826—Jefferson							
Bessemer General Hospital▲	Gen	Corp	72	43	12	402	2,364
Birmingham, 267,583—Jefferson							
Baptist Hospitals+▲○	Gen	Church	190	171	26	1,300	8,545
Children's Hospital+▲⊙	Chil	NPAssn	62	12	..	...	1,778
East End Memorial Hospital	Gen	Corp	76	41	20	597	3,467
Hargis Clinic Hospital	Gen	Indiv	22	15	4	56	729
Hill Crest Sanitarium	N&M	Indiv	50	40	..	...	792
Jefferson-Hillman Hosp.★+▲○	Gen	State	561	412	80	3,299	21,928
Jefferson Tuberculosis Sanat.	TB	NPAssn	200	167	..	...	433
Mid-South Medical Center	Ven	State	900	350	..	...	15,734
Miss Quinn's Nursing Home	Conv	Part	16	10	..	...	400
Norwood Hospital★+▲○	Gen	Church	185	111	33	1,426	7,486
St. Vincent's Hospital+▲○	Gen	Church	135	113	15	663	5,460
Slossfield Maternity Hosp.	Mat	County	12	8	16	485	504
South Highlands Infirm.★▲○	Gen	Corp	140	135	27	991	5,613
"365" Crippled Children's Clinic▲	Orth	NPAssn	50	37	..	...	179

ALABAMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Brewton, 3,323—Escambia							
[illegible]spital	Gen	CyCo	30	19	6	216	1,105
[illegible]	Gen	CyCo	56	37	16	1,269	3,573
Decatur, 16,604—Morgan							
Decatur General Hospital	Gen	CyCo	89	37	13	467	1,663
Morgan County Tuberculosis Sanatorium	TB	County	147	115	..	...	275
Dothan, 17,194—Houston							
Frasier-Ellis Hospital▲○	Gen	NPAssn	66	50	10	180	1,577
Moody Hospital▲○	Gen	Indiv	75	50	18	553	2,560
East Tallassee, 3,600—Tallapoosa							
Community Hospital	Gen	NPAssn	30	24	12	385	1,513
Enterprise, 4,353—Coffee							
Gibson Hospital	Gen	NPAssn	61	28	8	284	1,842
Eufaula, 6,269—Barbour							
Salter Hospital	Gen	Indiv	54	33	10	297	1,856
Fairfield, 11,703—Jefferson							
Employees' Hospital of Tennessee Coal, Iron and Railroad Company★+▲	Gen	NPAssn	257	187	42	1,395	8,117
Fayette, 2,668—Fayette							
McNease and Robertson Hospital▲	Gen	Part	20	15	8	313	917
Florala, 2,999—Covington							
Lakeview Hospital	Gen	Indiv	30	6	4	61	319
Florence, 15,043—Lauderdale							
Eliza Coffee Memorial Hosp.	Gen	CyCo	92	62	26	1,163	5,422
Gadsden, 36,975—Etowah							
Baptist Memorial Hospital	Gen	Church	75	54	21	677	2,977
Etowah County Tuberculosis Sanatorium	TB	StateCo	22	17	..	...	53
Holy Name of Jesus Hosp.▲○	Gen	Church	120	106	20	1,133	7,924
Greensboro, 2,034—Hale							
Greensboro Hospital	Gen	Indiv	22	5	3	76	524
Greenville, 5,075—Butler							
Speir Hospital	Gen	Indiv	46	13	6	140	800
Stabler Infirmary	Gen	Corp	65	30	18	335	1,758

Key to symbols and abbreviations is on this page, preceding the tabulation

ALABAMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Guntersville, 4,398—Marshall							
Guntersville City Hospital....	Gen	City	50	21	12	251	1,992
Haleyville, 2,427—Winston							
Haleyville Hospital	Gen	Indiv	41	20	8	223	989
Huntsville, 13,050—Madison							
Huntsville Hospital	Gen	NPAssn	80	58	17	1,190	4,031
Jackson, 2,039—Clarke							
South Alabama Infirmary....	Gen	Indiv	18	12	6	141	566
Jasper, 6,847—Walker							
Peoples Hospital◇	Gen	County	80	44	32	493	2,718
Walker County Hospital.....	Gen	Corp	55	37	12	197	1,875
Lafayette, 2,138—Chambers							
Batson Memorial Sanatorium	TB	Counties	75	60	..	...	111
Wheeler Hospital	Gen	Part	32	27	7	161	1,220
Langdale, 1,800—Chambers							
Langdale Hospital	Gen	NPAssn	22	11	7	310	1,201
Mobile, 78,720—Mobile							
Allen Memorial Home........	Mat	Church	26	18	26	852	1,004
City Hospital★+▲◇	Gen	CyCo	290	204	42	1,151	8,604
Mobile County Tuberculosis Sanatorium	TB	NPAssn	45	31	..	...	33
Mobile Infirmary▲	Gen	NPAssn	185	167	43	1,855	7,416
Providence Hospital◇	Gen	Church	118	101	34	1,476	7,119
Station Hospital	Gen	Army	50	13	7	60	470
U. S. Marine Hospital▲.......	Gen	USPHS	201	133	..	...	2,439
Montgomery, 78,084—Montgomery							
Fitts Hill Hospital..........	Gen	Indiv	30	17	10	240	2,072
Fraternal Hospital	Gen	Indiv	42	33	12	96	1,275
Hubbard Hospital	Gen	Indiv	40	25	..	15	1,149
Kilby Prison Hospital........	Inst	State	40	28	..	...	753
Montgomery Tuberculosis Sanatorium	TB	NPAssn	100	92	..	...	217
Professional Center Hospital.	Gen	Indiv	32	...	10	Estab. 1947	
St. Margaret's Hospital+▲◇..	Gen	Church	158	126	25	1,516	8,431
Station Hospital▲	Gen	Army	175	92	15	402	3,389
Veterans Admin. Hospital▲..	Gen	Vet	300	262	..	...	3,815
Mount Vernon, 810—Mobile							
Searcy Hospital	Ment	State	1,751	1,718	..	...	581
Opelika, 8,487—Lee							
Opelika Hospital	Gen	CyCo	30	17	8	367	1,544
Pell City, 900—St. Clair							
Pell City Infirmary..........	Gen	Indiv	46	25	7	248	1,232
Prattville, 2,664—Autauga							
Prattville General Hospital..	Gen	Indiv	23	20	6	228	1,242
Roanoke, 4,163—Randolph							
Knight Sanatorium	Gen	Indiv	50	28	11	123	1,151
Russellville, 3,510—Franklin							
Betty Wilson Hospital.......	Gen	Indiv	23	18	3	152	1,532
Franklin County Hospital....	Gen	Part	35	...	10	Estab. 1947	
Scottsboro, 2,834—Jackson							
Hodges Hospital	Gen	Indiv	14	8	2	143	500
Tri-Counties Tuberculosis Sanatorium	TB	Counties	20	No data supplied			
Selma, 19,834—Dallas							
Goldsby King Memorial Hospital▲	Gen	Indiv	65	46	7	47	1,440
Selma Baptist Hospital▲.....	Gen	Corp	75	55	12	486	3,545
Station Hospital	Gen	Army	25	10	13	26	462
Vaughan Memorial Hospital▲	Gen	Corp	41	26	8	154	1,824
Sheffield, 7,933—Colbert							
Colbert County Hospital.....	Gen	CyCo	63	64	18	939	4,779
Sylacauga, 6,269—Talladega							
Drummond-Fraser Hospital▲..	Gen	Corp	36	26	12	248	1,631
Sylacauga Hospital▲◇	Gen	City	78	40	18	411	2,658
Talladega, 9,298—Talladega							
Citizens Hospital▲	Gen	NPAssn	82	43	20	679	3,121
Troy, 7,055—Pike							
Beard Memorial Hospital.....	Gen	Part	36	25	8	284	1,412
Edge Hospital	Gen	Indiv	60	35	10	281	1,728
Tuscaloosa, 27,493—Tuscaloosa							
Bryce Hospital	Ment	State	3,979	4,022	..	...	1,489
Druid City Hospital▲◇.......	Gen	CyCo	185	90	31	1,441	6,242
Stillman Institute Hospital..	Gen	Church	43	24	5	126	1,010
Veterans Admin. Hospital▲..	Ment	Vet	1,056	736	..	...	3,141
Tuskegee, 3,937—Macon							
Veterans Admin. Hospital▲⊙..	Ment	Vet	2,203	2,072	..	...	5,482
Tuskegee Institute, 375—Macon							
John Albion Andrew Memorial Hospital▲◇	Gen	NPAssn	141	83	24	456	2,033
Wetumpka, 3,089—Elmore							
Wetumpka General Hospital..	Gen	Corp	40	21	6	135	865
York, 1,783—Sumter							
Hill Hospital	Gen	Indiv	27	10	4	71	730

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Birmingham, 267,583—Jefferson							
Alabama Boys' Industrial School	Inst	State	26	1	..	...	486
Highland Lying-In Hospital..	Gen	Corp	26	20	16	238	486
Salvation Army Home and Hospital	Mat	Church	45	9	25	101	151
Montevallo, 1,490—Shelby							
Peterson Hall	Inst	State	35	4	..	...	1,397
Phenix City, 15,351—Russell							
Phenix City Memorial Hosp.	Gen	City	78	...	16	Estab. 1947	
......	Gen	Church	18	1	1	...	85
osa							
Partlow State School........	MeDe	State	997	994	..	...	178

ARIZONA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Ajo, 1,100—Pima							
Phelps-Dodge Hospital	Gen	NPAssn	35	20	7	121	896
Bisbee, 5,853—Cochise							
Copper Queen Hospital.......	Gen	NPAssn	42	22	8	301	1,195
Chandler, 1,239—Maricopa							
Station Hospital	Gen	Army	50	23	..	...	1,300
Cottonwood, 1,710—Yavapai							
Marcus J. Lawrence Memorial Hospital	Gen	NPAssn	40	22	5	...	1,066
Douglas, 8,623—Cochise							
Cochise County Hospital.....	Gen	County	95	56	6	45	430
Flagstaff, 5,080—Coconino							
Flagstaff Hospital	Gen	NPAssn	29	13	8	284	1,397
Station Hospital	Gen	Army	25	10	5	46	354
Florence, 1,383—Pinal							
Pinal General Hospital.......	Gen	County	50	33	9	289	1,349
Fort Defiance, 600—Apache							
Navajo Medical Center▲⊙....	GenTb	IA	250	202	14	276	2,725
Ganado, 150—Apache							
Sage Memorial Hospital▲◇....	Gen	Church	150	76	15	177	2,201
Globe, 6,111—Gila							
Gila County Hospital........	Gen	County	50	36	7	309	1,387
Holbrook, 1,184—Navajo							
Holbrook Municipal Hospital.	Gen	City	15	4	5	105	363
Jerome, 2,295—Yavapai							
United Verde Hospital▲......	Gen	NPAssn	51	15	6	114	752
Keams Canyon, 150—Navajo							
Hopi General Hospital.......	Gen	IA	38	34	3	83	974
Kingman, 2,200—Mohave							
Mohave General Hospital.....	Gen	County	50	30	11	247	1,275
McNary, 55—Apache							
McNary Hospital	Gen	NPAssn	12	4	2	72	385
Mesa, 7,224—Maricopa							
South Side District Hospital	Gen	NPAssn	100	52	18	468	3,743
Miami, 4,722—Gila							
Miami-Inspiration Hospital▲..	Gen	NPAssn	48	23	6	286	1,230
Morenci, 1,500—Greenlee							
Morenci Hospital▲	Gen	NPAssn	54	32	8	399	1,796
Nogales, 5,135—Santa Cruz							
St. Joseph's Hospital........	Gen	Church	26	12	6	171	630
Parker, 200—Yuma							
Colorado River Indian Hosp.	Gen	IA	15	11	4	55	420
Phoenix, 65,414—Maricopa							
Arizona State Hospital.......	Ment	State	1,350	1,256	..	...	513
Convalescent Home for Crippled Children	Orth	State	50	50	..	...	259
Good Samaritan Hospital★▲◇	Gen	Church	221	180	42	1,892	8,417
Phoenix Indian Hospital▲....	Gen	IA	65	51	10	116	866
Phoenix Indian Sanatorium▲.	TB	IA	80	67	..	...	160
St. Joseph's Hospital★+▲◇....	Gen	Church	195	184	43	2,903	8,156
St. Luke's Sanatorium........	TB	Church	82	45	..	...	158
St. Monica's Hospital and Health Center★+▲◇	Gen	Church	231	138	20	982	6,383
Veterans Admin. Hospital....	Gen	Vet	144	130	..	...	2,780
Prescott, 6,018—Yavapai							
Prescott Community Hospital	Gen	NPAssn	44	26	8	273	1,366
Yavapai County Hospital....	Gen	County	70	45	8	98	507
Ray, 1,100—Pinal							
Kennecott Copper Corp. Hosp.	Gen	NPAssn	20	10	8	102	720
Sacaton, 315—Pinal							
Pima Indian Hospital........	Gen	IA	42	27	7	168	1,075
Safford, 2,266—Graham							
Morris-Squibb Hospital	Gen	NPAssn	37	12	13	224	745
San Carlos, 100—Gila							
San Carlos Indian Hospital..	Gen	IA	47	24	6	60	519
Tempe, 2,906—Maricopa							
State Welfare Sanatorium....	TB	State	90	89	..	...	103
Tempe Clinic-Hospital	Gen	Indiv	25	16	16	353	811
Tuba City, 150—Coconino							
Western Navajo Hospital▲...	Gen	IA	44	34	6	89	1,136
Tucson, 36,818—Pima							
Barfield Sanatorium	TB	Corp	28	20	..	...	60
Comstock Children's Hospital	TB	NPAssn	37	30	..	...	50
Pima County General Hosp.+▲	GenTb	County	150	98	4	14	1,321
St. Luke's in the Desert Sanitarium	TB	Church	32	26	..	...	47
St. Mary's Hospital and Sanatorium★+▲◇	GenTb	Church	210	171	36	1,366	6,460
San Xavier Sanatorium.......	TB	IA	46	32	..	...	68
Southern Pacific Sanatorium..	TB	NPAssn	82	46	..	...	99
Station Hospital▲	Gen	Army	269	39	..	...	1,840
Tucson Medical Center+▲.....	Gen	NPAssn	192	125	30	1,291	3,991
Veterans Admin. Hospital▲...	TB	Vet	428	396	..	...	2,150
Whipple,—Yavapai							
Veterans Admin. Center▲.....	TB	Vet	391	357	..	...	1,853
Whiteriver, 300—Navajo							
Fort Apache Agency Hospital	Gen	IA	50	24	4	67	915
Winslow, 4,577—Navajo							
Winslow Indian Sanatorium and Hospital▲	Gen	IA	50	29	5	108	892
Yuma, 5,325—Yuma							
Fort Yuma Indian Hospital▲	Gen	IA	28	10	8	31	355
Yuma County General Hosp.	Gen	County	100	54	16	605	2,444

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Phoenix, 65,414—Maricopa							
Casitas del Sol Sanatorium..	TB	Indiv	13	11	..	...	25
Tucson, 26,818—Pima							
pital..	TB	NPAssn	35	24	..	...	55
....	Gen	NPAssn	21	9	7	43	471

Key to symbols and abbreviations is on page 1396

ARKANSAS

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Alexander, 131—Pulaski							
Thomas C. McRae Memorial Sanatorium	TB	State	196	186	..	...	257
Batesville, 5,247—Independence							
Allen Hospital	Gen	Part	34	19	11	130	1,431
Craig Hospital	Gen	Indiv	12	11	6	150	731
Dr. Gray's Hospital	Gen	Indiv	50	32	8	176	1,983
Beebe, 1,189—White							
Sloan Hospital	Gen	Indiv	12	8	6	96	406
Benton, 3,502—Saline							
State Hospital	Unit of State Hospital, Little Rock						
Blytheville, 10,652—Mississippi							
Blytheville Hospital	Gen	Indiv	35	20	6	200	1,200
Walls Hospital	Gen	Indiv	50	33	12	308	2,402
Camden, 8,975—Ouachita							
Camden Hospital	Gen	NPAssn	50	31	15	519	2,646
Charleston, 958—Franklin							
Bollinger Hospital	Gen	Indiv	12	3	4	100	300
Clarksville, 3,118—Johnson							
St. Hildegard's Municipal Hospital	Gen	Church	27	17	10	324	1,118
Conway, 5,782—Faulkner							
Conway Memorial Hospital	Gen	NPAssn	30	21	10	318	1,178
Crossett, 4,891—Ashley							
Crossett Health Center	Gen	NPAssn	35	18	11	128	620
DeQueen, 3,055 Sevier							
Archer Hospital	Gen	Indiv	22	*No data supplied*			
DeQueen General Hospital	Gen	NPAssn	35	13	11	282	1,191
Dermott, 3,083—Chicot							
St. Mary's Hospital	Gen	Church	29	19	8	209	1,192
Dumas, 2,323—Desha							
Dumas Hospital	Gen	NPAssn	25	12	9	150	873
El Dorado, 15,858—Union							
Warner Brown Hospital▲○	Gen	Church	76	50	18	669	1,920
Fayetteville, 8,212—Washington							
Fayetteville City Hospital▲	Gen	City	80	62	20	1,032	5,827
Veterans Admin. Hospital▲	Gen	Vet	305	250	..	...	3,861
Forrest City, 5,699—St. Francis							
Roy Hospital	Gen	Part	40	15	10	125	850
Fort Smith, 36,584—Sebastian							
Arkansas Tuberculosis Sanat.	Unit of Arkansas Tuberculosis Sanatorium, State Sanatorium, Ark.						
St. Edward's Mercy Hosp.▲○	Gen	Church	115	110	35	1,166	5,047
Sparks' Memorial Hospital▲○	Gen	NPAssn	100	79	18	484	3,538
Haskell, 171—Saline							
State Hosp., Benton Division	Unit of State Hospital, Little Rock						
Heber Springs, 1,656—Cleburne							
Estelle Hospital	Gen	Indiv	17	10	6	111	117
Helena, 8,546—Phillips							
Helena Hospital	Gen	NPAssn	70	45	10	100	2,611
Hope, 7,475—Hempstead							
Branch Hospital	Gen	Indiv	16	...	..	Estab. 1947	
Josephine Hospital	Gen	Indiv	26	11	5	150	565
Julia Chester Hospital	Gen	NPAssn	30	18	9	193	920
Hot Springs National Park, 21,370—Garland							
Army and Navy Gen. Hosp.+▲	Gen	Army	410	324	6	83	3,956
Leo N. Levi Memorial Hospital+▲○	Gen	NPAssn	112	75	13	146	1,298
Methodist Hospital	Gen	Church	53	45	12	243	2,564
St. Joseph's Infirmary▲○	Gen	Church	167	165	30	700	5,250
U. S. Public Health Service Medical Center	Ven	USPHS	900	235	..	...	10,038
Jonesboro, 11,729—Craighead							
St. Bernard's Hospital▲○	Gen	Church	100	88	15	1,072	4,663
Lake Village, 2,015—Chicot							
Lake Village Infirmary	Gen	Part	40	18	8	188	1,215
Little Rock, 88,039—Pulaski							
Arkansas Children's Home and Hospital+▲	Chil	NPAssn	76	64	7	...	743
Baptist State Hospital*+▲○	Gen	Church	271	229	40	1,373	10,171
Granite Mountain Hospital	Gen	Indiv	20	4	2	18	221
Missouri Pacific Hospital▲	Indus	NPAssn	125	54	..	...	2,305
Pulaski County Hospital	Chr	County	215	184	..	...	323
St. Vincent Infirmary*+▲○	Gen	Church	210	200	50	1,981	9,389
State Hospital	Ment	State	4,735	4,767	..	...	1,892
Trinity Hospital	Gen	Part	40	18	10	119	1,393
United Friends of America Hospital	Gen	NPAssn	25	18	5	61	1,765
University Hospital*+▲	Gen	State	210	140	20	1,191	4,145
Magnolia, 4,326—Columbia							
City Hospital	Gen	City	42	33	12	343	1,946
Monticello, 3,650—Drew							
Mack Wilson Hospital	Gen	Indiv	30	15	7	213	944
Morrilton, 4,608—Conway							
St. Anthony's Hospital▲	Gen	Church	36	29	9	354	1,389
Newport, 4,321—Jackson							
Dr. Gray's Hospital	Gen	Indiv	35	16	6	145	958
Newport Hospital	Gen	Part	35	18	12	135	1,119
North Little Rock, 21,137—Pulaski							
Veterans Admin. Hospital+▲⊙	Ment	Vet	1,760	1,681	..	...	2,449
Paragould, 7,079—Greene							
Dickson Memorial Hospital	Gen	Corp	40	39	10	490	2,166
Pine Bluff, 21,290—Jefferson							
Davis Hospital▲	Gen	City	120	82	20	1,098	4,302
Prescott, 3,177—Nevada							
Cora Donnell Hospital	Gen	Indiv	25	13	7	155	1,193
	Gen	Indiv	60	45	12	485	1,939
Hawkins Clinic Hospital	Gen	Indiv	26	12	7	155	828
Porter Rodgers Hospital	Gen	Indiv	54	50	14	480	3,663

ARKANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Siloam Springs, 2,761—Benton							
John Brown University Hosp.	Gen	NPAssn	27	14	13	143	768
State Sanatorium, 300—Logan							
Arkansas Tuberculosis Sanat.▲	TB	State	1,155	1,055	..	...	1,502
Texarkana, 11,821—Miller							
Michael Meagher Memorial Hospital▲	Gen	Church	55	49	12	961	3,521
St. Louis Southwestern Hospital▲	Indus	NPAssn	150	61	..	...	2,915
Warren, 2,516—Bradley							
Hunt Hospital	Gen	Indiv	26	8	6	149	405

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bentonville, 2,359—Benton							
Bates Memorial Hospital	Gen	City	30	15	9	302	994
Booneville, 2,324—Logan							
McConnell Hospital	Gen	Indiv	18	3	6	94	302
Hot Springs National Park, 21,370—Garland							
Alamo Hospital	Gen	Indiv	27	7	4	25	53
Texarkana, 11,821—Miller							
Jamison Sanitarium	Gen	Indiv	21	7	6	89	327

CALIFORNIA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Agnew, 300—Santa Clara							
Agnews State Hospital	Ment	State	3,603	3,612	..	...	3,102
Ahwahnee, 50—Madera							
Ahwahnee Sanatorium	TB	Counties	101	80	..	...	102
Alameda, 36,256—Alameda							
Alameda Hospital▲	Gen	NPAssn	97	71	22	1,338	5,184
Albany, 11,493—Alameda							
Albany Hospital	Gen	Indiv	30	24	20	900	1,527
Alcatraz,—San Francisco							
U. S. Penitentiary Hospital▲	Inst	USPHS	20	9	..	...	172
Alhambra, 38,935—Los Angeles							
Alhambra Hospital▲	Gen	Corp	60	42	13	994	2,510
Antioch, 5,106—Contra Costa							
Antioch General Hospital	Gen	Corp	20	15	8	250	1,042
Arcata, 1,855—Humboldt							
Trinity Hospital	Gen	Church	35	27	7	131	1,434
Arlington, 3,440—Riverside							
Riverside County Hospital	See Riverside						
Artesia, 3,891—Los Angeles							
Artesia Hospital	Gen	Indiv	25	17	14	734	1,459
Atwater, 1,235—Merced							
Bloss Memorial Hospital	Unit of Merced General Hospital, Merced						
Auberry, 200—Fresno							
Wish-I-Ah Sanatorium	TB	County	116	100	..	...	110
Auburn, 4,013—Placer							
DeWitt State Hospital	Ment	State	2,080	871	..	...	952
Highland General Hospital	Gen	Part	26	22	6	347	1,928
Placer County Hospital	InstGen	County	200	140	5	55	600
Bakersfield, 29,252—Kern							
Bakersfield Hospital	Gen	Indiv	30	29	..	...	1,795
Kern General Hospital+⊙	Gen	County	375	335	44	1,983	10,009
Mercy Hospital▲	Gen	Church	100	79	30	1,434	4,273
Banning, 3,871—Riverside							
Southern Sierras Sanatorium	TB	Indiv	35	11	..	...	43
Bell, 11,264—Los Angeles							
Bell Mission Hospital	Gen	Corp	29	22	11	588	1,522
Belmont, 1,229—San Mateo							
Alexander Sanitarium	N&M	Corp	75	75	..	...	555
California Sanatorium	TB	Corp	110	90	..	...	235
Twin Pines Sanitarium	N&M	Corp	45	42	..	...	338
Berkeley, 85,547—Alameda							
Alta Bates Hospital▲	Gen	NPAssn	112	88	42	2,070	6,031
Ernest V. Cowell Memorial Hospital▲	*Inst*	State	100	37	..	...	2,736
Herrick Memorial Hospital*+▲	Gen	NPAssn	200	109	40	1,865	7,183
Brawley, 11,718—Imperial							
Brawley Community Hospital	Gen	Part	25	16	9	144	200
Burbank, 34,337—Los Angeles							
St. Joseph's Hospital▲	Gen	Church	125	103	30	1,437	4,745
Camarillo, 300—Ventura							
Camarillo State Hospital	Ment	State	4,658	4,614	..	...	1,919
Camp Stoneman,—Contra Costa							
Station Hospital	*Gen*	*Army*	500	320	8	91	13,012
Carmel, 2,837—Monterey							
Peninsula Community Hosp.	Gen	NPAssn	53	41	13	547	2,110
Chula Vista, 5,138—San Diego							
Chula Vista Hospital	Gen	Indiv	27	20	8	196	1,000
Clovis, 1,626—Fresno							
Clovis Sanitarium	Gen	Part	15	10	4	192	682
Coalinga, 5,026—Fresno							
Coalinga District Hospital	Gen	NPAssn	28	18	8	237	1,412
Colfax, 794—Placer							
Colfax Hospital for the Tuberculous	TB	Corp	34	28	..	...	51
Compton, 16,198—Los Angeles							
Compton Sanitarium+▲⊙	N&M	Corp	123	88	..	...	691
Las Campanas Hospital	Gen	Corp	46	37	16	915	2,452
Women's and Children's Hospital	Gen	Indiv	20	10	7	201	779
Concord, 1,373—Contra Costa							
Concord Hospital	Gen	Corp	34	24	12	308	1,225
Corona, 8,764—Riverside							
Corona Hospital	Gen	Indiv	31	13	9	222	763
U. S. Naval Hospital+▲	Gen	Navy	700	923	..	...	4,713

Key to symbols and abbreviations is on page 1396

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Coronado, 6,932—San Diego							
Coronado Hospital▲	Gen	NPAssn	30	15	8	200	928
Covina, 3,049—Los Angeles							
Covina Hospital	Gen	Part	50	39	13	570	1,958
Crescent City, 1,363—Del Norte							
Seaside Hospital	Gen	County	20	18	6	163	861
Culver City, 8,976—Los Angeles							
Community Hospital	Gen	Indiv	13	9	..	...	509
Culver City Hospital	Gen	Corp	52	38	11	715	2,127
Delano, 4,573—Kern							
Delano Hospital	Gen	Indiv	23	15	7	217	842
Dinuba, 3,790—Tulare							
Alta District Hospital	Gen	Indiv	19	10	6	160	950
Dos Palos, 978—Merced							
Dos Palos Community Hosp.	Gen	Part	17	7	5	185	636
Downey, 15,000—Los Angeles							
Downey Community Hospital	Gen	Corp	42	31	18	333	1,905
Duarte, 2,000—Los Angeles							
Los Angeles Sanatorium+▲	TB	NPAssn	250	238	..	..	129
El Centro, 10,017—Imperial							
Imperial County Charity Hospital	Gen	County	106	70	5	112	1,227
Eldridge, 16—Sonoma							
Sonoma State Home	MeDe	State	3,427	3,412	..	...	160
El Monte, 4,746—Los Angeles							
Ruth Home	VenMat	NPAssn	135	35	15	14	138
El Toro,—Orange							
U. S. Marine Corps Air Station Dispensary	Gen	Navy	140	6	..	...	2,325
Escalon, 785—San Joaquin							
Pioneer Memorial Hospital	Gen	Indiv	14	6	3	89	352
Escondido, 4,560—San Diego							
Escondido Community Hosp.	Gen	Indiv	20	16	6	306	892
Eureka, 17,055—Humboldt							
General Hospital	Gen	NPAssn	58	51	8	284	2,057
Humboldt County Community Hospital	InstGen	County	223	57	6	43	1,002
Humboldt County Sanitarium	TB	County	65	29	..	...	73
St. Joseph Hospital	Gen	Church	65	52	18	551	2,616
Fairfield, 1,312—Solano							
Solano County Hospital	InstGen	County	123	102	6	170	1,076
Station Hospital	Gen	Army	125	50	..	..	1,068
Fort Baker (Sausalito P.O.)—Marin							
Station Hospital	Gen	Army	50	15	10	169	635
Fort Bragg, 3,235—Mendocino							
Redwood Coast Hospital▲	Gen	Corp	27	16	8	148	799
Fort Ord,—Monterey							
Station Hospital▲	Gen	Army	400	270	36	132	5,288
Fowler, 1,531—Fresno							
Fowler Municipal Hospital	Gen	City	10	7	5	224	604
French Camp, 600—San Joaquin							
San Joaquin General Hospital★+▲○	Gen	County	565	533	38	1,031	12,740
Fresno, 60,685—Fresno							
Fresno Community Hospital	Gen	NPAssn	155	118	24	1,711	6,902
General Hospital of Fresno County★+▲○	Gen	County	547	418	26	953	8,592
St. Agnes Hospital▲	Gen	Church	97	82	26	1,548	4,951
Fullerton, 10,442—Orange							
[illegible]	Gen	Church	44	39	11	795	2,115
[illegible]	Gen	NPAssn	26	19	8	405	1,190
[illegible]	Gen	NPAssn	76	51	19	462	2,659
Glendale Sanitarium and Hospital★+▲○	Gen	Church	225	180	40	1,797	7,118
Physicians and Surgeons Hospital▲	Gen	NPAssn	110	105	35	2,099	5,656
Grass Valley, 5,701—Nevada							
Community Hospital	Gen	Indiv	19	16	6	267	1,023
W. C. Jones Memorial Hosp.	Gen	Indiv	18	8	3	61	394
Hamilton Field,—Marin							
Station Hospital▲	Gen	Army	200	117	13	306	3,394
Hanford, 8,234—Kings							
Hanford Sanitarium	Gen	Corp	30	27	8	326	1,115
Kings County Hospital	Gen	County	225	154	16	388	2,308
Sacred Heart Hospital	Gen	Church	30	23	9	557	1,421
[illegible]	Gen	Indiv	43	35	10	760	2,270
[illegible]	Gen	Indiv	30	23	14	1,081	2,122
[illegible] al	Gen	Corp	25	13	6	216	1,014
Herlong,—Lassen							
Station Hospital	Gen	Army	35	7	6	119	504
Hollister, 3,881—San Benito							
Hazel Hawkins Memorial Hospital	Gen	NPAssn	16	19	8	307	952
San Benito County Hosp.	InstGen	County	10	5	3	5	52
Hondo, 3,150—Los Angeles							
Rancho Los Amigos	Ment	County	2,638	2,522	..	...	3,190
Hoopa, 140—Humboldt							
Hoopa Valley Indian Hosp.	Gen	IA	29	12	4	30	435
Huntington Park, 28,648—Los Angeles							
Mission Hospital▲	Gen	Corp	38	32	16	787	1,900
Imola, 20—Napa							
Napa State Hospital+	Ment	State	4,247	4,050	..	...	1,419
Indio, 2,296—Riverside							
Casita Hospital	Gen	Indiv	21	11	9	177	836
Coachella Valley Hospital	Gen	Corp	30	21	6	251	1,541
Inglewood, 30,114—Los Angeles							
Centinela Hospital	Gen	Indiv	75	71	20	1,507	3,890
St. Erne Sanitarium	N&M	Indiv	200	190	..	...	190
Stork Nest Hospital	Mat	Part	21	14	17	741	753
Keene, 161—Kern							
Stony Brook Retreat	TB	County	102	95	..	...	72
King City, 1,768—Monterey							
Community Hospital	Gen	Indiv	22	21	4	198	1,233
Kingsburg, 1,504—Fresno							
Kingsburg Sanitarium	Gen	Indiv	21	18	6	181	841
La Crescenta, 3,000—Los Angeles							
Hillcrest Sanatorium	Unit of Olive View Sanatorium, Olive View						
La Jolla,—San Diego							
Scripps Memorial Hospital▲	Gen	NPAssn	50	41	9	480	2,080
Scripps Metabolic Clinic-Hosp.	Metab	NPAssn	36	31	..	..	1,505
Lake Port, 1,490—Lake							
Lakeside Hospital	Gen	Part	22	20	6	102	893
La Vina, 35—Los Angeles							
La Vina Sanatorium	TB	NPAssn	49	47	..	...	57
Lindsay, 4,397—Tulare							
Lindsay Municipal Hospital	Gen	City	21	No data supplied			
Livermore, 2,885—Alameda							
Arroyo-Del Valle Sanatorium	See Oakland						
Livermore Sanitarium+	N&M	Corp	120	112	..	...	680
St. Paul's Hospital	Gen	Indiv	23	15	6	214	1,074
Veterans Admin. Hospital▲	TB	Vet	452	410	..	..	666
Lodi, 11,079—San Joaquin							
Buchanan Hospital	Gen	Indiv	34	18	9	505	1,603
Mason Hospital	Gen	Indiv	28	7	4	260	1,056
Loma Linda, 2,500—San Bernardino							
Loma Linda Sanitarium and Hospital★+▲○	Gen	Church	143	133	20	749	5,035
Lompoc, 3,379—Santa Barbara							
Lompoc Community Hosp.	Gen	NPAssn	36	18	14	203	643
Lone Pine, 900—Inyo							
Mount Whitney Hospital	Gen	Indiv	20	6	4	63	636
Long Beach, 164,271—Los Angeles							
Bixby Knolls Hospital	Mat	Part	22	17	22	982	1,029
Harriman Jones Clinic Hosp.▲	Gen	Part	48	36	16	514	1,378
Long Beach Community Hospital▲	Gen	NPAssn	150	127	30	1,806	7,839
St. Mary's Long Beach Hospital▲	Gen	Church	100	75	33	1,848	5,454
Seaside Memorial Hospital★+▲	Gen	NPAssn	370	291	55	2,098	14,273
U. S. Naval Hospital★+▲	Gen	Navy	1,575	1,212	30	1,387	16,732
Los Angeles, 1,504,277—Los Angeles							
Alvarado Hospital	Gen	NPAssn	26	18	..	...	1,093
Barlow Sanatorium+▲⊙	TB	NPAssn	100	97	..	...	85
California Babies' and Children's Hospital+	Chil	NPAssn	30	6	..	...	449
California Hospital★+▲○	Gen	Church	317	286	48	3,287	14,406
Cedars of Lebanon Hosp.★+▲	Gen	NPAssn	310	283	50	2,309	10,892
Childrens Hospital★+▲⊙	Chil	NPAssn	203	149	..	...	5,220
Eye and Ear Hospital	ENT	Corp	19	13	..	...	3,029
French Hospital▲	Gen	NPAssn	76	55	16	475	2,327
Hollywood-Leland Hospital	Gen	Part	31	29	..	...	1,731
Hospital of the Good Samaritan★+▲○	Gen	Church	419	372	55	2,479	11,452
Hygeia Sanatorium	Alcoh	Indiv	11	7	..	..	346
Juvenile Hall Hospital	Inst	County	86	85	..	...	5,044
Lincoln Hospital	Gen	NPAssn	32	21	13	747	1,482
Los Angeles County Hospital (Medical Unit)★+▲○	Gen	County	3,394	2,826	230	4,677	58,418
Los Angeles County Jail Hospital	Inst	County	64	55	..	...	2,083
Los Angeles County Psychopathic Hospital	Unit of Los Angeles County Hospital						
Los Angeles Neurological Institute	N&M	Corp	34	22	..	...	314
Los Angeles Sanitarium	Chr	Indiv	36	19	..	...	172
Methodist Hospital of Southern California▲○	Gen	Church	206	165	48	2,029	7,815
Orthopaedic Hospital+▲⊙	Orth	NPAssn	75	71	..	...	2,192
Pahl Hospital	Gen	Indiv	15	7	3	126	501
Presbyterian Hospital-Olmsted Memorial★+▲○	Gen	Church	300	248	65	2,577	11,182
Queen of Angels Hosp.★+▲○	Gen	Church	502	415	113	4,450	16,353
St. Vincent's Hospital★+▲○	Gen	Church	250	240	50	2,117	15,948
Santa Fe Coast Lines Hospital★+▲	Indus	NPAssn	196	175	..	...	4,545
Veterans Admin. Center+▲	MentGen	Vet	3,554	3,061	..	...	13,561
White Memorial Hosp.★+▲○	Gen	Church	225	169	30	1,746	8,901
Los Banos, 2,214—Merced							
City Clinic and Emergency Hospital	Gen	Church	14	10	3	116	541
Lynwood, 10,982—Los Angeles							
St. Francis Hospital▲	Gen	Church	150	114	48	1,999	7,299
Madera, 6,457—Madera							
Dearborn Hospital	Gen	Corp	30	21	6	409	1,696
Madera County Hospital	Gen	County	135	95	8	166	1,172
Madera Sanitarium	Gen	Indiv	21	14	5	298	1,420
Manor,—Marin							
Arequipa Sanatorium	TB	NPAssn	55	48	..	...	75
March Field,—Riverside							
Station Hospital▲	Gen	Army	150	62	12	275	2,158
Mare Island,—Solano							
U. S. Naval Hospital★▲	Gen	Navy	800	644	10	651	8,258
Martinez, 7,381—Contra Costa							
Contra Costa County Hosp.	Gen	County	217	192	10	377	3,313
Martinez Community Hosp.	Gen	Corp	50	20	10	403	2,110
Marysville, 6,646—Yuba							
Rideout Memorial Hospital	Gen	Indiv	42	39	8	631	2,439
Yuba County Hospital	Gen	County	100	78	12	106	3,962
McCloud, 2,000—Siskiyou							
McCloud Hospital	Gen	NPAssn	30	12	6	101	649

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Merced, 10,135—Merced							
Merced General Hospital	GenTb	County	150	123	20	612	4,471
Mercy Hospital	Gen	Indiv	50	32	22	705	2,119
Modesto, 16,379—Stanislaus							
McPheeters Hospital	*Gen*	*Indiv*	41	31	7	320	1,918
Modesto State Hospital	Ment	State	1,253	221	..	...	1,071
Robertson Hospital	Gen	Part	38	36	11	695	1,825
St. Mary's Hospital	*Gen*	*Church*	24	17	8	510	1,302
Stanislaus County Hospital	Gen	County	283	98	18	759	3,598
Moffett Field,—Santa Clara							
U. S. Naval Air Station Dispensary	Gen	Navy	66	12	..	...	965
Monrovia, 12,807—Los Angeles							
Norumbega Sanatorium	TB	Indiv	20	11	..	..	22
Pottenger Sanatorium and Clinic†▲	TB	Corp	90	85	..	...	130
Montebello, 8,016—Los Angeles							
Beverly Hospital	Gen	NPAssn	56	38	18	930	2,567
Monterey, 10,084—Monterey							
Monterey Hospital	Gen	Corp	55	39	13	417	2,122
Monterey Park, 8,531—Los Angeles							
Garfield Hospital▲	Gen	*Corp*	50	40	12	616	2,079
Murphys, 600—Calaveras							
Bret Harte Sanatorium†▲	TB	Counties	159	125	..	...	222
Napa, 7,740—Napa							
Parks Victory Memorial Hospital▲	Gen	NPAssn	58	39	10	506	2,060
National City, 10,344—San Diego							
Paradise Valley Sanitarium and Hospital†▲○	Gen	Church	131	94	35	818	3,911
Nevada City, 2,445—Nevada							
Miners Hospital	Gen	NPAssn	21	17	6	113	867
Nevada County Hospital	InstGen	County	100	70	4	17	498
Newhall, 1,800—Los Angeles							
Wildwood Sanatorium	Unit of Olive View Sanatorium, Olive View						
Newman, 1,214—Stanislaus							
West Side Hospital	Gen	Corp	16	18	3	219	908
Norwalk, 3,000—Los Angeles							
Norwalk State Hospital	*Ment*	State	2,188	2,177	..	...	1,011
Oakland, 302,163—Alameda							
Alameda County Hospitals							
Arroyo-Del Valle Sanat.†▲⊙	TB	County	276	234	..	...	270
Fairmont Hospital of Alameda County†▲⊙	GenTb	County	763	740	..	...	1,130
Highland-Alameda County Hospital★†▲○	Gen	County	485	306	26	1,359	9,136
Children's Hospital of the East Bay†▲⊙	Chil	NPAssn	76	60	..	...	3,420
East Oakland Hospital▲	Gen	Corp	80	61	20	1,903	5,080
Peralta Hospital†▲	Gen	NPAssn	156	133	35	2,254	8,520
Permanente Foundation Hospital★†▲○	Gen	NPAssn	315	233	58	1,896	11 872
Providence Hospital▲○	Gen	Church	235	172	43	2,226	9,127
Samuel Merritt Hospital†▲○	Gen	NPAssn	187	160	41	2,568	9,326
U. S. Naval Hospital★†▲	Gen	Navy	1,618	1,493	43	1,472	17,320
Veterans Admin. Hospital†	Gen	Vet	612	456	..	...	5,461
Oceanside, 4,651—San Diego							
U. S. Naval Hospital▲	Gen	Navy	300	168	14	188	1,326
Olive View,—Los Angeles							
Olive View Sanatorium†▲	TB	County	1,025	961	..	...	793
Orange, 7,901—Orange							
Orange County General Hos[illegible]▲	*Gen*	County	365	323	15	223	3,256
[illegible]▲	Gen	Church	115	111	32	1,899	5,703
St. John's Hospital▲	Gen	Church	46	33	15	590	2,469
Palo Alto, 16,774—Santa Clara							
Palo Alto Hospital†▲	Gen	NPAssn	200	169	47	2,266	8,872
Veterans Admin. Hospital†▲⊙	Ment	Vet	1,473	1,407	..	...	939
Pasadena, 81,864—Los Angeles							
Collis P. and Howard Huntington Memorial Hosp.★†▲○	Gen	NPAssn	242	222	35	2,067	10 249
Las Encinas Sanitarium	N&M	Corp	125	115	..	...	237
McCornack General Hospital	Gen	Army	650	606	13	313	4,824
Pasadena Lutheran Hospital	Gen	Church	65	47	15	691	1,644
St. Luke Hospital▲	Gen	Church	145	134	45	2,116	6,783
Southern California Sanitarium for Nervous and General Diseases	See Las Encinas Sanitarium						
Woman's Hospital	Mat	NPAssn	19	10	19	419	414
Patton, 4,100—San Bernardino							
Patton State Hos[illegible]†	Ment	State	4,406	4,387	..	..	1,839
[illegible]a							
[illegible]p.	Gen	City	70	47	16	808	3,027
[illegible]	InstGen	County	64	55	..	...	47
[illegible]	Gen	Part	26	17	4	212	1,132
Pomona, 23,539—Los Angeles							
Pomona Valley Co[illegible]unity [illegible]▲	Gen	NPAssn	103	70	20	917	3,766
[illegible] Hospital	Gen	Part	22	20	8	634	1,348
Portola, 2,000—Plumas							
Western Pacific Railway Hospital	Gen	NPAssn	28	15	5	106	794
Quincy, 1,800—Plumas							
Plumas County Hospital	Gen	County	45	30	5	23	361
Red[illegible]							
St. [illegible]	Gen	Church	50	45	10	250	900
Red[illegible]							
Shasta [illegible]	Gen	County	54	65	9	47	462

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Redlands, 14,324—San Bernardino							
Redlands Community Hosp.	Gen	NPAssn	75	57	20	537	2,778
Redwood City, 12,453—San Mateo							
Canyon Sanatorium	TB	County	75	67	..	...	67
Hassler Health Home	*TB*	*CyCo*	262	210	..	...	272
Reedley, 3,170—Fresno							
Reedley Hospital	Gen	NPAssn	30	19	7	443	1,949
Represa, 250—Sacramento							
Folsom Prison Hospital	Inst	State	120	76	..	...	1,041
Richmond, 23,642—Contra Costa							
Permanente Field Hospital	Unit of Permanente Foundation Hospital, Oakland						
Richmond Hosp[illegible]▲	Gen	Indiv	70	60	22	1,979	5,006
[illegible]							
[illegible] Hosp.▲	Gen	NPAssn	136	103	43	1,489	6,334
[illegible]side County Hospital▲	GenTb	County	320	273	14	265	2,966
Sherman Institute Hospital	Inst	IA	56	20	..	...	261
Rosemead, 5,500—Los Angeles							
Alhambra Sanatorium	N&M	Indiv	21	15	.	...	182
Ross, 1,751—Marin							
Ross General Hospital	GenTb	Corp	95	83	12	529	2,502
Sacramento, 105,958—Sacramento							
Mercy Hospital▲○	*Gen*	Church	177	163	25	2,429	7,266
Sacramento County Hosp.★▲○	Gen	County	475	412	25	638	3,484
Station Hospital▲	Gen	Army	63	42	10	156	1,592
Sutter General Hospital▲	Gen	NPAssn	250	189	..	...	7,583
Sutter Maternity Hospital▲	Mat	NPAssn	72	63	78	3,621	3,794
Salinas, 11,586—Monterey							
El Sausal Sanitarium	Unit of Monterey County Hospital						
Monterey County Hospital†▲	GenTb	County	230	189	10	318	2,715
Park Lane Hospital	Gen	*Corp*	59	53	19	861	3,149
Salinas Valley Hospital	Gen	Indiv	30	23	7	100	750
San Andreas, 1,082—Calaveras							
San Andreas Hospital	Gen	Indiv	12		2	·	263
San Bernardino, 43,646—San Bernardino							
St. Bernardine's Hospital▲	Gen	Church	125	115	34	1,511	5,000
San Bernardino County Charity Hospital★†▲○	Gen	County	311	256	17	445	4,475
San Diego, 203,341—San Diego							
Collier Park Hospital	Mat	Church	19	14	11	65	86
Family Hospital▲	Gen	Navy	30	21	26	1,019	1,553
Mercy Hospital★†▲○	Gen	Church	325	291	100	4,972	13,594
Quintard Hospital	Gen	NPAssn	91	86	30	1,518	4,733
San Diego County General Hospital★†▲○	GenTb	County	875	670	13	545	7,855
U. S. Naval Hospital★†▲	Gen	Navy	1,500	1,530	51	1,894	22,2[illegible]6
Vauclain Home	Unit of San Diego County General Hosp.						
San Fernando, 9,094—Los Angeles							
San Fernando Hospital	Gen	Indiv	28	18	8	592	1,348
Veterans Admin. Hospital†▲	TB	Vet	389	361	..	...	502
San Francisco, 634,536—San Francisco							
Children's Hospital★†▲○	Gen	NPAssn	225	187	60	2,626	7,602
Chinese Hospital	Gen	NPAssn	61	52	9	297	1,443
Doctors Hospital	Gen	Corp	60	41	2	3	3,285
Franklin Hospital★†▲○	Gen	NPAssn	250	221	22	609	7,716
French Hospital★†▲○	Gen	NPAssn	225	174	18	706	4,915
Greens' Eye Hospital†▲	ENT	Part	35	21	..	...	1,260
Hahnemann Hospital▲	Gen	NPAssn	79	67	..	...	2,556
Laguna Honda Home	InstGen	CyCo	900	776	..	...	770
Langley Porter Clinic-Hosp.†	Ment	State	79	55	..	..	273
Letterman General Hosp.★†▲	Gen	Army	2,442	1,340	13	304	15,295
Mary's Help Hospital★†▲○	Gen	Church	172	142	58	1,858	6,022
Mount Zion Hospital★†▲○	Gen	NPAssn	163	140	30	1,179	5,561
Park Sanitarium	N&M	Corp	38	26	..	..	1,157
St. Elizabeth's Infant Hosp.	MatCh	Church	85	87	10	117	315
St. Francis Hospital▲○	Gen	NPAssn	300	243	49	1,830	12,155
St. Joseph's Hospital★▲○	Gen	Church	235	196	45	2,013	7,976
St. Luke's Hospital★†▲○	Gen	Church	229	184	25	915	7,625
St. Mary's Hospital★†▲○	Gen	Church	371	354	60	2,692	11,757
San Francisco Hospital★†▲⊙	Gen	CyCo	1,366	1,066	50	1,378	18,735
San Francisco Polyclinic	Gen	NPAssn	21	13	..	...	911
San Francisco Psychopathic Hospital	Unit of San Francisco Hospital						
Shriners Hospital for Crippled Children†▲⊙	Orth	NPAssn	50	50	..	...	209
Southern Pacific General Hospital★†▲	Indus	NPAssn	450	436	..	...	7,406
Stanford University Hospitals★†▲○	Gen	NPAssn	355	304	55	2,537	11,246
U. S. Marine Hospital★†▲	GenTb	USPHS	567	441	..	...	5,630
University of California Hospital★†▲○	Gen	State	286	227	30	926	8,891
Veterans Admin. Hospital†▲	Gen	Vet	356	311	..	...	3,057
Sanger, 4,017—Fresno							
Sanger Hospital	Gen	Corp	17	14	6	376	976
Sanitarium, 500—Napa							
St. Helena Sanitarium and Hospital†▲○	Gen	Church	135	120	8	239	4,239
San Jacinto, 1,356—Riverside							
Soboba Indian Hospital	Gen	IA	34	21	3	51	432
San Jose, 68,457—Santa Clara							
Alum Rock Sanatorium	TB	NPAssn	67	60	..	...	269
O'Conner Hospital▲○	Gen	Church	127	119	35	1,791	6,386
San Jose Hospital▲○	Gen	NPAssn	185	151	45	2,799	8,724
Santa Clara County Hospital★†▲○	GenTb	County	420	362	30	569	6,082
Santa Clara County Sanat.†	Unit of Santa Clara County Hospital						
Sunnyholme Preventorium	Unit of Santa Clara County Hospital						
San Leandro, 14,601—Alameda							
Fairmont Hospital of Alameda County	See Oakland						

Key to symbols and abbreviations is on page 1396

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
San Luis Obispo, 8,881—San Luis Obispo							
French Clinic and Hospital...	Gen	Indiv	29	20	..	...	1,189
Mountain View Hospital......	Gen	Indiv	27	22	8	565	1,727
San Luis Obispo County Tuberculosis Sanatorium ...	Unit of San Luis Obispo General Hospital						
San Luis Obispo General Hospital	GenTb	County	50	37	12	223	1,836
San Mateo, 19,403—San Mateo							
Community Hospital of San Mateo County*▲	Gen	County	145	106	13	214	2,602
Mills Memorial Hospital......	Gen	Church	160	110	31	1,881	7,869
San [illegible]							
Sa[illegible]	Gen	Corp	129	90	26	1,101	4,010
San [illegible]							
Ch[illegible]▲	Inst	State	150	150	..	...	1,029
San Rafael, 8,573—Marin							
Marin County Hospital and [illegible]	Chr	County	45	38	..	...	51
S[illegible]	Gen	Indiv	42	31	17	587	1,339
San[illegible]rbara							
St. Francis Hospital*.........	Gen	Church	91	69	19	706	3,585
Santa Barbara Cottage Hospital*†▲○	Gen	NPAssn	210	165	28	752	6,154
Santa Barbara General Hospital*	Gen	County	261	205	..	...	1,624
Santa Cruz, 16,896—Santa Cruz							
Santa Cruz County Hospital	Gen	County	165	127	7	62	1,543
Santa Cruz Hospital.........	Gen	Corp	40	34	15	507	2,467
Sisters Hospital	Gen	Church	28	21	7	307	1,024
Santa Maria, 8,522—Santa Barbara							
Our Lady of Perpetual Help Hospital▲	Gen	Church	50	40	14	636	2,200
Santa Monica, 53,500—Los Angeles							
St. John's Hospital*†▲.......	Gen	Church	108	106	10	2,324	5,836
Santa Monica Hospital*▲⊖...	Gen	Church	178	145	28	1,958	8,717
Santa Rosa, 12,605—Sonoma							
Eliza Tanner Hospital........	Gen	Part	20	15	..	...	1,101
Sonoma County Hospital†▲○	GenTb	County	455	401	20	546	3,353
Scotia, 2,200—Humboldt							
Scotia Hospital	Gen	NPAssn	45	23	5	302	2,434
[illegible]							
[illegible]	Gen	Part	30	17	10	257	1,127
[illegible]							
Selma Sanitarium	Gen	Corp	35	29	11	396	2,722
Sonoma, 1,158—Sonoma							
Sonoma Valley Community Hospital	Gen	NPAssn	22	17	4	181	936
Sonora, 2,257—Tuolumne							
Sonora Hospital	Gen	Indiv	20	15	5	76	689
Tuolumne County Hospital..	InstGen	County	41	26	3	18	448
South Gate, 26,945—Los Angeles							
Suburban Hospital	Gen	Corp	52	30	29	572	2,143
South Pasadena, 14,356—Los Angeles							
Pasadena Sanitarium	N&M	Indiv	75	47	..	...	439
South San Francisco, 6,629—San Mateo							
South San Francisco Hospital	Gen	Corp	36	19	10	186	936
Spadra, 275—Los Angeles							
Pacific Colony†	MeDe	State	1,906	1,777	..	...	363
Springville, 665—Tulare							
Tulare-Kings Counties Joint Tuberculosis Hospital†	TB	Counties	110	116	..	...	120
Stockton, 54,714—San Joaquin							
Dameron Hospital	Gen	NPAssn	82	68	16	1,134	4,373
St. Joseph's Hospital▲........	Gen	Church	125	111	22	1,091	5,586
Stockton State Hospital†....	Ment	State	4,240	4,282	..	...	2,288
Susanville, 1,575—Lassen							
Riverside Hospital	Gen	Part	13	13	6	136	939
Talmage, 350—Mendocino							
Mendocino State Hospital†..	Ment	State	3,060	2,892	..	...	800
Tehachapi, 1,264—Kern							
Tehachapi Valley Hospital...	Gen	Indiv	16	12	7	103	614
Torrance, 9,950—Los Angeles							
Harbor General Hospital*†...	Gen	County	539	426	14	283	2,625
Jared Sidney Torrance Memorial Hospital▲	Gen	NPAssn	42	40	20	1,039	2,544
Trona, 775—San Bernardino							
Trona Hospital	Gen	NPAssn	25	14	8	100	664
Tulare, 8,259—Tulare							
East Tulare Hospital.........	Mat	Indiv	12	8	12	678	752
Tulare County General Hosp.	Gen	County	103	70	10	371	2,626
Tulare Hospital	Gen	Indiv	24	17	4	20	1,673
Turlock, 4,839—Stanislaus							
Emanuel Hospital	Gen	Church	59	56	18	646	2,299
Lillian Collins Hospital.......	Gen	Indiv	25	23	4	233	1,121
[illegible]	Gen	Part	20	12	6	256	945
[illegible] pital▲	Gen	NPAssn	74	57	20	727	3,437
Vallejo, 20,072—Solano							
Vallejo General Hospital.....	Gen	Corp	60	53	15	1,332	3,749
U. S. Naval Hospital.........	See Mare Island						
Van Nuys,—Los Angeles							
Valley Hospital	Gen	Corp	39	32	10	414	1,933
Veterans Admin. Hospital†▲..	Gen	Vet	1,500	1,197	..	...	6,806
Ventura, 13,264—Ventura							
Bard Memorial Hospital.....	Unit of Ventura County Hospital						
Foster Memorial Hospital▲...	Gen	NPAssn	54	44	12	453	2,709
Ventura County Hospital▲...	GenTb	County	314	245	14	369	5,400
Veterans Home, 1,860—Napa							
Veterans Home Hospital▲....	Inst	State	265	227	..	...	1,246

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Visalia, 8,904—Tulare							
[illegible] pital...	Gen	City	46	41	15	719	2,545
[illegible] Cruz [illegible]	Gen	Corp	46	38	11	653	2,298
Weimar, 125—Placer							
Weimar Joint Sanatorium....	TB	Counties	560	401	..	...	595
West Los Angeles,—Los Angeles							
Veterans Admin. Center.......	See Los Angeles						
Westwood, 5,000—Lassen							
Westwood Hospital	Gen	NPAssn	40	12	5	143	857
Willits, 1,625—Mendocino							
Frank R. Howard Memorial *Hospital*	*Gen*	*NPAssn*	*25*	*16*	*5*	*92*	*765*
Woodlake, 1,126—Tulare							
Sequoia Hospital	Gen	Indiv	9	5	4	152	465
Woodland, 6,637—Yolo							
Woodland Clinic Hosp.▲.....	Gen	Part	67	49	12	504	2,609
Yolo General Hospital........	*Gen*	*County*	80	50	10	170	1,059
Yosemite National Park, 500—Mariposa							
Lewis Memorial Hospital.....	*Gen*	Indiv	13	6	3	33	560
Yreka, 2,485—Siskiyou							
Siskiyou County General Hospital	Gen	County	140	102	14	320	1,799
Yuba City, 4,968—Sutter							
Sutter County Hospital......	Gen	County	41	33	4	77	828
Yuba City General Hospital..	Gen	Indiv	25	11	10	373	1,538
Related Institutions							
Altadena,—Los Angeles							
Pasadena Health School......	Conv	NPAssn	31	28	..	...	55
Artesia, 3,891—Los Angeles							
Pioneer Sanitarium	N&M	Indiv	53	51	..	...	28
Avalon, 1,637—Los Angeles							
Santa Catalina Hospital.....	Gen	Indiv	9	5	3	31	304
Baldwin Park, 16,000—Los Angeles							
Sierra Lodge Sanitarium.....	N&M	Indiv	62	62	..	...	75
Belmont, 1,229—San Mateo							
Charles S. Howard Foundation	TB Chil	Corp	20	16	..	...	88
Chino, 4,204—San Bernardino							
Hospital of the California Institution for Men▲..........	Inst	State	22	3	..	...	341
Chula Vista, 5,138—San Diego							
Guest House	N&M	Indiv	30	22	..	...	423
Vista Hill Sanitarium........	N&M	Indiv	16	12	..	...	250
Claremont, 3,057—Los Angeles							
Claremont Colleges Infirmary	Inst	NPAssn	24	2	..	...	229
Duarte, 2,000—Los Angeles							
Santa Teresita Sanatorium...	TB	Church	117	115	..	...	205
Eureka, 17,055—Humboldt							
Humboldt County Isolation *Hospital*	*Iso*	*County*	*16*	5	..	...	*177*
La Crescenta, 3,000—Los Angeles							
Kimball Sanitarium	N&M	Part	35	30	..	...	197
Lakeport, 1,400—Lake							
Lake County General Hospital	InstGen	County	28	18	6	120	540
Lincoln, 2,044—Placer							
Joslin's Sanatorium	N&M	Indiv	12	6	..	...	12
Long Beach, 164,271—Los Angeles							
California Sanitarium	Conv	Indiv	50	50	..	...	250
Los Angeles, 1,504,277—Los Angeles							
Booth Memorial Hospital.....	Mat	Church	14	9	14	211	234
Chase Diet Sanitarium........	Conv	Part	23	23	..	...	40
Florence Crittenton Home...	Mat	NPAssn	44	26	6	63	89
Mont St. John of God Sanit.	Conv	Church	32	29	..	...	67
Resthaven	N&M	NPAssn	45	40	..	...	220
St. Anne's Maternity Hosp.▲	Mat	Church	40	8	20	223	257
Twentieth Century Sani[illegible]	N&M	Indiv	51	51	..	...	18
[illegible]	TB	Church	44	41	..	...	61
National City, 10,344—San Diego							
Hillcrest Manor Sanitarium..	Chr	Indiv	50	45	..	...	34
Oakland, 302,163—Alameda							
[illegible]	Mat	Church	65	53	38	255	260
[illegible]							
California Tuberculosis Sanitarium	TB	NPAssn	50	19	..	...	71
Rosemead, 5,500—Los Angeles							
[illegible]	N&M	Indiv	50	25	..	...	246
[illegible]	MeDe	Corp	75	65	..	...	24
[illegible]	Conv	Indiv	25	22	..	...	173
[illegible]cisco							
[illegible]	Incur	NPAssn	97	96	..	...	37
[illegible]	N&M	Part	68	68	..	...	28
[illegible]	N&M	Indiv	70	65	..	...	176
San [illegible]	N&M	Part	54	51	..	...	31
San Mateo, 19,403—San Mateo							
San Mateo Preventorium.....	TB	NPAssn	26	20	..	...	19
Santa Monica, 53,500—Los Angeles							
Loamshire Convalescent Hos[illegible]ne......	Unit of Santa Monica Hospital						
[illegible]							
[illegible]tal.....	Gen	Indiv	24	5	8	50	215
Stanford University, [illegible]—Santa Clara							
Stanford Convalescent Home.	Chil	NPAssn	80	69	..	...	136
Sunland,—Los Angeles							
Sunland Sanatorium	Conv	Corp	48	20	..	...	257

Key to symbols and abbreviations is on page 1396

COLORADO

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Akron, 1,417—Washington							
Victory Hospital	Gen	County	15	8	5	100	596
Alamosa, 5,613—Alamosa							
Alamosa Community Hosp.	Gen	Church	51	53	21	598	2,769
Boulder, 12,958—Boulder							
Boulder-Colorado Sanitarium and Hospital+▲○	Gen	Church	101	77	10	319	2,481
Boulder County Hospital	Gen	County	44	25	4	16	404
Community Hospital▲	Gen	NPAssn	50	41	14	413	2,229
Brush, 2,481—Morgan							
Eben-Ezer Hospital	Gen	Church	33	27	12	305	1,479
Burlington, 1,280—Kit Carson							
Kit Carson County Public Hospital	Gen	County	15	9	3	62	567
Camp Carson,—El Paso							
Station Hospital	Gen	Army	100	151	4	11	3,156
Canon City, 6,690—Fremont							
Colorado Hospital	Gen	Indiv	28	10	4	82	833
Colorado State Penitentiary Hospital	Inst	State	40	35	..	...	688
St. Thomas More Hospital	Gen	Church	47	15	7	238	1,962
Cheyenne Wells, 695—Cheyenne							
St. Joseph Hospital	Gen	Church	28	7	7	21	155
Climax, 500—Lake							
Climax Molybdenum Company Hospital	Indus	NPAssn	11	4	..	...	326
Collbran, 301—Mesa							
Plateau Valley Congregation Hospital	Gen	Church	13	6	4	45	350
Colorado Springs, 36,789—El Paso							
Colorado Springs Psychopathic Hospital	N&M	Part	150	152	..	...	396
El Paso Contagious and Observation Hospital	Unit of Memorial Hospital						
Glockner-Penrose Hospital▲○	GenTb	Church	198	161	25	554	3,897
Memorial Hospital+▲○	Gen	City	89	95	17	532	3,778
St. Francis Hospital and Sanatorium+▲⊙	GenTb	Church	175	151	12	482	3,255
Union Printers Home and Tuberculosis Sanatorium	GenTb	NPAssn	155	214	..	...	177
Cripple Creek, 2,358—Teller							
Cripple Creek Hospital	Gen	NPAssn	25	7	6	52	378
Del Norte, 1,923—Rio Grande							
St. Joseph's Hospital	Gen	Church	45	38	15	170	1,573
St. Mary's Pavilion	Unit of St. Joseph's Hospital						
Delta, 3,717—Delta							
Delta Memorial Hospital	Gen	NPAssn	16	10	4	68	451
Denver, 322,412—Denver							
Bethesda Sanatorium	TB	Church	48	35	..	...	30
Beth Israel Hospital▲	Gen	NPAssn	55	49	10	201	2,236
Childrens Hospital+▲○	Chil	NPAssn	150	148	15	...	3,507
Colorado General Hosp.★+▲○	Gen	State	270	218	20	730	1,995
Colorado Psychopathic Hospital+▲⊙	Ment	State	80	80	..	...	941
Denver General Hospital★+▲○	GenTb	CyCo	587	320	36	524	9,382
Ex-Patients' Tubercular Home	TB	NPAssn	50	49	..	...	18
Fitzsimons General Hosp.★+▲	Gen	Army	3,005	2,040	20	731	14,796
Mercy Hospital★▲○	Gen	Church	250	230	40	1,747	10,575
Mount Airy Sanitarium▲	N&M	Part	70	65	..	...	1,322
National Jewish Hospital+▲	TB	NPAssn	235	220	..	...	254
Porter Sanitarium and Hospital★▲○	Gen	Church	130	125	23	978	5,382
Presbyterian Hospital★+▲○	Gen	Church	180	175	30	1,875	7,407
Robert W. Speer Memorial Hospital for Children	Unit of Denver General Hospital						
St. Anthony Hospital★▲○	Gen	Church	210	108	40	1,803	9,439
St. Joseph's Hospital★+▲○	Gen	Church	279	253	61	2,741	11,082
St. Luke's Hospital★+▲○	Gen	Church	271	242	30	1,931	9,414
Station Hospital▲	Gen	Army	300	227	..	...	576
Steele Memorial Hospital	Unit of Denver General Hospital						
Durango, 5,887—La Plata							
La Plata County Hospital	Gen	County	24	11	6	62	700
Mercy Hospital▲○	Gen	Church	63	59	12	491	4,705
Edgewater, 1,648—Jefferson							
Craig Colony	TB	NPAssn	42	31	..	...	37
Sands House	TB	NPAssn	39	19	..	...	27
Englewood, 9,680—Arapahoe							
Federal Correctional Inst.	Inst	USPHS	25	5	..	...	191
Swedish National Sanatorium	TB	NPAssn	72	63	..	...	85
Estes Park, 994—Larimer							
Estes Park Hospital	Gen	Indiv	6	1	3	36	177
Flagler, 506—Kit Carson							
Flagler Hospital	Gen	Indiv	12	7	6	102	312
Fort Collins, 12,251—Larimer							
Larimer County Hospital▲	Gen	County	70	59	21	913	3,496
Fort Logan, Arapahoe							
Veterans Admin. Hospital+▲	Gen	Vet	300	219	..	...	2,805
Fort Lyon, 1,180—Bent							
Veterans Admin. Hospital+▲	Ment	Vet	981	961	..	...	317
Fort Morgan, 4,884—Morgan							
Fort Morgan Hospital	Gen	Indiv	25	18	8	130	713
Fruita, 1,466—Mesa							
Fruita Community Hospital	Gen	NPAssn	14	5	5	95	516
Glenwood Springs, 2,253—Garfield							
Dr. Porter's Hospital	Gen	Part	18	11	7	120	623
Grand Junction, 12,479—Mesa							
St. Mary's Hospital▲○	Gen	Church	65	65	15	763	3,033
Greeley, 15,995—Weld							
Weld County Public Hosp.▲	Gen	County	107	80	22	996	4,100
Hayden, 640—Routt							
Solandt Memorial Hospital	Gen	NPAssn	16	11	7	173	484
Holyoke, 1,150—Phillips							
Holyoke Hospital	Gen	Indiv	11	6	5	56	364

COLORADO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Ignacio, 555—La Plata							
Edward T. Taylor Indian Hospital	Gen	IA	21	8	4	26	228
Julesburg, 1,619—Sedgwick							
Community Hospital	Gen	NPAssn	12	6	6	110	362
La Junta, 7,040—Otero							
Atchison, Topeka and Santa Fe Railroad Hospital▲	Indus	NPAssn	36	13	..	...	466
Mennonite Hospital and Sanitarium▲○	Gen	Church	103	76	22	660	2,773
Lamar, 4,445—Prowers							
Sacred Heart Hospital	Gen	Church	34	26	12	530	1,691
Leadville, 4,774—Lake							
St. Vincent's Hospital	Gen	Church	40	20	10	225	875
Longmont, 7,406—Boulder							
Longmont Hosp. and Clinic▲	Gen	Corp	35	25	10	260	1,472
St. Vrain Hospital	Gen	NPAssn	23	...	Reorganized		
Monte Vista, 3,208—Rio Grande							
Monte Vista Community Hospital	Gen	Church	35	23	10	266	1,423
Montrose, 4,764—Montrose							
St. Luke's Hospital	Gen	Indiv	22	24	11	267	878
Oak Creek, 1,769—Routt							
Oak Creek Hospital	Gen	Indiv	13	6	3	94	271
Ouray, 951—Ouray							
Ouray Hospital	Gen	NPAssn	16	4	4	34	192
Pueblo, 52,162—Pueblo							
Colorado State Hospital+▲⊙	Ment	State	4,832	4,613	..	...	965
Corwin Hospital★+▲○	Gen	NPAssn	206	156	21	875	5,925
Parkview Hospital▲	Gen	NPAssn	100	68	20	527	2,531
St. Mary Hospital+▲○	Gen	Church	146	102	28	614	3,924
Woodcroft Hospital▲	N&M	Corp	130	68	..	...	170
Rocky Ford, 3,494—Otero							
Physicians Hospital	Gen	NPAssn	13	10	5	148	892
Salida, 4,969—Chaffee							
Denver and Rio Grande Western Railroad Hospital▲	Gen	NPAssn	85	61	7	175	2,223
Spivak, 350—Jefferson							
Sanatorium of the Jewish Consumptives' Relief Society+▲	TB	NPAssn	300	268	..	...	115
Sterling, 7,411—Logan							
Good Samaritan Hospital	Gen	Church	32	22	9	126	1,452
St. Benedict Hospital	Gen	Church	32	26	11	310	1,767
Trinidad, 13,223—Las Animas							
Mount San Rafael Hosp.▲○	Gen	Church	70	45	12	497	1,951
Walsenburg, 5,855—Huerfano							
Lamme Hospital	Gen	Indiv	20	9	5	115	526
Wheat Ridge, 3,500—Jefferson							
Evangelical Lutheran Sanat.▲	TB	Church	110	85	..	...	63
Wray, 2,061—Yuma							
Wray Community Hospital	Gen	Corp	16	5	8	160	587

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Aspen, 777—Pitkin							
Pitkin County Public Hosp.	Gen	County	16	2	4	8	35
Boulder, 12,958—Boulder							
Mesa Vista Sanatorium	TB	Part	49	34	..	...	46
Colorado Springs, 36,789—El Paso							
Cragmor Sanatorium	TB	NPAssn	125	60	..	...	57
Denver, 322,412—Denver							
Booth Memorial Hospital	Mat	Church	8	5	10	163	112
Florence Crittenton Home and Hospital	Mat	NPAssn	77	47	9	118	135
St. Francis Sanatorium	TB	Church	22	20	..	...	30
Englewood, 9,680—Arapahoe							
Costello Home	TB	NPAssn	14	7	..	...	7
Temple Rest Home	Conv	Indiv	23	23	..	...	74
Golden, 3,175—Jefferson							
Hospital—State Industrial School for Boys	Inst	State	25	4	..	...	109
Grand Junction, 12,479—Mesa							
State Home and Training School for Mental Defectives	MeDe	State	500	456	..	...	27
Homelake, 225—Rio Grande							
Colorado State Soldiers and Sailors Home	Inst	State	35	12	..	...	56
Ridge, 100—Jefferson							
State Home and Training School for Mental Defectives	MeDe	State	345	340	..	...	10

CONNECTICUT

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bridgeport, 147,121—Fairfield							
Bridgeport Hospital★+▲○	Gen	NPAssn	387	349	74	2,491	12,585
Englewood Hospital	IsoTb	City	150	11	..	...	241
Park City Hospital	Gen	NPAssn	33	24	..	...	986
]★▲○	Gen	Church	342	262	80	3,176	11,603
▪	Gen	NPAssn	120	112	30	894	5,116
Canaan, 555—Litchfield							
Robert C. Geer Memorial Hospital	Gen	NPAssn	32	21	7	99	862
Cromwell, 3,281—Middlesex							
Cromwell Hall	Nerv	Corp	33	16	..	...	69
Danbury, 22,339—Fairfield							
Danbury Hospital★▲○	Gen	NPAssn	180	126	40	1,175	5,282
Federal Correctional Institution	Inst	USPHS	33	22	..	...	503
Derby, 10,287—New Haven							
Griffin Hospital▲	Gen	NPAssn	94	80	24	1,109	3,861

Key to symbols and abbreviations is on page 1396

CONNECTICUT—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Greens Farms, 275—Fairfield							
Hall-Brooke Sanitarium	N&M	Corp	58	52	..	...	187
Greenwich, 6,000—Fairfield							
Blythewood	N&M	Corp	70	57	..	...	219
Greenwich Hospital+▲○	Gen	NPAssn	128	110	23	583	4,018
St. Luke's Convalescent Hospital	ChilConv	NPAssn	110	78	..	...	952
Hartford, 166,267—Hartford							
Avery Convalescent Hospital	Unit of Hartford Hospital						
Cedarcrest Sanatorium▲	TB	State	243	232	..	...	218
Hartford Hospital*+▲○	Gen	NPAssn	746	607	170	6,261	23,855
Institute of Living (Neuro-Psychiatric Institute of the Hartford Retreat)+▲	N&M	NPAssn	400	403	..	...	916
J. J. McCook Memorial Hospital*+▲⊙	GenIso	City	256	199	6	89	4,310
Mount Sinai Hospital▲	Gen	NPAssn	55	42	..	...	1,961
St. Francis Hospital*+▲○	Gen	Church	531	470	126	2,281	20,359
Kent, 1,245—Litchfield							
Kent School Infirmary	Inst	NPAssn	27	3	..	...	122
Lakeville, 1,800—Litchfield							
Hotchkiss School Infirmary	Inst	NPAssn	36	5	..	...	498
Manchester, 23,799—Hartford							
Manchester Memorial Hosp.▲	Gen	NPAssn	127	116	20	671	4,181
Meriden, 39,494—New Haven							
Meriden Hospital*▲○	Gen	NPAssn	146	124	30	1,331	5,373
Undercliff Sanatorium+▲	TB	State	343	198	..	...	194
Middletown, 26,495—Middlesex							
Connecticut State Hosp.+▲⊙	Ment	State	3,122	3,019	..	...	902
Middlesex Hospital*▲○	Gen	NPAssn	146	109	27	1,264	4,906
Milford, 16,439—New Haven							
Milford Hospital	Gen	NPAssn	50	33	15	454	1,451
New Britain, 68,685—Hartford							
New Britain General Hospital*+▲○	Gen	NPAssn	220	185	38	2,218	7,762
New Haven, 160,605—New Haven							
Grace-New Haven Community Hospital							
Grace Unit*+▲○	Gen	NPAssn	230	155	40	1,932	6,573
New Haven Unit*+▲○	Gen	NPAssn	541	437	57	2,142	12,210
Hospital of St. Raphael*+▲○	Gen	Church	370	288	60	2,539	10,738
Psychiatric Clinic, Yale School of Medicine	Unit of Grace-New Haven Com. Hospital						
Sarah Wey Thompkins Me- [illegible]	Unit of Grace-New Haven Com. Hospital						
[illegible] ...ppled Children+▲	Orth	NPAssn	175	114	..	...	221
Veterans Admin. Hospital+▲	Gen	Vet	387	316	..	...	5,473
New London, 30,456—New London							
Lawrence and Memorial Associated Hospital*+▲○	Gen	NPAssn	249	177	81	1,998	6,445
Dr. Lena's Surgical Hospital	Surg	Indiv	26	16	..	...	826
U. S. Coast Guard Academy Hospital▲	Gen	USPHS	31	9	..	...	372
New Milford, 3,600—Litchfield							
New Milford Hospital	Gen	NPAssn	26	16	8	156	750
Newtown, 603—Fairfield							
Fairfield State Hospital+▲⊙	Ment	State	2,540	2,467	..	...	819
Norwalk, 38,849—Fairfield							
Norwalk Hospital*+▲○	Gen	NPAssn	241	169	44	1,506	7,507
Norwich, 23,632—New London							
Norwich State Hospital+▲⊙	Ment	State	2,600	2,632	..	...	811
Norwich State Tuberculosis Sanatorium+▲	TB	State	422	355	..	...	302
William W. Backus Hosp.*▲○	Gen	NPAssn	125	123	30	1,373	6,111
Portland, 2,500—Middlesex							
Elmcrest Manor	N&M	Indiv	42	40	..	...	249
Putnam, 7,775—Windham							
Day Kimball Hospital▲	Gen	NPAssn	80	66	18	679	2,621
Rockville, 7,572—Tolland							
Rockville City Hospital	Gen	NPAssn	51	35	14	185	1,198
Sharon, 500—Litchfield							
Sharon Hospital▲	Gen	NPAssn	40	25	12	266	1,257
Shelton, 10,971—Fairfield							
Laurel Heights State Tuberculosis Sanatorium+▲	TB	State	261	250	..	...	218
Southbury, 1,100—New Haven							
Southbury Training School	MeDe	State	1,460	1,302	..	...	79
Southington, 5,088—Hartford							
Bradley Memorial Hospital	Gen	NPAssn	35	19	..	...	929
Stafford Springs, 3,401—Tolland							
Cyril and Julia C. Johnson Memorial Hospital▲	Gen	NPAssn	50	37	12	326	1,570
Stamford, 47,938—Fairfield							
Dr. Barnes Sanitarium	N&M	Corp	50	34	..	...	120
St. Joseph Hospital▲	Gen	Church	90	73	30	904	3,566
Stamford Hall	N&M	Corp	175	171	..	...	352
Stamford Hospital*+▲○	Gen	NPAssn	248	160	27	805	6,601
Tophassee Grange	N&M	Corp	26	7	..	...	...
Torrington, 26,988—Litchfield							
Charlotte Hungerford Hosp.▲	Gen	NPAssn	133	92	27	861	3,854
Wallingford, 11,425—New Haven							
Gaylord Farm Sanatorium+	TB	NPAssn	144	131	..	...	167
Waterbury, 99,314—New Haven							
St. Mary's Hospital*+▲○	Gen	Church	327	238	57	1,773	9,578
Waterbury Hospital*+▲○	Gen	NPAssn	310	241	68	2,018	11,026
Waterford, 100—New London							
The Seaside	TbChil	State	145	110	..	...	22
Westport, 8,258—Fairfield							
Westport Sanitarium	N&M	Corp	100	67	..	...	253
Willimantic, 12,101—Windham							
Windham Community Memorial Hospital▲	Gen	NPAssn	96	66	22	588	3,024
Winsted, 7,674—Litchfield							
Litchfield County Hospital▲	Gen	NPAssn	71	60	16	353	1,807

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bridgeport, 147,121—Fairfield							
Hillside Home and Hospital	Chr	City	275	248	..	...	431
East Lyme, 3,338—New London							
Ida Thompson Hospital	Unit of Connecticut State Farm for Women, Niantic						
Greenwich, 6,000—Fairfield							
Nathaniel Witherell Hospital	Chr	City	72	43	..	...	136
Mansfield Depot, 300—Tolland							
Mansfield State Training School and Hospital	MeDe	State	1,223	1,135	..	...	48
Meriden, 39,494—New Haven							
Connecticut School for Boys	Inst	State	37	7	..	...	243
New Canaan, 6,221—Fairfield							
Silver Hill Foundation+	N&M	NPAssn	46	29	..	...	242
New Haven, 160,605—New Haven							
Jewish Home for the Aged	Inst	NPAssn	92	90	..	...	20
Yale Infirmary	Inst	NPAssn	40	9	..	...	1,046
Niantic, 1,312—New London							
Connecticut State Farm for Women	Inst	State	243	51	9	49	212
Rocky Hill, 2,679—Hartford							
State Veterans Hospital	Inst	State	284	197	..	...	2,525
Waterbury, 99,314—New Haven							
Connecticut Children's Hosp.	MeDe	NPAssn	125	120	..	...	119
West Hartford, 33,776—Hartford							
St. Agnes Home	Mat	Church	140	32	6	95	96
West Suffield, 700—Hartford							
Travelers Rest House	Conv	NPAssn	40	11	..	...	79
Wethersfield, 9,644—Hartford							
Connecticut State Prison Hospital	Inst	State	30	14	..	...	205

DELAWARE

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Dover, 5,517—Kent							
Kent General Hospital▲	Gen	NPAssn	60	58	10	501	2,668
Farnhurst, 500—New Castle							
Delaware State Hospital+▲○	Ment	State	1,250	1,230	..	...	359
Lewes, 2,246—Sussex							
Beebe Hospital▲○	Gen	NPAssn	101	59	17	359	2,580
Marshallton, 1,500—New Castle							
Brandywine Sanatorium	TB	State	130	113	..	...	106
Edgewood Sanatorium	TB	State	68	42	..	...	57
Milford, 4,214—Sussex							
Milford Memorial Hospital▲○	Gen	NPAssn	100	72	19	684	3,053
Smyrna, 1,870—Kent							
Delaware State Welfare Home Hospital	InstChr	StateCo	378	365	7	2	265
Wilmington, 112,504—New Castle							
Alfred I. duPont Institute of The Nemours Foundation+▲	OrthChil	NPAssn	85	48	..	...	156
Delaware Hospital*+▲○	Gen	NPAssn	376	267	64	1,907	9,461
Doris Memorial Hospital⊙	Unit of Wilmington General Hospital						
Gross Private Hospital	Gen	Corp	15	7	6	60	290
Memorial Hospital*+▲○	Gen	NPAssn	210	161	38	1,179	5,636
St Francis Hospital▲○	Gen	Church	105	71	32	472	2,919
Veterans Admin. Hospital	Gen	Vet	150	148	..	...	1,758
Wilmington General Hosp.+▲○	Gen	NPAssn	172	107	52	1,069	4,366

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Marshallton, 1,500—New Castle							
Sunnybrook Cottage Preventorium	TbChil	NPAssn	24	20	..	...	12
Stockley, 68—Sussex							
Delaware Colony	MeDe	State	507	483	..	...	26

DISTRICT OF COLUMBIA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Washington, 786,000							
Adams' Hospital	Gen	Indiv	23	14	8	61	263
Central Dispensary and Emergency Hospital*+▲○	Gen	NPAssn	310	249	..	...	7,891
Children's Hospital+▲⊙	Chil	NPAssn	222	16[illegible]	..	...	7,731
Columbia Hospital for Women and Lying-In Asylum+▲	MatGyn	NPAssn	125	100	96	3,882	5,621
Doctors Hospital*+▲	Gen	Corp	240	213	61	2,020	8,771
Eastern Dispensary and Casualty Hospital+▲	Gen	NPAssn	150	97	..	...	3,537
Episcopal Eye, Ear and Throat Hospital+▲	ENT	Church	100	66	..	...	6,949
Freedmen's Hospital*+▲○	GenTb	Fed	498	403	54	1,210	7,002
Gallinger Municipal Hosp.*+▲○	Gen	City	1,407	979	129	4,722	21,116
Garfield Memorial Hosp.*+▲○	Gen	NPAssn	373	355	104	3,392	11,464
Georgetown University Hospital*+▲○	Gen	NPAssn	340	191	103	1,936	6,844

DISTRICT OF COLUMBIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
George Washington University Hospital★+△	Gen	NPAssn	400	75	22	919	3,063
National Homeopathic Hosp.▲	Gen	NPAssn	62	43	23	628	2,545
Providence Hospital★+▲○	Gen	Church	340	250	60	3,421	12,335
Saint Elizabeths Hosp.★+▲○	MentGen	Fed	6,577	6,169	..	9	1,378
Sibley Memorial Hosp.★+▲○	Gen	Church	256	217	78	3,328	11,588
Station Hospital	Gen	Army	153	80	18	513	3,136
Tuberculosis Sanatorium+▲ (Glenn Dale Sanatorium, Glendale, Md. P.O.)	TB	City	532	507	..	...	500
U. S. Soldiers' Home Hospital▲	InstGen	Fed	379	328	..	...	1,567
Veterans Admin. Hospital+▲	Gen	Vet	335	295	..	...	3,565
Walter Reed General Hospital★+▲	Gen	Army	2,400	1,897	33	1,140	12,454
Washington Sanitarium and Hospital★▲○	Gen	Church	188	179	29	917	1,962

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Washington, 796,000							
District Training School (Laurel, Md. P.O.)	MeDe	City	672	609	6	...	42
Florence Crittenton Home	Mat	NPAssn	56	10	36	158	167
Home for the Aged and Infirm	Inst	City	150	146	..	...	130
Kendall House Sanitarium	Conv	Indiv	22	15	..	...	22
National Training School for Boys Hospital	Inst	Fed	30	8	..	...	890
Washington Home for Incurables	Incur	NPAssn	172	172	..	..	30

FLORIDA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Avon Park, 3,125—Highlands							
Walker Memorial Sanitarium and Hospital	Gen	Church	82	...	6	Estab. 1945	
Bartow, 6,158—Polk							
Bartow General Hospital	Gen	City	30	16	12	301	1,573
Polk County Hospital	Gen	County	69	41	6	15	493
Bay Pines,—Pinellas							
Veterans Admin. Hospital▲	Gen	Vet	440	416	..	...	3,770
Bradenton, 7,444—Manatee							
Bradenton General Hospital	Gen	Part	27	20	10	204	928
Century, 2,000—Escambia							
Turberville Hospital▲	Gen	NPAssn	35	20	5	173	1,151
Chattahoochee, 7,110—Gadsden							
Florida State Hospital▲○	Ment	State	5,615	5,102	..	...	2,083
Clearwater, 10,136—Pinellas							
Morton F. Plant Hospital▲	Gen	NPAssn	75	43	15	441	2,425
Coral Gables, 8,294—Dade							
Coral Gables Hospital	Gen	Corp	15	...	15	Estab. 1947	
Veterans Admin. Hospital+	Gen	Vet	350	290	..	...	4,020
Dade City, 2,561—Pasco							
Jackson Memorial Hospital	Gen	County	20	9	10	240	619
Daytona Beach, 22,584—Volusia							
Halifax District Hospital	Gen	NPAssn	143	83	35	666	3,722
De Funiak Springs, 2,570—Walton							
Lakeside Clinic Hospital	Gen	Part	14	8	10	337	436
De Land, 7,041—Volusia							
De Land Memorial Hospital	Gen	NPAssn	23	11	9	294	1,316
Dunedin, 1,758—Pinellas							
Mease Hospital	Gen	NPAssn	25	12	4	86	829
Eglin Field,—Okaloosa							
Station Hospital	Gen	Army	150	90	25	350	3,500
Eustis, 2,930—Lake							
Lake County Medical Center	Gen	NPAssn	71	33	12	357	1,893
Fort Lauderdale, 17,996—Broward							
Broward General Hospital	Gen	City	126	81	41	768	3,693
Fort Myers, 10,604—Lee							
Jones-Walker Hospital	Unit of Lee Memorial Hospital						
Lee Memorial Hospital	Gen	NPAssn	40	37	10	457	1,949
Fort Pierce, 8,040—St. Lucie							
Fort Pierce Memorial Hosp.	Gen	NPAssn	50	28	12	455	1,420
Gainesville, 13,757—Alachua							
Alachua County Hospital▲○	Gen	County	116	83	30	1,045	3,947
University of Florida Infirmary	Inst	State	53	9	..	...	1,255
Hollywood, 6,239—Broward							
Hollywood Hospital	Gen	Corp	30	18	8	173	1,107
Homestead, 3,154—Dade							
James Archer Smith Hospital	Gen	NPAssn	18	10	8	151	639
Jacksonville, 173,065—Duval							
Brewster Hospital○	Gen	Church	105	65	25	1,042	2,701
Duval County Hospital★+▲⊙	Gen	County	225	138	15	560	3,657
Hazelhurst Sanatorium	TB	NPAssn	30	25	..	...	42
Hope Haven Hospital+	Orth	NPAssn	100	60	..	...	463
Negro Tuberculosis Hospital	TB	CyCo	48	35	..	...	42
Riverside Hospital+▲○	Gen	NPAssn	50	43	12	173	1,817
St. Luke's Hospital★+▲○	Gen	NPAssn	180	150	30	1,710	7,423
St. Vincent's Hospital★+▲○	Gen	Church	228	228	62	3,226	13,515
U. S. Naval Air Station Dispensary	Gen	Navy	138	20	..	...	2,148
U. S. Naval Hospital★+▲	Gen	Navy	550	493	40	836	6,727
Key West, 12,927—Monroe							
Key West Municipal Hospital	Gen	City	50	20	17	185	953
U. S. Naval Hospital	Gen	Navy	150	114	17	306	1,950
Kissimmee, 3,225—Osceola							
Osceola Hospital	Gen	Indiv	50	20	10	118	1,092

FLORIDA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Lake City, 5,836—Columbia							
Lake Shore Hospital	Gen	City	47	48	24	431	2,373
Veterans Admin. Hospital▲	Gen	Vet	378	312	..	...	4,552
Lakeland, 22,068—Polk							
Morrell Memorial Hospital▲	Gen	City	110	78	14	606	3,635
Lake Wales, 5,024—Polk							
Lake Wales Hospital▲	Gen	NPAssn	31	10	14	197	960
Leesburg, 4,687—Lake							
Durham Young Hospital	Gen	Indiv	23	...	8	Estab. 1947	
Stevens Clinic-Hospital	Gen	Indiv	18	...	11	Estab. 1947	
Manatee, 3,595—Manatee							
Riverside Hospital	Gen	Indiv	20	8	4	27	395
Marianna, 5,079—Jackson							
Jackson Hospital	Gen	NPAssn	62	53	14	384	2,429
Northwest Florida State Sanatorium	TB	State	206	124	..	...	419
Melbourne, 2,622—Brevard							
Brevard Hospital	Gen	NPAssn	30	11	5	111	519
Florida Rapid Treatment Center	Ven	State	280	...	..	Estab. 1947	
Miami, 172,172—Dade							
Biscayne Hospital	Gen	Corp	40	10	3	26	559
Christian Hospital	Gen	NPAssn	30	15	15	508	829
Dade County Hospital▲	GenTb	County	174	102	16	501	3,156
Jackson Memorial Hosp.★+▲○	Gen	City	551	443	70	3,662	18,207
Miami Medical Center	N&M	Indiv	25	20	..	...	432
Miami Retreat Sanatorium	N&M	NPAssn	85	57	..	...	1,273
Miami Riverside Hospital	Gen	Corp	44	25	10	140	680
National Children's Cardiac Home	Card	NPAssn	62	35	..	...	61
Sun-Ray Park Health Resort	Conv	Corp	75	42	..	...	677
Victoria Hospital	Gen	Indiv	57	39	22	670	2,736
Miami Beach, 28,012—Dade							
Alton Road Hospital	Gen	NPAssn	50	...	..	Estab. 1947	
St. Francis Hospital★▲	Gen	Church	175	102	40	726	4,254
Miami Springs, 898—Dade							
Miami-Battle Creek Sanit.	Gen	NPAssn	115	...	..	Reopened	
Ocala, 8,986—Marion							
Munroe Memorial Hospital	Gen	CyCo	74	51	15	521	3,661
Opa Locka, 1,855—Dade							
North Dade Hospital	Gen	Corp	250	...	20	Estab. 1947	
Orlando, 36,736—Orange							
Florida Sanitarium and Hospital▲○	Gen	Church	115	125	25	378	2,762
Florida State Tuberculosis Sanatorium⊙	TB	State	380	325	..	...	436
Orange Memorial Hospital★▲○	Gen	NPAssn	233	191	30	1,274	7,076
Station Hospital▲	Gen	Army	30	25	6	161	1,301
Palatka, 7,140—Putnam							
Glendale Hospital	Gen	Indiv	25	No data supplied			
Mary Lawson Sanatorium	Gen	Indiv	30	12	11	138	591
Panama City, 11,610—Bay							
Fraser Clinic Hospital	Gen	Indiv	10	5	5	150	772
Lisenby Hospital	Gen	Indiv	31	15	10	276	977
Panama City Hospital	Gen	NPAssn	22	15	12	480	1,356
Station Hospital	Gen	Army	59	31	15	199	1,271
Pensacola, 37,449—Escambia							
Pensacola Hospital▲○	Gen	Church	175	150	30	817	7,047
Pensacola Maternity Hospital	Mat	NPAssn	33	20	28	1,087	1,274
U. S. Naval Hospital★+▲	Gen	Navy	350	235	30	795	4,537
Plant City, 7,491—Hillsborough							
Dr. T. C. Maguire's Hosp.	Gen	Indiv	15	8	9	141	473
Quincy, 3,888—Gadsden							
Gadsden County Hospital	Gen	NPAssn	30	28	6	206	1,176
Rockledge, 725—Brevard							
Eugene Wuesthoff Memorial Hospital	Gen	NPAssn	20	8	8	96	401
St. Augustine, 12,090—St. Johns							
East Coast Hospital▲	Gen	NPAssn	55	50	5	186	1,027
Flagler Hospital▲	Gen	NPAssn	65	40	16	390	1,461
St. Petersburg, 60,812—Pinellas							
American Legion Hospital for Crippled Children	Orth	NPAssn	35	33	..	...	374
Mound Park Hospital▲○	Gen	City	159	157	25	757	5,826
St. Anthony's Hospital▲	Gen	Church	138	100	30	589	3,650
St. Anthony's Villa	Unit of St. Anthony's Hospital						
Sanford, 10,217—Seminole							
Fernald-Laughton Memorial Hospital	Gen	NPAssn	60	21	15	434	1,241
Sarasota, 11,141—Sarasota							
Joseph Halton Hospital	Gen	Indiv	10	8	2	8	509
Sarasota Hospital	Gen	City	74	46	12	408	2,109
Sebring, 3,155—Highlands							
Sebring General Hospital	Gen	Indiv	25	10	7	68	704
Weems Hospital	Gen	Indiv	22	13	6	150	376
Starke, 2,130—Bradford							
Shadycrest Hospital	Gen	Corp	50	...	10	Estab. 1947	
Stuart, 2,438—Martin							
Martin County Hospital	Gen	NPAssn	20	9	8	123	436
Tallahassee, 16,240—Leon							
Federal Correctional Institution	Inst	USPHS	30	11	..	...	291
Forsyth Memorial Sanitarium and Hospital	Gen	Church	44	...	11	Estab. 1947	
Tallahassee Memorial Hosp.	Gen	City	75	...	28	Estab. 1948	
Tampa, 108,391—Hillsborough							
Centro Asturiano Hospital	Gen	NPAssn	80	72	10	341	2,639
Clara Frye Tampa Municipal Negro Hospital▲	Gen	City	66	45	6	134	2,581
Hillsborough County Home and Hospital	Gen	County	257	197	12	274	4,472
St. Joseph's Hospital▲	Gen	Church	108	97	32	1,367	5,693
Southwest Florida State Tuberculosis Sanatorium	TB	State	375	300	..	...	613

Key to symbols and abbreviations is on page 1396

FLORIDA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Station Hospital▲	Gen	Army	150	99	24	362	2,233
Tampa Municipal Hospital★▲○	Gen	City	302	235	39	1,791	10,191
Tarpon Springs, 3,402—Pinellas							
Tarpon Springs Municipal Hospital	Gen	City	14	...	5	Estab. 1917	
Umatilla, 1,149—Lake							
Harry-Anna Crippled Children's Home	Orth	NPAssn	75	55	..	...	77
Vero Beach, 3,050—Indian River							
Indian River Hospital	Gen	NPAssn	26	12	12	202	791
West Palm Beach, 33,693—Palm Beach							
Good Samaritan Hospital▲◇	Gen	NPAssn	123	86	22	592	3,835
St. Mary's Hospital▲	Gen	Church	100	63	[illegible]	615	2,5 0
Winter Haven, 6,199—Polk							
Winter Haven Hospital	Gen	NPAssn	62	32	18	417	1,982

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Fernandina, 3,492—Nassau							
Nassau County Hospital	Gen	County	30	7	8	174	730
Fort Lauderdale, 17,996—Broward							
Provident Hospital	Gen	NPAssn	42	20	10	182	899
Gainesville, 13,757—Alachua							
Florida Farm Colony	MeDe	State	550	477	..	...	53
Gulfport, 2,443—Pinellas							
Cedars Hospital	Gen	Indiv	26	19	..	...	166
Jacksonville, 173,065—Duval							
Dr. Miller's Sanitarium	Drug	Indiv	20	8	..	...	546
Largo, 1,031—Pinellas							
Pinellas County Home and Hospital	InstTB	County	152	49	..	...	55
Miami, 172,172—Dade							
Edgewater Hospital	Gen	Indiv	41	26	12	318	1,957
Orlando, 36,736—Orange							
Holiday House Nursing Home	Conv	Part	16	11	..	...	58
St. Petersburg, 60,812—Pinellas							
Earle Restorium	Conv	Indiv	35	22	..	...	102
Florence Crittenton Home	Mat	NPAssn	22	17	12	50	55
Woman's Hospital	Gen	Indiv	24	...	12	Estab. 1947	
Tallahassee, 16,240—Leon							
Florida Agricultural and Mechanical College Hospital○	Gen	State	56	20	8	96	1,021
Wauchula, 2,710—Hardee							
Wauchula Infirmary	Gen	Indiv	16	10	5	180	1,080

GEORGIA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Albany, 19,055—Dougherty							
Phoebe Putney Memorial Hospital▲	Gen	CyCo	116	66	40	835	4,046
Alto, 217—Habersham							
Alto Medical Center†▲	Ven	State	846	411	16	16	13,706
Americus, 9,281—Sumter							
Americus and Sumter County [illegible]	Gen	NPAssn	62	33	12	278	1,642
[illegible]	Gen	County	84	62	14	300	3,040
[illegible]	Gen	Church	102	68	16	774	3,828
Atlanta, 302,288—Fulton							
Albert Steiner Clinic for Cancer and Allied Diseases†	Unit of Grady Memorial Hospital						
Blackman-Walton Sanatorium	Gen	Part	25	24	..	...	910
Contagious Disease Hospital	Unit of Grady Memorial Hospital						
Crawford W. Long Memorial Hospital★†▲○	Gen	NPAssn	329	300	120	5,551	16,095
Georgia Baptist Hosp.★†▲○	Gen	Church	194	169	20	850	6,956
Grady Memorial Hosp.★†▲○	Gen	Counties	610	460	90	4,320	16,937
Grady Memorial Hosp., Emory University Division	Unit of Grady Memorial Hospital						
Henrietta Egleston Hospital for Children†▲	Chil	NPAssn	40	33	4	...	1,104
Jesse Parker Williams Hosp.	Gen	NPAssn	66	46	..	...	2,163
Joseph B. Whitehead Memo- [illegible]	Inst	State	28	8	..	...	2,806
[illegible]	Gen	NPAssn	132	132	18	1,092	5,087
[illegible]	ENT	Indiv	25	21	..	...	2,537
[illegible]	Gen	Church	140	135	37	1,443	6,047
[illegible]	Gen	Army	607	135	20	253	3,373
[illegible]	Inst	USPHS	172	67	..	...	900
Veterans Admin. Hospital▲	TB	Vet	225	209	..	...	2,324
William A. Harris Memorial Hospital	Gen	Corp	28	27	3	86	772
Augusta, 65,919—Richmond							
Oliver General Hosp.★†▲	Gen	Army	2,600	2,113	12	206	8,403
University Hospital★†▲○	GenTb	City	496	410	58	2,164	14,532
Veterans Admin. Hospital†▲	Ment	Vet	1,225	1,374	..	...	1,131
Wilhenford Hospital	Unit of University Hospital						
[illegible]	Gen	Part	32	7	6	237	517
[illegible]	Gen	Part	34	17	8	170	997
[illegible]	Gen	Indiv	10	2	2	124	816
Burdine Hospital	Gen	Part	12	9	6	106	745
Brunswick, 15,035—Glynn							
City Hospital	Gen	City	100	43	20	620	3,067
Butler, 1,093—Taylor							
Montgomery Hospital	Gen	Indiv	22	11	5	151	805

GEORGIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Cairo, 1,653—Grady							
Grady County Hospital	Gen	County	18	8	5	217	539
Calhoun, 2,955—Gordon							
Johnson-Hall Hospital	Gen	Indiv	24	12	3	384	675
Canton, 2,651—Cherokee							
Cokers' Hospital	Gen	Indiv	50	27	5	262	1,632
Cartersville, 6,141—Bartow							
Wofford-Stanford Hospital	Gen	Part	12	4	3	196	402
Cedartown, 9,025—Polk							
Polk General Hospital	Gen	NPAssn	31	...	12	Estab. 1947	
Chamblee, 1,081—De Kalb							
Veterans Admin. Hospital†▲	Gen	Vet	550	540	..	...	6,161
Columbus, 53,280—Muscogee							
Columbus City Hospital▲○	Gen	City	300	188	30	2,054	9,580
Cuthbert, 3,447—Randolph							
Patterson Hospital▲	Gen	Part	50	...	10	Reopened	
Dalton, 10,448—Whitfield							
Hamilton Memorial Hospital	Gen	NPAssn	52	44	15	1,030	3,200
Decatur, 16,561—De Kalb							
Scottish Rite Hospital for Crippled Children†▲	Orth	NPAssn	64	44	..	...	311
Donalsonville, 1,718—Seminole							
Donalsonville Hospital▲	Gen	Part	30	21	6	238	1,459
Douglas, 5,175—Coffee							
Douglas Hospital	Gen	City	31	21	12	452	...
Dublin, 7,814—Laurens							
Claxton Sanitarium	Gen	Indiv	65	45	12	260	2,412
Coleman Hospital	Gen	Indiv	45	26	6	258	1,709
U. S. Naval Hospital	Gen	Navy	400	421	6	32	3,699
Eastman, 3,311—Dodge							
Coleman Memorial Hospital▲	Gen	Part	18	10	5	75	691
Elberton, 6,188—Elbert							
Elbert County Hospital	Gen	CyCo	24	16	6	282	830
Emory University, 250—De Kalb							
Emory University Hosp.★†▲○	Gen	NPAssn	274	262	36	1,802	9,757
Fort Benning,—Chattahoochee							
Station Hospital▲	Gen	Army	800	398	33	876	10,211
Gainesville, 10,243—Hall							
Downey Hospital▲	Gen	Corp	52	37	13	438	2,246
Hall County Memorial Hosp.	Gen	County	36	20	10	203	1,126
Griffin, 13,222—Spalding							
R. F. Strickland and Son Memorial Hospital▲	Gen	CyCo	42	32	9	689	2,385
Hahira, 980—Lowndes							
Smith Hospital	Gen	Indiv	36	19	8	127	1,390
Hawkinsville, 3,000—Pulaski							
R. J. Taylor Memorial Hosp.	Gen	NPAssn	34	16	7	182	1,217
Jasper, 576—Pickens							
Roper Hospital	Gen	Indiv	26	13	8	276	992
Jesup, 2,903—Wayne							
Ritch-Leaphart Hospital	Gen	Part	56	37	13	443	2,275
La Grange, 21,983—Troup							
City-County Hospital▲	Gen	CyCo	95	69	18	854	3,807
Louisville, 1,803—Jefferson							
Pilcher Hospital	Gen	Indiv	35	15	6	120	1,559
Macon, 57,865—Bibb							
Clinic Hospital	Gen	Corp	38	32	10	268	2,180
Hopewell Sanatorium	Unit of Macon Hospital						
Macon Hospital★▲○	GenTb	CyCo	248	211	40	1,863	[illegible],757
Mercy Hospital▲	Gen	Church	38	23	10	335	1,488
Middle Georgia Hospital▲◇	Gen	Corp	47	40	12	247	2,444
St. Luke Hospital	Gen	NPAssn	39	12	6	60	475
Station Hospital	Gen	Army	50	7	1	2	400
Marietta, 8,667—Cobb							
Marietta Hospital	Gen	Corp	54	39	21	852	2,920
Metter, 1,823—Candler							
Kennedy Memorial Hospital	Gen	Indiv	20	16	3	115	1,029
Milledgeville, 6,778—Baldwin							
Allen's Invalid Home	N&M	Indiv	131	130	..	...	247
Milledgeville State Hosp.◇	Ment	State	9,413	8,895	..	...	2,080
Richard Binion Clinic Hosp.	Gen	Indiv	60	32	15	363	2,214
Scott Hospital	Gen	Indiv	25	24	6	100	650
Millen, 2,820—Jenkins							
Millen Hospital▲	Gen	Indiv	24	11	8	82	736
Mulkey Hospital	Gen	Part	40	18	16	217	1,313
Monroe, 4,168—Walton							
Walton County Hospital	Gen	CyCo	42	18	13	308	1,428
Montezuma, 2,346—Macon							
Macon County Clinic-Hospital	Gen	Part	31	19	4	58	869
Riverside Sanatorium	Gen	Indiv	35	22	8	151	1,156
Moultrie, 10,147—Colquitt							
Vereen Memorial Hospital	Gen	NPAssn	58	40	14	568	2,734
Nashville, 2,449—Berrien							
Askew Memorial Hospital	Gen	Indiv	17	6	5	146	731
Ocilla, 2,124—Irwin							
[illegible]	Gen	Part	30	13	5	136	680
[illegible]	Gen	Part	20	8	6	71	591
Quitman, 4,450—Brooks							
Brooks County Hospital	Gen	CyCo	37	23	10	221	1,347
Reidsville, 805—Tattnall							
Jelks Hospital	Gen	Indiv	13	9	2	123	474
Rome, 26,282—Floyd							
Battey State Hospital†▲	TB	State	2,200	935	..	...	867
Floyd Hospital▲	Gen	County	75	57	20	404	4,265
Harbin Hospital▲	Gen	Corp	60	38	12	214	2,771
McCall Hospital▲	Gen	Corp	67	50	24	1,067	3,780
Royston, 1,549—Franklin							
Brown's Hospital	Gen	Indiv	20	2	3	60	498
Sandersville, 3,566—Washington							
Rawlings Sanitarium▲	Gen	NPAssn	50	40	12	246	1,699

Key to symbols and abbreviations is on page 1396

GEORGIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Savannah, 95,996—Chatham							
Central of Georgia Railway Hospital▲	Indus	NPAssn	76	52	..	...	2,278
Charity Hospital	Gen	NPAssn	100	51	20	367	2,031
Georgia Infirmary	Gen	NPAssn	95	42	12	375	2,346
Oglethorpe Sanatorium	Gen	Corp	50	10	10	127	1,911
St. Joseph's Hospital▲◇	Gen	Church	124	93	26	950	4,044
Telfair Hospital	Gen	NPAssn	89	49	38	528	2,972
U. S. Marine Hospital▲	Gen	USPHS	180	133	..	...	2,206
Warren A. Candler Hosp.▲◇	Gen	Church	127	95	23	1,020	5,298
Smyrna, 1,440—Cobb							
Brawner's Sanitarium	N&M	Indiv	15	11	..	...	1,211
Statesboro, 5,028—Bulloch							
Bulloch County Hospital	Gen	County	64	68	15	179	2,344
Van Buren's Sanitarium	Gen	Indiv	25	17	5	25	258
Thomasville, 12,683—Thomas							
John D. Archbold Memorial Hospital▲	Gen	NPAssn	110	87	15	429	4,242
Tifton, 5,228—Tift							
Tift County Hospital	Gen	County	50	36	12	608	2,055
Toccoa, 5,494—Stephens							
Stephens County Hospital	Gen	County	30	32	8	128	2,143
Trion, 3,600—Chattooga							
Riegel Community Hospital	Gen	NPAssn	30	26	8	317	1,899
Valdosta, 15,595—Lowndes							
Little-Griffin Hospital	Gen	NPAssn	80	60	18	613	4,205
Vidalia, 4,100—Toombs							
Gross-Mercer Hospital	Gen	Corp	17	3	7	195	985
Vienna, 2,003—Dooly							
Dooly Hospital	Gen	Corp	17	9	1	147	810
Warm Springs, 608—Meriwether							
Georgia Warm Springs Foundation+▲	Orth	NPAssn	165	153	..	...	799
Washington, 3,537—Wilkes							
Washington General Hospital	Gen	City	50	12	8	334	2,269
Waycross, 16,763—Ware							
Atlantic Coast Line Hosp.▲	Indus	NPAssn	75	39	.	..	1,189
Ware County Hospital	Gen	County	90	60	10	850	4,275
West Point, 3,591—Troup							
Valley Hospital	Gen	City	29	24	7	138	2,564

Related Institutions

[illegible] rmary	Inst	State	35	7	..	...	1,004
[illegible] Convalescent Hospital	Orth	NPAssn	70	59	..	...	385
Dwelle's Infirmary	Gen	Indiv	20	14	3	45	400
Florence Crittenton Home	Mat	NPAssn	6	3	10	61	71
Our Lady of Perpetual Help Free Cancer Home	Cancer	Church	80	51	..	...	261
Barwick, 400—Brooks							
Barwick Hospital	Gen	Indiv	6	1	3	80	369
Clayton, 1,088—Rabun							
Rabun County Maternity Hospital	Mat	County	12	No data supplied			
[illegible] Hospital	TB	County	40	31	..	...	55
Cordele, 7,929—Crisp							
Gillespie Hospital	Gen	Church	30	10	6	28	576
Gracewood, 500—Richmond							
Georgia Training School for Mental Defectives	MeDe	State	500	503	..	...	110
Lyons, 1,900—Toombs							
Aiken Hospital	Gen	Indiv	10	6	5	113	481
Stone Mountain, 1,408—De Kalb							
Brook Haven Manor Sanitarium	N&M	Indiv	50	25	..	...	100
[illegible] ooga							
[illegible] Hospital	Gen	Indiv	20	8	0	181	565

IDAHO

Hospitals and Sanatoriums

American Falls, 1,439—Power							
[illegible] tal	Gen	County	23	9	8	189	753
[illegible]	Ment	State	750	651	..	...	235
[illegible] Hospital▲◇	Gen	Church	135	128	26	1,020	5,196
St. Luke's Hospital▲◇	Gen	Church	124	103	28	849	4,341
Veterans Admin. Hospital▲	Gen	Vet	263	191	..	...	2,512
Bonners Ferry, 1,345—Boundary							
Boundary County Hospital	Gen	County	25	10	8	145	936
Burley, 5,329—Cassia							
Cottage Hospital	Gen	Corp	32	28	10	176	1,083
Caldwell, 7,272—Canyon							
Caldwell Sanitarium	Gen	Part	22	20	7	97	801
Coeur d'Alene, 10,049—Kootenai							
[illegible] pital	Gen	Indiv	37	24	17	425	1,443
[illegible] Hospital	Gen	Church	35	25	10	399	1,004
Council, 692—Adams							
Community Hospital	Gen	NPAssn	25	17	8	121	691
[illegible]	Gen	NPAssn	16	10	5	200	380
[illegible] Tuberculosis Hospital	TB	State	42	...	..	Estab. 1947	

IDAHO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Grangeville, 1,929—Idaho							
General Hospital	Gen	City	25	14	7	106	637
Hailey, 1,443—Blaine							
Hailey Clinical Hospital	Gen	Indiv	22	11	7	132	618
Idaho Falls, 15,024—Bonneville							
Idaho Falls Latter-Day Saints' Hospital▲◇	Gen	Church	111	79	40	1,019	4,633
Sacred Heart Hospital▲	Gen	Church	28	23	7	62	1,021
Kellogg, 4,235—Shoshone							
Wardner Hospital	Gen	Part	25	28	8	246	1,313
Lewiston, 10,548—Nez Perce							
St. Joseph's Hospital▲◇	Gen	Church	120	94	18	749	3,503
Malad City, 2,731—Oneida							
Oneida Hospital	Gen	NPAssn	17	7	7	165	458
Moscow, 6,014—Latah							
Gritman Memorial Hospital	Gen	Corp	53	43	21	536	1,953
Nampa, 12,149—Canyon							
Mercy Hospital▲◇	Gen	Church	92	85	20	723	4,309
Nazarene Missionary Sanitarium (Samaritan Hospital Division)▲◇	Gen	Church	60	45	10	246	1,572
Orofino, 1,602—Clearwater							
Orofino Hospital	Gen	Part	33	10	4	59	431
State Hospital North	Ment	State	454	430	..	...	61
Pocatello, 18,133—Bannock							
Pocatello General Hospital▲◇	Gen	CyCo	75	69	22	523	2,496
St. Anthony's Mercy Hosp.▲◇	Gen	Church	100	77	25	961	4,092
Preston, 4,236—Franklin							
General Memorial Hospital	Gen	NPAssn	17	12	8	230	436
Rexburg, 3,137—Madison							
Harle B. [illegible] al	Gen	Indiv	15	6	7	90	419
[illegible]	Gen	Indiv	11	8	4	96	575
St. Maries Hospital	Gen	NPAssn	30	29	6	94	1,024
Sandpoint, 4,356—Bonner							
Community Hospital	Gen	NPAssn	35	28	8	211	505
Soda Springs, 1,057—Caribou							
Caribou County Hospital	Gen	County	31	17	11	151	773
Twin Falls, 11,851—Twin Falls							
Twin Falls County General Hospital	Gen	County	82	58	28	1,011	3,467
Wallace, 3,839—Shoshone							
Providence Hospital▲	Gen	Church	50	36	12	146	1,864
Wallace Hospital	Gen	Part	40	15	3	169	893
Wendell, 1,001—Gooding							
St. Valentine's Hospital	Gen	Church	31	29	12	457	1,204

Related Institutions

Boise, 26,130—Ada							
Booth Memorial Hospital	Mat	Church	26	15	11	75	105
Nampa, 12,149—Canyon							
State School and Colony	MeDe	State	632	630	..	...	61
Priest River, 1,056—Bonner							
Priest River Hospital	Gen	Indiv	10	3	..	4	77

ILLINOIS

Hospitals and Sanatoriums

Alton, 31,255—Madison							
Alton Memorial Hospital+▲◇	Gen	Church	140	105	32	1,141	3,923
Alton State Hospital+	Ment	State	1,876	1,795	..	...	753
St. Anthony's Infirmary and Sanitarium	Gen	Church	95	78	..	...	878
St. Joseph's Hospital+▲◇	Gen	Church	165	153	40	1,163	6,162
Amboy, 1,926—Lee							
Amboy Public Hospital	Gen	NPAssn	12	9	5	106	365
Anna, 4,092—Union							
Anna State Hospital+	Ment	State	2,414	2,210	..	...	697
Hale-Willard Memorial Hosp.	Gen	City	16	8	7	435	874
Aurora, 47,170—Kane							
Copley Hospital▲◇	Gen	NPAssn	200	110	40	997	4,070
Kane County Springbrook Sanitarium	TB	County	75	60	..	...	79
Mercyville Sanitarium©	N&M	Church	172	165	..	...	530
St. Charles Hospital▲◇	Gen	Church	125	100	28	606	3,381
St. Joseph Mercy Hospital▲◇	Gen	Church	120	99	30	788	4,073
Avon, 803—Fulton							
Saunders Hospital	Gen	NPAssn	16	12	7	158	231
Batavia, 5,101—Kane							
Fox River Sanitarium	TB	NPAssn	75	47	..	...	86
Beardstown, 6,505—Cass							
Schmitt Memorial Hospital	Gen	City	36	31	8	338	1,377
Belleville, 28,405—St. Clair							
St. Elizabeth's Hospital	Gen	Church	133	138	32	1,481	5,301
Belvidere, 8,094—Boone							
Highland Hospital	Gen	NPAssn	37	26	5	140	1,115
St. Joseph's Hospital	Gen	Church	55	37	17	296	1,937
Benton, 7,372—Franklin							
Moore Hospital	Gen	Indiv	25	12	2	96	453
Berwyn, 48,451—Cook							
MacNeal Memorial Hosp.★▲	Gen	NPAssn	150	146	45	1,369	7,848
Bloomington, 32,868—McLean							
Mennonite Hospital▲◇	Gen	Church	102	93	25	1,034	3,643
St. Joseph's Hospital▲◇	Gen	Church	200	177	25	619	5,182
Blue Island, 16,638—Cook							
St. Francis Hospital+▲	Gen	Church	110	99	25	1,024	4,035
Breese, 2,206—Clinton							
St. Joseph Hospital	Gen	Church	52	29	16	361	1,183

Key to symbols and abbreviations is on page 1396

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bushnell, 2,906—McDonough							
"Elmgrove" McDonough County Tuberculosis Sanatorium ..	TB	County	30	11	..	...	34
Cairo, 14,407—Alexander							
Alexander County Tuberculosis Sanatorium	TB	County	56	41	..	...	92
St. Mary's Infirmary▲○.......	Gen	Church	100	68	12	705	3,819
Canton, 11,577—Fulton							
Graham Hospital○	Gen	NPAssn	112	103	35	884	5,245
Carbondale, 8,550—Jackson							
Holden Hospital	Gen	Church	75	40	15	655	2,415
Carlinville, 4,965—Macoupin							
Macoupin Hospital	Gen	Indiv	28	22	6	293	1,005
Carrollton, 2,285—Greene							
Boyd Memorial Hospital.....	Gen	NPAssn	22	19	12	375	1,006
Centralia, 16,343—Marion							
St. Mary's Hospital..........	Gen	Church	85	73	15	678	3,834
Champaign, 23,302—Champaign							
Burnham City Hospital▲○....	Gen	City	115	114	25	1,009	5,123
Charleston, 8,197—Coles							
M. A. Montgomery Memorial Sanitarium	Gen	NPAssn	35	19	12	279	1,005
Chester, 5,110—Randolph							
Chester Hospital	Gen	NPAssn	23	14	12	117	595
Chicago, 3,396,808—Cook							
Albert Merritt Billings Hosp.	Unit of University of Chicago Clinics						
Alexian Brothers Hosp.★+▲○..	Gen	Church	211	182	..	...	4,772
American Hospital★+▲○	Gen	NPAssn	160	121	25	725	6,573
Augustana Hospital★+▲○	Gen	Church	275	263	30	1,175	7,737
Belmont Community Hosp.★..	Gen	NPAssn	110	82	27	985	4,566
Bethany Methodist Hospital▲	Gen	Church	25	18	..	...	865
Bethany Sanitarium and Hospital▲	Gen	Church	81	51	21	812	2,938
Bobs Roberts Memorial Hospital for Children...........	Unit of University of Chicago Clinics						
Burrows Hospital	Gen	Indiv	40	11	6	97	423
Chicago Clinic of Physical Medicine	Gen	NPAssn	55	20	..	...	235
Chicago Eye, Ear, Nose and Throat Hospital	ENT	Corp	75	15	..	...	1,228
Chicago Fresh Air Hospital..	TB	NPAssn	70	41	..	...	181
Chicago Intensive Treatment Center+	Ven	City	200	151	..	...	5,798
Chicago Lying-In Hosp.+▲⊙..	Unit of University of Chicago Clinics						
Chicago Memorial Hosp.★+▲..	Gen	NPAssn	92	80	20	528	3,002
Chicago State Hospital+▲⊙..	Ment	State	4,860	4,720	..	...	1,806
Children's Memorial Hosp.+▲⊙	Chil	NPAssn	252	150	..	...	4,037
City of Chicago Municipal Tuberculosis Sanitarium+▲..	TB	City	1,296	1,100	..	...	1,359
Columbus Hospital★▲○	Gen	Church	132	95	18	459	3,444
Cook County Children's Hospital	Unit of Cook County Hospital						
Cook County Hospital★+▲○..	Gen	County	3,280	2,559	225	5,867	72,273
Cook County Psychopathic Hospital	Unit of Cook County Hospital						
Edgewater Hospital★+▲	Gen	NPAssn	138	119	38	1,144	6,935
Englewood Hospital★▲○	Gen	NPAssn	157	136	32	1,246	6,517
Evangelical Hospital★▲○	Gen	Church	195	187	60	2,634	8,241
Fairview Sanitarium	N&M	Corp	50	42	..	...	981
Frank Cuneo Hospital.......	Mat	Church	75	48	50	1,551	2,343
Franklin Boulevard Community Hospital▲	Gen	NPAssn	66	54	..	48	2,522
Garfield Park Community Hospital★▲○	Gen	NPAssn	150	101	32	1,485	5,539
Grant Hospital★+▲○	Gen	NPAssn	243	189	45	1,473	7,625
Henrotin Hospital★+▲○	Gen	NPAssn	102	80	25	784	3,415
Holy Cross Hospital★▲.......	Gen	Church	130	120	36	1,983	6,154
Home for Destitute Crippled Children	Unit of University of Chicago Clinics						
Hospital of St. Anthony de Padua★+▲○	Gen	Church	211	182	39	1,986	8,076
Illinois Central Hospital★+▲..	Gen	NPAssn	250	191	40	941	6,675
Illinois Eye and Ear Infirmary+▲	ENT	State	147	96	..	...	3,923
Illinois Masonic Hosp.★+▲○...	Gen	NPAssn	225	149	40	1,208	6,542
Illinois Neuropsychiatric Institute+⊙	Ment	State	82	53	..	...	884
Illinois Surgical Institute for Children⊙	Unit of Research and Educational Hosps.						
Jackson Park Hospital★▲○...	Gen	Corp	135	103	25	641	3,945
La Rabida Jackson Park Sanitarium+	CardChil	NPAssn	100	55	..	...	151
Lewis Memorial Maternity Hospital+▲	Mat	Church	117	44	100	1,757	2,339
Loretto Hospital★+▲..........	Gen	Church	134	103	31	1,339	5,103
Lutheran Deaconess Home and Hospital★+▲○	Gen	Church	193	169	42	1,618	9,445
Manor Hospital	Gen	NPAssn	44	25	..	...	1,272
Martha Washington Hospital	Gen	NPAssn	75	57	15	572	3,261
Mercy Hospital-Loyola University Clinics★+▲○	Gen	Church	363	301	46	1,147	9,320
Michael Reese Hospital★+▲○..	Gen	NPAssn	647	487	71	2,526	16,081
Misericordia Hospital and Home for Infants▲..........	Mat	Church	58	7	19	205	224
Mother Cabrini Memorial Hospital★▲○	Gen	Church	129	90	30	1,229	4,791
Mount Sinai Hospital★+▲○...	Gen	NPAssn	233	208	44	1,711	8,313
Municipal Contagious Disease Hospital+▲⊙	Iso	City	428	63	..	...	2,203
Northwest Hospital	Gen	NPAssn	47	..	..	Estab. 1948	
Norwegian-American Hospital★+▲○	Gen	NPAssn	164	144	50	1,758	7,997
Orthopaedic Institute	See Illinois Surgical Institute for Children						

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Passavant Memorial Hospital★+▲	Gen	NPAssn	220	200	35	905	5,838
Pinel Sanitarium	N&M	NPAssn	50	35	..	...	340
Presbyterian Hospital★+▲○ ..	Gen	Church	435	371	52	1,854	12,651
Provident Hospital★+▲○	Gen	NPAssn	150	138	23	1,500	5,287
Ravenswood Hospital★+▲○ ...	Gen	NPAssn	155	129	37	1,774	6,105
Research and Educational Hospitals★+▲⊙	Gen	State	428	368	24	833	6,591
Roosevelt Memorial Hospital.	Gen	Corp	35	17	..	...	1,124
Roseland Community Hospital★▲○	Gen	NPAssn	101	76	24	1,014	4,012
St. Anne's Hospital★+▲○.....	Gen	Church	315	283	80	2,904	9,325
St. Anthony de Padua Hosp.	See Hospital of St. Anthony de Padua						
St. Bernard's Hospital★+▲○..	Gen	Church	189	183	42	1,409	10,353
St. Elizabeth Hospital★+▲○...	Gen	Church	274	242	77	2,753	9,936
St. George Hospital▲.........	Gen	Church	100	72	..	...	3,209
St. Joseph Hospital★+▲○.....	Gen	Church	260	207	40	1,583	7,259
St. Luke's Hospital★+▲○.....	Gen	NPAssn	534	487	55	1,706	15,486
St. Mary of Nazareth Hospital★+▲○	Gen	Church	263	239	60	2,859	10,010
St. Vincent's Infant and Maternity Hospital+▲	MatChil	Church	290	205	20	424	954
Sarah Morris Hospital for Children	Unit of Michael Reese Hospital						
Shriners Hospital for Crippled Children+▲	Orth	NPAssn	60	51	..	...	225
South Chicago Community Hospital★▲○	Gen	NPAssn	149	144	40	1,705	5,882
South Shore Hospital▲○......	Gen	Corp	100	78	17	927	4,275
Southtown Hospital	Gen	NPAssn	87	71	12	665	2,982
Swedish Covenant Hosp.★+▲○	Gen	Church	193	177	65	2,120	6,569
U. S. Marine Hospital★+▲....	Gen	USPHS	306	181	..	...	2,424
University Hospital★▲○	Gen	Church	100	59	..	...	3,343
University of Chicago Clinics★+▲	Gen	NPAssn	526	420	134	4,088	12,615
Veterans Rehabilitation Center+	Ment	State	29	16	..	...	216
Walther Memorial Hosp.★▲○..	Gen	Church	175	135	31	1,285	6,561
Wesley Memorial Hosp.★+▲○..	Gen	Church	579	468	51	1,473	13,015
Women and Children's Hospital★+▲○	Gen	NPAssn	115	107	30	1,389	4,022
Woodlawn Hospital★+▲	Gen	NPAssn	112	92	22	591	4,510
Chicago Heights, 22,461—Cook							
St. James Hospital+▲........	Gen	Church	100	85	20	1,081	4,625
Christopher, 3,833—Franklin							
Miners Hospital	Gen	NPAssn	42	...	10	Estab. 1947	
Clinton, 6,331—DeWitt							
John Warner Hospital.......	Gen	City	45	32	6	219	1,268
Danville, 36,919—Vermilion							
Lake View Hospital▲○........	Gen	NPAssn	180	169	30	822	5,016
St. Elizabeth Hospital▲○.....	Gen	Church	195	145	35	1,055	5,528
Vermilion County Tuberculosis Dispensary and Hospital▲..	TB	County	60	44	..	...	48
Veterans Admin. Hospital▲⊙..	Ment	Vet	2,025	1,955	..	...	694
Decatur, 59,305—Macon							
Decatur and Macon County Hospital+▲○	Gen	NPAssn	220	219	45	1,546	6,265
Macon County Tuberculosis Sanatorium+▲⊙	TB	County	80	75	..	..	62
St. Mary's Hospital..........	Gen	Church	180	199	25	1,332	7,196
Wabash Employes' Hospital▲	Indus	NPAssn	75	47	..	...	1,646
DeKalb, 9,146—DeKalb							
DeKalb County Tuberculosis Sanatorium	TB	County	27	13	..	...	23
DeKalb Public Hospital▲.....	Gen	City	40	38	12	315	1,101
St. Mary's Hospital▲.........	Gen	Church	50	36	13	269	1,358
Des Plaines, 9,518—Cook							
Forest Sanitarium	N&M	Indiv	26	20	..	...	145
Dixon, 10,671—Lee							
Dixon Public Hospital▲○.....	Gen	NPAssn	105	66	22	650	2,620
Dixon State Hospital+.......	MeDe	State	4,901	4,510	10	12	500
Downey,—Lake							
Veterans Admin. Hospital+▲⊙	Ment	Vet	2,872	2,010	..	...	1,279
Dunning,—Cook							
Chicago State Hospital......	See Chicago						
Du Quoin, 7,515—Perry							
Marshall Browning Hospital..	Gen	NPAssn	57	42	12	587	1,987
Dwight, 2,499—Livingston							
Veterans Admin. Hospital▲..	Gen	Vet	225	181	..	...	2,383
East Moline, 12,359—Rock Island							
East Moline State Hospital..	Ment	State	2,251	2,125	..	...	641
East St. Louis, 75,609—St. Clair							
Christian Welfare Hosp.▲○..	Gen	NPAssn	133	111	33	1,319	4,267
Pleasant View Sanatorium+▲	TB	County	100	90	..	...	129
St. Mary's Hospital★▲○.......	Gen	Church	265	222	36	1,023	6,640
Edwardsville, 8,008—Madison							
Madison County Tuberculosis Sanatorium▲	TB	County	99	73	..	...	101
Effingham, 6,180—Effingham							
St. Anthony's Hospital.......	Gen	Church	122	95	16	823	3,589
Eldorado, 4,891—Saline							
Ferrell Hospital Clinic........	Gen	Part	45	30	12	367	1,093
Elgin, 38,333—Kane							
Elgin State Hospital+▲......	Ment	State	5,216	5,309	..	...	2,068
Resthaven Sanitarium	N&M	Indiv	85	70	..	...	86
St. Joseph Hospital○........	Gen	Church	150	122	30	932	4,947
Sherman Hospital▲○	Gen	NPAssn	125	132	30	809	5,548
Elmhurst, 15,458—Du Page							
Memorial Hospital▲	Gen	NPAssn	150	133	35	1,306	6,871
Evanston, 65,389—Cook							
Community Hospital	Gen	NPAssn	28	19	7	103	930
Evanston Hospital★+▲○	Gen	NPAssn	250	220	46	1,727	7,995
St. Francis Hospital★+▲○.....	Gen	Church	351	294	79	2,250	10,957

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Evergreen Park, 3,313—Cook							
Little Company of Mary Hospital★+▲○	Gen	Church	200	184	65	3,250	10,058
Fairbury, 2,300—Livingston							
Fairbury Hospital	Gen	NPAssn	31	30	16	383	1,448
Fort Sheridan,—Lake							
Station Hospital▲	Gen	Army	300	159	10	144	4,546
Freeport, 22,366—Stephenson							
Deaconess Hospital▲○	Gen	NPAssn	92	93	25	270	3,687
St. Francis Hospital▲○	Gen	Church	136	117	20	631	3,914
Galesburg, 28,876—Knox							
Galesburg Cottage Hosp.▲○	Gen	NPAssn	113	90	22	674	3,417
St. Mary's Hospital	Gen	Church	166	96	20	770	2,904
Geneseo, 3,824—Henry							
J. C. Hammond City Hosp.▲	Gen	City	30	24	8	294	1,101
Geneva, 4,101—Kane							
Community Hospital▲	Gen	NPAssn	73	69	20	395	2,101
Granite City, 22,974—Madison							
St. Elizabeth Hospital▲○	Gen	Church	125	132	25	1,103	4,302
Great Lakes,—Lake							
U. S. Naval Hospital★+▲	Gen	Navy	1,961	1,160	34	441	9,351
Harrisburg, 11,453—Saline							
Harrisburg Hospital	Gen	Corp	30	10	5	68	414
Lightner Hospital	Gen	Part	36	25	10	393	2,127
Hospital	Gen	NPAssn	25	16	10	209	650
Harvey, 17,878—Cook							
Ingalls Memorial Hospital▲	Gen	NPAssn	95	73	25	1,021	1,265
Herrin, 9,352—Williamson							
Herrin Hospital	Gen	NPAssn	85	70	24	1,020	2,883
Highland, 3,820—Madison							
St. Joseph's Hospital	Gen	Church	70	63	14	550	2,075
Highland Park, 11,476—Lake							
Highland Park Hospital▲	Gen	NPAssn	51	35	20	439	1,524
Hillsboro, 4,514—Montgomery							
Hillsboro Hospital	Gen	NPAssn	40	44	10	313	1,344
Hines,—Cook							
Veterans Admin. Hospital+▲⊙	Gen	Vet	3,474	2,657	..	...	20,220
Hinsdale, 7,336—Du Page							
Hinsdale Sanitarium and	Gen	Church	100	104	15	519	3,144
rgan							
osp +⊙	Ment	State	3,327	3,080	..	...	944
	N&M	Corp	100	81	..	...	170
Morgan County Tuberculosis Sanatorium	TB	County	36	34	..	...	31
Our Saviour's Hospital▲○	Gen	Church	80	67	15	403	2,377
Passavant Memorial Hosp.○	Gen	Church	84	72	12	397	2,305
Joliet, 42,365—Will							
Illinois State Penitentiary Hospital	Inst	State	110	40	..	...	2,397
St. Joseph's Hospital★▲○	Gen	Church	303	278	45	1,907	8,681
Silver Cross Hospital▲○	Gen	NPAssn	171	112	33	975	4,012
Will County Tuberculosis Sanatorium	TB	County	98	69	..	...	73
Kankakee, 22,241—Kankakee							
Kankakee State Hospital+▲	Ment	State	4,332	3,992	..	...	1,201
St. Mary's Hospital▲○	Gen	Church	186	169	42	1,480	6,389
Kewanee, 16,901—Henry							
Kewanee Public Hospital	Gen	NPAssn	55	50	11	327	1,866
St. Francis Hospital▲○	Gen	Church	100	75	18	509	2,085
Lake Forest, 6,885—Lake							
Lake Forest Hospital▲	Gen	NPAssn	40	32	10	185	1,412
La Salle, 12,812—La Salle							
St. Mary's Hospital▲○	Gen	Church	100	83	20	496	2,527
Libertyville, 3,930—Lake							
Condell Memorial Hospital	Gen	NPAssn	25	16	10	294	1,371
Magnus House	N&M	Indiv	20	8	..	...	20
Lincoln, 12,752—Logan							
Evangelical Deaconess Hosp.	Gen	Church	65	50	15	367	1,830
Lincoln State School and Colony+	MeDe	State	4,874	4,472	..	...	350
St. Clara's Hospital	Gen	Church	60	51	6	264	2,002
Litchfield, 7,048—Montgomery							
St. Francis Hospital	Gen	Church	143	135	17	650	4,350
Mackinaw, 845—Tazewell							
Oak Knoll Sanatorium	TB	County	45	30	..	...	43
Macomb, 8,764—McDonough							
Phelps Hospital	Gen	NPAssn	45	26	10	221	948
St. Francis Hospital○	Gen	Church	88	83	12	454	2,973
Manteno, 1,537—Kankakee							
Manteno State Hospital+▲	Ment	State	7,005	6,609	..	...	2,017
Marion, 9,251—Williamson							
Veterans Admin. Hospital▲	Gen	Vet	202	128	..	...	2,891
Mattoon, 15,827—Coles							
Memorial Methodist Hospital	Gen	Church	30	42	16	695	2,233
Melrose Park, 10,923—Cook							
Westlake Hospital▲	Gen	NPAssn	66	44	25	780	2,143
Mendota, 4,215—La Salle							
Harris Hospital	Gen	Part	27	16	8	243	693
Metropolis, 6,287—Massac							
Metropolis Memorial Hosp.	Gen	Part	22	14	5	143	520
Moline, 34,608—Rock Island							
Lutheran Hospital▲○	Gen	Church	135	114	30	973	4,178
[illegible]★▲○	Gen	City	198	185	48	1,439	7,055
	Gen	City	76	65	18	519	1,721
—Piatt							
John and Mary E. Kirby Hospital	Gen	NPAssn	32	27	8	118	923
Morris, 6,145—Grundy							
Morris Hospital	Gen	NPAssn	40	23	14	393	1,049
Morrison, 3,187—Whiteside							
Morrison Hospital	Gen	City	19	16	12	323	729

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Mount Vernon, 14,724—Jefferson							
Good Samaritan Hospital	Gen	Church	33	29	12	604	1,055
Moweaqua, 1,366—Shelby							
Moweaqua Hospital	Gen	Indiv	28	18	8	82	186
Murphysboro, 8,976—Jackson							
St. Andrew's Hospital▲	Gen	Church	36	26	10	474	1,634
Naperville, 5,272—Du Page							
Edward Sanatorium▲	TB	NPAssn	110	104	..	...	150
Normal, 6,983—McLean							
Brokaw Hospital▲○	Gen	Church	96	78	14	287	2,269
Fairview Sanatorium	TB	County	56	26	..	...	37
North Riverside (Riverside P. O.),—Cook							
Municipal Tuberculosis Sanitarium North Riverside Division	TB	City	256	160	..	...	1,289
Oak Forest, 825—Cook							
Cook County Infirmary	Chr	County	2,430	2,113	..	...	1,012
Cook County Tuberculosis Hospital	TB	County	551	292	13	...	442
Oak Park, 66,015—Cook							
Oak Park Hospital★▲○	Gen	Church	144	158	44	1,322	5,432
West Suburban Hospital★+▲○	Gen	NPAssn	312	297	100	3,573	11,691
Olney, 7,831—Richland							
Olney Sanitarium○	Gen	Corp	88	73	18	384	2,555
Oregon, 2,825—Ogle							
Warmolts Clinic-Hospital	Gen	Indiv	25	15	6	70	469
Ottawa, 16,005—La Salle							
Highland	TB	County	74	55	..	...	61
Ottawa Tuberculosis Sanatorium▲	TB	Corp	133	123	..	...	133
Ryburn Memorial Hosp.+▲○	Gen	City	120	103	28	719	3,031
Pana, 5,966—Christian							
Huber Memorial Hospital▲○	Gen	Church	40	30	12	367	1,284
Paris, 9,281—Edgar							
Paris Hospital○	Gen	NPAssn	75	73	10	490	2,534
Paxton, 3,106—Ford							
Paxton Community Hospital	Gen	NPAssn	19	14	8	245	685
Pekin, 19,407—Tazewell							
Pekin Public Hospital	Gen	NPAssn	93	79	20	705	3,312
Peoria, 105,087—Peoria							
Costeff Sanatorium	N&M	Indiv	13	13	..	...	115
John C. Proctor Hospital○	Gen	NPAssn	110	75	14	438	2,745
Methodist Hospital of Central Illinois★+▲○	Gen	Church	200	161	40	1,843	6,760
Michell Farm Sanatorium	N&M	Indiv	30	30	..	...	21
Michell Sanatorium	N&M	Indiv	22	22	..	...	110
Peoria Municipal Tuberculosis Sanitarium+▲	TB	City	102	67	..	...	118
Peoria State Hospital+▲⊙	Ment	State	2,761	2,605	..	...	815
St. Francis Hospital★+▲○	Gen	Church	500	451	93	2,935	4,251
Peru, 8,983—La Salle							
Peoples Hospital	Gen	NPAssn	50	44	12	150	1,194
Pittsfield, 2,884—Pike							
Illini Community Hospital▲	Gen	NPAssn	43	32	10	341	1,905
Pontiac, 9,585—Livingston							
Livingston County Sanat.	TB	County	50	39	..	...	50
St. James Hospital	Gen	Church	50	35	14	378	1,467
Princeton, 5,224—Bureau							
Julia Rackley Perry Memorial Hospital	Gen	City	57	25	15	400	1,532
Quincy, 40,469—Adams							
Blessing Hospital▲○	Gen	NPAssn	128	100	25	765	3,990
Hillcrest	TB	County	42	33	..	...	28
St. Mary's Hospital★▲○	Gen	Church	180	165	25	819	5,223
Rantoul, 2,367—Champaign							
Station Hospital▲	Gen	Army	620	118	..	...	3,113
Red Bud, 1,302—Randolph							
St. Clement's Hospital	Gen	Church	21	19	12	370	830
Robinson, 4,311—Crawford							
Brooks Hospital	Gen	Part	23	19	6	271	952
Rochelle, 4,200—Ogle							
Rochelle Hospital	Gen	City	33	19	12	238	985
Rockford, 84,627—Winnebago							
Ehnlawn Sanitarium	N&M	Indiv	30	23	..	...	401
Rockford Memorial Hosp.▲○	Gen	NPAssn	104	104	23	824	3,918
Rockford Municipal Tuberculosis Sanatorium+▲	TB	City	120	87	..	...	148
St. Anthony's Hospital▲○	Gen	Church	265	270	60	1,830	8,852
Swedish-American Hospital▲○	Gen	NPAssn	125	113	30	1,140	5,293
Winnebago County Hospital	GenIso	County	76	61	6	14	620
Rock Island, 42,775—Rock Island							
Rock Island County Tuberculosis Sanatorium	TB	County	65	42	..	...	51
St. Anthony's Hospital+▲○	Gen	Church	190	165	30	883	4,877
Rosiclare, 1,774—Hardin							
Rosiclare Hospital	Gen	Part	17	4	5	83	225
Rushville, 2,460—Schuyler							
Culbertson Hospital	Gen	Indiv	25	18	9	116	417
St. Charles, 5,870—Kane							
Delnor Hospital▲	Gen	NPAssn	30	21	10	231	900
Salem, 7,319—Marion							
Salem Memorial Hospital	Gen	NPAssn	40	33	10	400	1,758
Savanna, 4,792—Carroll							
Savanna City Hospital	Gen	City	36	21	12	336	865
Scott Field,—St. Clair							
Station Hospital▲	Gen	Army	300	246	12	289	6,142
Shelbyville 4,092—Shelby							
Shelby County Memorial Hospital	Gen	NPAssn	21	13	8	190	560
Sparta, 3,664—Randolph							
Sutherland Hospital	Gen	Indiv	30	14	8	127	384

Key to symbols and abbreviations is on page 1396

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Springfield, 75,503—Sangamon							
Memorial Hospital★▲○	Gen	NPAssn	241	211	40	1,014	6,390
Palmer Sanatorium▲	TB	Corp	83	75	..	...	118
St. John's Crippled Children's School and Hospital........	Orth	Church	55	49	..	...	64
St. John's Hospital○.........	Gen	Church	654	652	70	2,105	16,410
St. John's Sanitarium........	TB	Church	200	182	..	...	224
Spring Valley, 5,010—Bureau							
St. Margaret's Hospital......	Gen	Church	90	82	15	529	3,207
Sterling, 11,363—Whiteside							
Home Hospital	Gen	NPAssn	25	10	6	100	601
Public Hospital▲	Gen	City	58	40	11	589	2,059
Streator, 14,930—La Salle							
St. Mary's Hospital..........	Gen	Church	110	89	15	917	5,157
Sycamore, 4,702—De Kalb							
Sycamore Municipal Hosp.▲..	Gen	City	28	20	12	240	1,140
Taylorville, 8,313—Christian							
St. Vincent Hospital.........	Gen	Church	88	85	22	181	2,987
Tuscola, 2,838—Douglas							
Douglas County Jarman Memorial Hospital	Gen	County	42	33	12	390	1,305
Urbana, 14,064—Champaign							
Carle Memorial Hospital▲....	Gen	Corp	68	56	12	391	2,057
Champaign County Hospital.	Gen	County	55	21	10	47	586
Mercy Hospital▲○	Gen	Church	105	91	19	1,144	4,318
The Outlook	TB	County	50	47	..	...	44
Vandalia, 5,288—Fayette							
Mark Greer Hospital.........	Gen	Indiv	35	26	12	424	1,487
Watseka, 3,744—Iroquois							
Iroquois Hospital	Gen	NPAssn	38	27	15	533	1,506
Waukegan, 34,241—Lake							
Lake County General Hosp...	Gen	County	65	42	..	...	480
Lake County Tuberculosis Sanatorium+▲	TB	County	150	89	..	...	206
St. Therese's Hospital▲○......	Gen	Church	185	155	39	1,200	7,724
Victory Memorial Hosp.+▲○..	Gen	NPAssn	107	85	28	990	4,485
White Hall, 3,025—Greene							
White Hall Hospital....	Gen	NPAssn	10	10	5	98	300
Winfield, 567—Du Page							
Winfield Hospital▲	TB	NPAssn	76	72	..	...	77
Zace Sanatorium	TB	NPAssn	50	40	..	...	60
Winnetka, 12,430—Cook							
North Shore Health Resort+▲	N&M	Corp	75	70	..	...	451
Woodstock, 6,123—McHenry							
Woodstock Public Hospital..	Gen	NPAssn	45	37	17	614	1,780

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Arlington Heights, 5,668—Cook							
Magnus Farm	Conv	Indiv	20	20	..	...	3
Batavia, 5,101—Kane							
Bellevue Place Sanitarium....	N&M	Indiv	40	40	..	...	53
Belleville, 28,405—St. Clair							
St. Clair County Hospital and Home	InstGen	County	100	80	2	8	340
Chicago, 3,396,808—Cook							
Beverly Hills Rest Home.....	Conv	Indiv	10	10	..	...	...
Bigley Rest Home...........	Conv	Indiv	24	...	..	...	...
Catherine Booth Memorial Convalescent Hospital	Conv	Church	30	25	..	...	90
Chicago Home for Incurables	Incur	NPAssn	261	252	..	...	86
Convalescent Home	Conv	City	165	118	..	...	498
House of Correction Hospital	Inst	City	75	24	..	...	1,732
Jewish People's Convalescent Home	Conv	NPAssn	50	14	..	...	...
Long's Convalescent Home...	Conv	Indiv	35	30	..	...	88
Martha Washington Home for Dependent Crippled Children	Orth	NPAssn	30	24	..	...	25
Reynolds Rest Home.........	Conv	Indiv	35	25	..	...	25
Rosary Hill Convalescent Home	Conv	Church	32	23	..	...	95
Salvation Army Booth Memorial Hospital	Mat	Church	91	62	12	242	364
Washington and Jane Smith Home	InstGen	NPAssn	22	15	..	...	42
Decatur, 59,305—Macon							
City Public Hospital.........	Iso	City	20	2	..	...	94
Des Plaines, 9,518—Cook							
Northwestern Hospital	Gen	NPAssn	14	6	5	72	226
Evanston, 65,389—Cook							
Broadhurst Nursing Home...	Unit of Virginia Hall Nursing Homes						
The Cradle	Chil	NPAssn	60	36	..	...	262
Virginia Hall Nursing Homes.	Conv	Corp	58	54	..	...	96
Geneva, 4,101—Kane							
State Training School for Girls	Inst	State	22	17	15	...	278
Godfrey, 300—Madison							
Beverly Farm	MeDe	Corp	175	172	..	...	25
Mattoon, 15,827—Coles							
Independent Order Odd Fellows Old Folks Home Hosp.	Inst	NPAssn	55	35	..	...	85
Menard, 22—Randolph							
Illinois Security Hospital.....	Ment	State	380	364	..	...	62
Mooseheart, 995—Kane							
Philadelphia Memorial Hosp.	Chil	NPAssn	65	36	..	...	1,887
Normal, 6,983—McLean							
Illinois Soldiers' and Sailors' Children's School Hospital..	Inst	State	100	10	..	...	709
Park Ridge, 12,063—Cook							
Park Ridge Convalescent Home	Conv	Indiv	18	19	..	...	19
Peoria, 105,087—Peoria							
Florence Crittenton Home....	Mat	NPAssn	70	48	4	73	82
Pontiac, 9,585—Livingston							
Illinois State Penitentiary Hospital	Inst	State	180	49	..	...	850
Robinson, 4,311—Crawford							
Griffy Eye and Ear Infirmary	ENT	Indiv	11	1	..	...	312
Rockford, 84,637—Winnebago							
Children's Convalescent Home	Orth	NPAssn	35	20	..	...	67
St. Charles, 5,870—Kane							
Illinois State Training School for Boys	Inst	State	18	3	..	...	920
Urbana, 14,064—Champaign							
McKinley Memorial Hospital..	Inst	State	150	10	..	...	3,858
Waterman, 579—De Kalb							
Bellevue Place Sanitarium....	N&M	Indiv	30	...	..	Estab.	1947
Wedron, 202—La Salle							
St. Joseph's Health Resort...	Conv	Church	70	65	..	...	1,551
Wheaton, 7,389—Du Page							
Mary E. Pogue School........	MeDe	Indiv	82	80	..	...	22
Wheeling, 550—Cook							
Addolorata Villa Health Resort for Women	Conv	Church	40	30	..	...	...

INDIANA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Anderson, 41,572—Madison							
St. John's Hickey Memorial Hospital▲○	Gen	Church	250	188	50	2,148	5,518
Angola, 3,141—Steuben							
Cameron Hospitals	Gen	NPAssn	22	15	5	210	670
Argos, 1,180—Marshall							
Kelly Hospital	Gen	NPAssn	10	8	4	69	344
Auburn, 5,415—De Kalb							
Dr. Bonnell M. Souder Hosp..	Gen	Indiv	26	14	7	158	467
Batesville, 3,065—Ripley							
Margaret Mary Hospital.....	Gen	Church	75	63	24	509	2,322
Bedford, 12,514—Lawrence							
Dunn Memorial Hospital.....	Gen	County	48	49	12	715	2,868
Beech Grove, 3,907—Marion							
St. Francis Hospital+▲.......	Gen	Church	140	100	50	2,087	6,211
Bloomington, 20,870—Monroe							
Bloomington Hospital○	Gen	NPAssn	75	48	25	834	2,989
Bluffton, 5,417—Wells							
Clinic Hospital+▲	Gen	Corp	75	61	8	160	2,033
Wells County Hospital........	Gen	County	25	24	6	318	868
Clinton, 7,092—Vermillion							
Vermillion County Hospital..	Gen	County	42	46	20	536	1,713
Columbus, 11,738—Bartholomew							
Bartholomew County Hosp..	Gen	County	75	62	20	934	3,551
Connersville, 12,898—Fayette							
Fayette Memorial Hospital...	Gen	NPAssn	42	38	15	635	1,777
Crawfordsville, 11,089—Montgomery							
Montgomery County Culver Union Hospital▲	Gen	County	85	69	18	716	2,991
Crown Point, 4,643—Lake							
James O. Parramore Hosp.▲	TB	County	276	226	..	...	196
Decatur, 5,861—Adams							
Adams County Memorial Hospital	Gen	County	47	36	18	617	1,891
..	N&M	Church	75	70	..	...	390
▲ ..	Gen	Church	264	207	60	1,951	8,800
Elkhart, 33,434—Elkhart							
Elkhart General Hospital▲...	Gen	NPAssn	108	82	28	1,394	4,276
Elwood, 10,913—Madison							
Mercy Hospital	Gen	Church	45	36	18	762	1,858
Evansville, 97,062—Vanderburgh							
Boehne Tuberculosis Hosp.+▲	TB	County	130	114			286
Clearview	N&M	Part	30	17	..	...	198
Evansville State Hospital....	Ment	State	1,200	1,225	..	.	285
Protestant Deaconess Hospital★▲○	Gen	Church	243	180	56	2,375	11,329
St. Mary's Hospital★▲○.......	Gen	Church	187	137	21	1,038	4,936
Welborn Memorial Baptist Hospital▲○	Gen	Church	128	99	24	816	4,612
Fort Benjamin Harrison,—Marion							
Veterans Admin. Hospital....	Gen	Vet	500	313	..	..	3,530
Fort Wayne, 118,410—Allen							
Irene Byron Sanatorium▲....	TB	Counties	254	252	..	...	589
Lutheran Hospital★▲○	Gen	Church	210	212	40	1,922	6,572
Methodist Hospital▲○	Gen	Church	118	84	30	944	3,161
St. Joseph Hospital★+▲○.....	Gen	Church	290	229	60	2,292	7,782
Frankfort, 13,706—Clinton							
Clinton County Hospital.....	Gen	County	43	38	14	661	1,801
Franklin, 6,264—Johnson							
Johnson County Memorial Hospital	Gen	County	68	...	15	Estab.	1947
Garrett, 4,285—De Kalb							
Sacred Heart Hospital.......	Gen	Church	42	35	12	422	1,264
Gary, 11,719—Lake							
Methodist Hospital★▲○	Gen	Church	206	175	69	2,322	7,844
Patients' Hospital	Gen	Indiv	40	20	6	144	781
St. Mary's Mercy Hosp.★+▲○	Gen	Church	216	164	70	2,064	7,641
Goshen, 11,375—Elkhart							
Goshen Hospital	Gen	NPAssn	34	23	12	825	1,699
Greencastle, 4,872—Putnam							
Putnam County Hospital.....	Gen	County	50	43	12	478	2,008
Greensburg, 6,065—Decatur							
Decatur County Memorial Hospital	Gen	County	50	33	16	432	1,460

Key to symbols and abbreviations is on page 1396

INDIANA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Hammond, 70,184—Lake							
Mount Mercy Sanitarium	N&M	Church	35	27	..	...	226
St. Margaret Hospital★+▲○	Gen	Church	260	208	60	2,990	10,383
Hartford City, 6,916—Blackford							
Blackford County Hospital	Gen	County	32	16	6	361	803
Huntingburg, 3,816—Dubois							
Stork Hospital	Gen	Indiv	26	22	16	526	1,196
Huntington, 13,903—Huntington							
Huntington County Hospital	Gen	County	48	45	24	765	1,617
Indianapolis, 386,972—Marion							
Central State Hospital+▲	Ment	State	2,392	2,103	..	...	512
Emhardt Memorial Hospital	Gen	NPAssn	36	17	12	228	712
Flower Mission Memorial Hosp.	Unit of Indianapolis General Hospital						
Indianapolis General Hosp★+▲○	GenTb	City	701	551	40	1,418	10,246
Indiana University Medical Center★+▲○	Gen	State	584	528	62	1,716	10,995
James Whitcomb Riley Hospital for Children	Unit of Indiana University Medical Center						
Kiwanis Home	Unit of Indiana University Medical Center						
Methodist Hospital★+▲○	Gen	Church	611	596	85	1,927	21,752
"Norways" Sanatorium+	N&M	NPAssn	31	29	..	...	330
Public Health Center	Ven	City	112	48	..	...	1,800
Robert W. Long Hospital	Unit of Indiana University Medical Center						
Rotary Convalescent Home	Unit of Indiana University Medical Center						
St. Vincent's Hospital★+▲○	Gen	Church	340	301	60	3,684	12,377
Sunnyside Sanatorium+▲	TB	County	224	213	..	...	188
Veterans Admin. Hospital+▲	Gen.	Vet	315	332	..	...	1,669
William H. Coleman Hospital for Women	Unit of Indiana University Medical Center						
Jeffersonville, 11,493—Clark							
Clark County Memorial Hospital▲	Gen	County	91	57	25	755	2,695
Kendallville, 5,431—Noble							
McCray Memorial Hospital	Gen	City	32	18	12	471	1,717
Kokomo, 33,795—Howard							
St. Joseph Memorial Hosp.○	Gen	Church	125	110	30	1,563	4,503
La Fayette, 28,798—Tippecanoe							
La Fayette Home Hosp.+○	Gen	NPAssn	132	103	25	1,047	4,775
St. Elizabeth Hospital★+▲○	Gen	Church	309	250	50	1,231	9,237
William Ross Sanatorium	TB	County	27	23	..	...	40
La Porte, 16,180—La Porte							
Fairview Hospital	Gen	NPAssn	73	51	20	650	2,227
Holy Family Hospital	Gen	Church	110	81	20	691	3,436
Lebanon, 6,529—Boone							
Witham Memorial Hospital	Gen	County	70	43	22	695	1,902
Linton, 6,263—Greene							
Freeman Greene County Hosp.	Gen	County	50	32	12	708	2,253
Logansport, 20,177—Cass							
Logansport State Hosp.+▲	Ment	State	2,405	2,250	..	...	315
Memorial Hospital▲	Gen	County	70	54	15	454	2,271
St. Joseph Hospital▲	Gen	Church	60	56	12	636	2,042
Madison, 6,923—Jefferson							
Kings Daughters Hospital	Gen	NPAssn	48	32	13	132	1,450
Marion, 26,767—Grant							
Marion General Hospital▲	Gen	NPAssn	101	80	30	1,525	4,144
Veterans Admin. Hospital	See Veterans Administration Hosp., Ind.						
[illegible]							
[illegible] al	Gen	County	30	23	10	337	1,940
Michigan City, 26,476—La Porte							
Clinic Hospital▲	Gen	Corp	50	47	12	192	2,482
Indiana Hospital for Insane Criminals	Ment	State	345	340	..	...	343
Indiana State Prison Hosp.	Inst	State	175	90	..	.	798
St. Anthony's Hospital▲	Gen	Church	100	65	26	759	3,144
Warren Hospital	Gen	Corp	25	13	..	2	575
Mishawaka, 29,293—St. Joseph							
St. Joseph Hospital★▲○	Gen	Church	100	77	20	903	3,390
Mooresville, 1,979—Morgan							
Comer's Sanitarium	Proct	Indiv	22	16	..	...	214
Muncie, 49,720—Delaware							
Ba [illegible]	Gen	NPAssn	217	192	30	2,316	8,469
New [illegible]							
St. [illegible]	Gen	Church	92	86	24	1,325	4,815
"S [illegible] T [illegible]	TB	State	152	115	..	...	153
New Castle, 16,620—Henry							
Clinic Hospital	Gen	Part	22	6	4	131	1,191
Henry County Hospital▲	Gen	County	110	87	24	1,338	4,494
North Madison, 316—Jefferson							
Madison State Hospital	Ment	State	1,315	1,443	..	...	264
Oakland City, 3,068—Gibson							
Wood Hospital and Clinic	Gen	Indiv	12	4	6	228	209
Peru, 12,432—Miami							
Dukes-Miami County Memorial Hospital	Gen	County	63	62	15	592	2,013
Wabash Railroad Employees Hospital▲	Indus	NPAssn	50	24	..	...	478
Plymouth, 5,713—Marshall							
Parkview Hospital	Gen	County	33	19	12	507	1,417
Portland, 6,362—Jay							
Jay County Hospital	Gen	County	35	42	10	458	1,766
Princeton, 7,786—Gibson							
Gibson General Hospital	Gen	NPAssn	43	35	15	599	1,892
Rensselaer, 3,214—Jasper							
Jasper County Hospital	Gen	County	41	44	10	467	1,651
Richmond, 35,147—Wayne							
Reid Memorial Hospital▲○	Gen	NPAssn	144	124	24	1,614	5,073
Richmond State Hospital	Ment	State	1,742	1,639	..	...	348
Smith-Esteb Memorial Hosp.	TB	County	48	40	..	...	52
Rochester, 3,835—Fulton							
Woodlawn Hospital	Gen	County	29	24	16	393	1,198
Rockville, 2,208—Parke							
Indiana State Sanatorium	TB	State	200	173	..	...	164
Rome City, 504—Noble							
Kneipp Springs Sanatorium	Gen	Church	150	145	..	...	2,122
Rushville, 5,960—Rush							
Rushville City Hospital	Gen	City	12	9	7	459	772
Seymour, 8,620—Jackson							
Schneck Memorial Hospital	Gen	County	56	26	14	802	1,633
Shelbyville, 10,791—Shelby							
W. S. Major Hospital	Gen	City	57	35	13	739	2,163
South Bend, 101,268—St. Joseph							
Healthwin Hospital+▲	TB	County	155	138	..	...	226
Memorial Hospital★+▲○	Gen	NPAssn	220	182	45	2,074	7,313
St. Joseph's Hospital★▲○	Gen	Church	181	115	42	1,507	6,139
Sullivan, 5,077—Sullivan							
Mary Sherman Memorial Hos- [illegible]	Gen	County	50	30	12	501	1,832
[illegible]	Gen	Indiv	14	4	12	154	620
[illegible]	Gen	Indiv	10	6	2	21	330
St. Anthony's Hospital★▲○	Gen	Church	185	151	40	1,523	5,725
Union Hospital★▲○	Gen	NPAssn	181	178	27	1,033	5,593
[illegible]	Inst	USPHS	107	29	..	...	1,042
[illegible]	Gen	Part	10	8	2	82	279
[illegible]	Gen	Indiv	12	10	3	213	839
[illegible]	Gen	County	50	57	20	756	2,400
[illegible] l, 507—Grant							
[illegible]	Ment	Vet	1,921	1,855	..	...	1,003
Vincennes, 18,228—Knox							
Good Samaritan Hospital○	Gen	County	109	86	22	1,190	4,349
Hillcrest Tuberculosis Hosp.	TB	County	65	42	..	...	75
Wabash, 9,653—Wabash							
Wabash County Hospital	Gen	County	52	52	15	575	2,191
Warsaw, 6,378—Kosciusko							
McDonald Hospital	Gen	Indiv	40	29	12	495	1,746
Murphy Medical Center	Gen	Indiv	21	15	10	169	514
Washington, 9,312—Daviess							
Daviess County Hospital	Gen	County	105	81	15	719	3,405
Williamsport, 1,222—Warren							
Community Hospital	Gen	NPAssn	19	12	7	169	593
Winchester, 5,303—Randolph							
Randolph County Hospital	Gen	County	37	31	11	431	1,539
Wolflake, 250—Noble							
Luckey Hospital	Gen	Indiv	15	12	8	258	673

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Anderson, 41,572—Madison							
Citizens' Nursing Center	Gen	Part	13	10	4	115	1,044
Butlerville, 266—Jennings							
Muscatatuck State School	MeDe	State	1,400	1,371	..	...	118
Fort Wayne, 118,410—Allen							
Fort Wayne State School	MeDe	State	1,593	1,900	..	...	118
Grace Convalescent Hospital	Conv	Indiv	39	12	..	...	52
Greencastle, 4,872—Putnam							
Indiana State Farm Hospital	Inst	State	50	12	..	...	548
Greensburg, 6,065—Decatur							
Odd Fellows Home Hospital	Inst	NPAssn	75	49	..	...	98
Hammond, 70,184—Lake							
Kuhn Clinic Hospital	ENT	Part	12	3	..	...	1,376
La Fayette, 28,798—Tippecanoe							
Indiana State Soldiers' Home Hospital	Inst	State	112	51	..	...	356
[illegible] tal	Gen	County	14	11	..	...	217
[illegible] ings	Conv	Corp	150	120	..	...	4,266
[illegible]	Conv	Corp	120	63	..	...	3,105
[illegible] ileptics	Epil	State	1,036	937	..	...	87
[illegible] tory	Inst	State	86	23	..	...	1,157
Plainfield, 1,811—Hendricks							
Indiana Boys' School Hosp.	Inst	State	25	1	..	...	177

IOWA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Akron, 1,314—Plymouth							
Akron Hospital	Gen	Indiv	14	7	3	107	393
Albia, 5,157—Monroe							
Smith Hospital	Gen	Indiv	22	7	5	132	415
Algona, 4,954—Kossuth							
Kossuth Hospital	Gen	Indiv	23	12	8	293	434
Alta, 1,269—Buena Vista							
Alta Community Hospital	Gen	NPAssn	18	7	5	33	251
Ames, 12,555—Story							
Iowa State College Hospital▲	Inst	State	75	10	..	...	969
Anamosa, 4,069—Jones							
Mercy Hospital	Gen	Church	35	25	10	231	929
Atlantic, 5,802—Cass							
Atlantic Memorial Hospital	Gen	NPAssn	50	31	12	221	1,819
Battle Creek, 827—Ida							
Battle Creek Hospital	Gen	Part	18	7	8	80	291
Bellevue, 1,771—Jackson							
Bellevue Memorial Hospital	Gen	Church	25	...	7	Estab. 1947	
Belmond, 2,109—Wright							
Steele Memorial Hospital	Gen	Indiv	13	11	7	167	612

Key to symbols and abbreviations is on page 1396

IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Buffalo Center, 911—Winnebago							
Dolmage Hospital	Gen	Part	11	10	8	196	291
Burlington, 25,832—Des Moines							
Burlington Protestant Hospital▲○	Gen	NPAssn	105	100	20	180	1,095
[illegible] ▲	Gen	Church	100	99	25	517	3,187
[illegible]	Gen	Church	65	40	15	201	1,372
St. Anthony Hospital▲○	Gen	Church	115	102	35	912	1,074
Cedar Falls, 9,349—Black Hawk							
Sartori Memorial Hospital▲	Gen	City	45	30	10	454	1,509
Cedar Rapids, 62,120—Linn							
Mercy Hospital★▲○	Gen	Church	185	116	32	1,254	6,576
St. Luke's Methodist Hospital+▲○	Gen	Church	170	171	32	1,172	7,371
Centerville, 8,413—Appanoose							
St. Joseph's Mercy Hospital▲	Gen	Church	46	38	12	524	2,431
Chariton, 5,754—Lucas							
Yocom Hospital	Gen	Indiv	25	23	10	300	755
Charles City, 8,681—Floyd							
Cedar Valley Hospital	Gen	City	60	56	20	626	2,756
Cherokee, 7,469—Cherokee							
Cherokee State Hospital	Ment	State	1,755	1,668	..	...	335
Sioux Valley Hospital▲	Gen	NPAssn	35	30	12	409	2,075
Clarinda, 4,905—Page							
Clarinda Municipal Hospital	Gen	City	41	31	13	333	1,889
[illegible]	Ment	State	1,170	1,542	..	...	575
C[illegible]							
[illegible] and Clinic	Gen	Part	17	9	9	175	365
Clinton, 26,270—Clinton							
Jane Lamb Memorial Hosp.▲○	Gen	NPAssn	100	84	16	544	3,100
St. Joseph Mercy Hospital▲○	Gen	Church	95	82	30	697	2,762
Colfax, 2,252—Jasper							
Colfax Sanitarium	Gen	Corp	18	10	1	36	291
Council Bluffs, 41,439—Pottawattamie							
Jennie Edmundson Memorial Hospital★▲○	Gen	NPAssn	156	135	20	1,231	5,364
Mercy Hospital★▲○	Gen	Church	150	128	22	791	4,386
St. Bernard's Hospital+⊖	N&M	Church	180	177	..	...	702
Cresco, 3,530—Howard							
St. Joseph Mercy Hospital	Gen	Church	28	16	10	233	1,110
Davenport, 66,039—Scott							
Mercy Hospital★▲○	Gen	Church	225	173	60	1,895	7,816
Pine Knoll Sanatorium	TB	County	75	47	..	...	92
St. Elizabeth's and St. John's	Units of Mercy Hospital						
[illegible]	Gen	Church	92	102	22	834	4,110
Decorah Hospital▲	Gen	Church	52	38	13	448	1,580
Denison, 4,361—Crawford							
Denison Hospital	Gen	Indiv	21	16	12	314	1,099
Des Moines, 159,819—Polk							
Broadlawns Polk County Hospital★▲○	GenIso	County	206	127	20	263	4,722
Broadlawns Polk County Hospital▲	TB	County	87	69	..	...	111
Iowa Lutheran Hospital★▲○	Gen	Church	135	137	20	802	4,811
Iowa Methodist Hospital★+▲○	Gen	Church	282	256	52	2,285	10,806
Mercy Hospital★+▲○	Gen	Church	190	184	30	1,641	7,812
Raymond Blank Memorial Hospital for Children+	Unit of Iowa Methodist Hospital						
Retreat Hospital	N&M	Corp	50	48	..	...	260
Veterans Admin. Center+▲	Gen	Vet	452	401	..	...	4,795
Dexter, 760—Dallas							
Clinic Hospital	Gen	Part	20	18	7	113	625
Dubuque, 43,892—Dubuque							
Finley Hospital▲○	Gen	NPAssn	128	91	22	772	3,539
[illegible] ▲	Gen	Church	403	133	35	1,178	5,587
[illegible]	N&M	Church	230	230	..	...	703
[illegible] ▲	TB	County	70	44	..	...	59
[illegible]	Gen	NPAssn	23	24	11	280	1,315
[illegible]	Gen	Church	41	33	10	377	2,237
[illegible]							
Forest City Municipal Hosp.	Gen	City	20	13	8	226	676
Fort Dodge, 22,904—Webster							
Lutheran Hospital▲	Gen	Church	120	106	25	1,036	5,939
St. Joseph Mercy Hospital▲○	Gen	Church	125	111	20	682	4,395
Fort Madison, 14,063—Lee							
Atchison, Topeka and Santa Fe [illegible]	Indus	NPAssn	40	No data supplied			
[illegible]	Gen	Church	72	49	18	556	2,977
[illegible]	Gen	NPAssn	40	29	13	206	1,450
[illegible]	Gen	Church	35	33	10	231	1,178
[illegible]	Gen	Indiv	30	29	10	295	1,360
Hampton, 4,006—Franklin							
Lutheran Hospital▲	Gen	Church	50	28	16	411	1,499
Hartley, 1,503—O'Brien							
Hand Hospital	Gen	Part	12	5	5	135	370
Hull, 1,072—Sioux							
Hull Hospital	Gen	Corp	15	9	5	81	546
Independence, 4,342—Buchanan							
Independence State Hospital	Ment	State	1,867	1,730	..	...	408
Peoples Hospital	Gen	NPAssn	32	31	10	304	1,138
Iowa City, 17,182—Johnson							
Children's Hospital	Unit of University Hospitals						
Iowa State Psychopathic Hospital+	Ment	State	60	42	..	...	366
Mercy Hospital+▲○	Gen	Church	149	124	31	848	4,630
University Hospitals★+▲○	Gen	State	900	655	50	1,047	18,304

IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Keokuk, 15,076—Lee							
Graham Hospital	Gen	NPAssn	65	65	10	198	2,537
St. Joseph's Hospital	Gen	Church	110	115	25	506	3,941
Knoxville, 6,936—Marion							
Collins Memorial Hospital	Gen	Part	30	21	10	244	1,345
Veterans Admin. Hospital▲	Ment	Vet	1,910	1,693	..	...	648
Lake City, 2,216—Calhoun							
McCrary-Rost Hospital	Gen	Part	15	10	8	123	422
McVay Memorial Hospital	Gen	Part	18	10	6	118	563
Lemars, 5,353—Plymouth							
Sacred Heart Hospital▲	Gen	Church	50	33	15	570	2,407
Leon, 2,307—Decatur							
Decatur County Hospital	Gen	County	23	24	11	294	1,118
Marshalltown, 19,240—Marshall							
Evangelical Deaconess Home and Hospital○	Gen	Church	150	131	22	707	4,072
St. Thomas Mercy Hospital○	Gen	Church	102	85	20	199	2,359
Mason City, 27,080—Cerro Gordo							
Park Hospital▲	Gen	Corp	56	44	15	329	1,846
St. Joseph's Mercy Hospital▲○	Gen	Church	192	165	12	1,114	6,412
McGregor, 1,309—Clayton							
McGregor Hospital	Gen	Indiv	12	6	4	60	177
Monticello, 2,548—Jones							
John McDonald Hospital	Gen	NPAssn	45	30	10	233	1,378
Mount Pleasant, 4,610—Henry							
Mount Pleasant State Hosp.	Ment	State	1,692	1,547	..	...	351
Muscatine, 18,286—Muscatine							
Bellevue Hospital	Gen	NPAssn	45	41	15	353	2,578
Benjamin Hershey Memorial Hospital	Gen	NPAssn	50	15	14	182	1,814
New Hampton, 2,933—Chickasaw							
St. Joseph's Hospital▲	Gen	Church	52	40	12	323	1,910
Newton, 10,462—Jasper							
Skiff Memorial Hospital▲	Gen	City	52	39	10	400	1,609
Oakdale, —Johnson							
State Sanatorium+▲	TB	State	425	401	..	...	312
Oelwein, 7,801—Fayette							
Mercy Hospital	Gen	Church	44	37	15	497	2,007
Onawa, 3,438—Monona							
Onawa Hospital	Gen	Indiv	23	12	6	52	676
Orange City, 1,920—Sioux							
Grossmann Hospital	Gen	Part	15	10	5	146	556
Osceola, 3,281—Clarke							
Harken Hospital	Gen	Indiv	26	13	5	47	616
Osceola Hospital	Gen	Indiv	30	21	8	273	1,409
Oskaloosa, 11,024—Mahaska							
Mercy Hospital	Gen	Part	32	21	12	309	1,023
Ottumwa, 31,570—Wapello							
Ottumwa Hospital	Gen	NPAssn	53	48	12	400	1,970
St. Joseph Hospital▲○	Gen	Church	118	120	29	678	4,990
Sunnyslope Sanatorium	TB	County	18	17	..	...	8
Perry, 5,977—Dallas							
Kings Daughters Hospital	Gen	NPAssn	35	22	11	283	992
Pleasantville, 895—Marion							
Community Hospital	Gen	Indiv	10	4	2	43	132
Red Oak, 5,763—Montgomery							
Murphy Memorial Hospital▲	Gen	City	26	24	12	282	1,224
Rock Rapids, 2,556—Lyon							
Vander Wilt Hospital	Gen	Indiv	20	7	5	119	425
Sheldon, 3,768—O'Brien							
Good Samaritan Hospital	Gen	Church	16	4	8	224	675
Shenandoah, 6,846—Page							
Henry and Catherine L. Hand Memorial Hospital	Gen	NPAssn	40	31	7	366	1,745
Sibley, 2,356—Osceola							
Osceola Hospital	Gen	Corp	35	14	12	266	971
[illegible]	Gen	Indiv	18	11	9	121	334
[illegible]	Gen	Church	86	92	15	587	3,344
Methodist Hospital▲○	Gen	Church	110	113	15	721	4,415
St. Joseph Mercy Hosp.★▲○	Gen	Church	250	216	56	1,130	8,811
St. Vincent's Hospital▲○	Gen	Church	140	145	18	768	7,261
Spencer, 6,599—Clay							
Spencer Municipal Hospital	Gen	City	25	25	9	461	1,492
Spirit Lake, 2,161—Dickinson							
Marcus Snyder Memorial Hospital	Gen	Part	24	21	6	206	1,187
Storm Lake, 5,274—Buena Vista							
Porath Hospital	Gen	Indiv	12	13	7	449	689
Vinton, 4,163—Benton							
[illegible]	Gen	City	40	28	10	279	779
[illegible]	Gen	County	54	36	12	516	1,564
[illegible]	Gen	NPAssn	83	78	30	1,342	4,146
[illegible]	Gen	NPAssn	46	42	10	321	2,167
[illegible]	Gen	Church	124	108	25	1,081	4,756
[illegible]	Gen	Church	52	28	17	388	1,176
West Union, 2,050—Fayette							
West Union Community Hosp.	Gen	City	15	13	8	187	496
Williamsburg, 1,308—Iowa							
Miller Hospital	Gen	Indiv	8	5	5	110	281

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Davenport, 66,039—Scott							
Isolation Hospital	Iso	County	26	6	1	2	291
Des Moines, 159,819—Polk							
Junior League Convalescent Home for Children	Conv	NPAssn	18	13	..	...	51
Salvation Army Booth Memorial Hospital	Mat	Church	50	38	15	131	146

Key to symbols and abbreviations is on page 1396

IOWA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Eldora, 3,553—Hardin							
Iowa Training School for Boys Hospital	Inst	State	30	2	..	...	422
Glenwood, 4,501—Mills							
Glenwood State School	MeDe	State	1,920	1,860	..	...	122
Marshalltown, 19,240—Marshall							
Iowa Soldiers' Home Hosp.	Inst	State	140	91	..	...	190
Orange City, 1,920—Sioux							
Doornink Hospital	Gen	Indiv	15	7	4	65	329
Postville, 1,194—Allamakee							
Postville Community Hosp.	Gen	City	18	15	6	168	450
Red Oak, 5,763—Montgomery							
Powell School	MeDe	Indiv	65	69	..	...	15
Sac City, 3,165—Sac							
...	Gen	NPAssn	11	7	6	160	206
...	Mat	NPAssn	35	25	40	60	101
...	Inst	State	25	4	..	...	125
Hospital for Epileptics and School for Feebleminded	MeDe	State	1,709	1,601	..	...	121

KANSAS

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Abilene, 5,671—Dickinson							
Dickinson County Memorial Hospital	Gen	NPAssn	30	19	12	220	1,189
Anthony, 2,873—Harper							
Galloway Hospital	Gen	Indiv	37	16	7	135	785
Arkansas City, 12,752—Cowley							
Mercy Hospital	Gen	NPAssn	62	14	18	128	1,648
Atchison, 12 648—Atchison							
Atchison Hospital	Gen	NPAssn	45	30	11	383	1,305
Axtell, 545—Marshall							
Axtell Hospital	Gen	Indiv	12	6	5	92	379
Belleville, 2,580—Republic							
Belleville Hospital	Gen	Indiv	28	17	6	169	635
Beloit, 3,765—Mitchell							
Community Hospital▲	Gen	NPAssn	52	33	11	403	1,629
Caldwell, 1,962—Sumner							
Caldwell General Hospital	Gen	Part	20	5	5	61	396
Chanute, 10,142—Neosho							
Johnson Hospital	Gen	Corp	50	33	9	335	1,316
Clay Center, 4,518—Clay							
Clay Center Municipal Hosp.	Gen	City	29	21	6	328	1,020
Coffeyville, 17,355—Montgomery							
Medical Center Hospital	Gen	NPAssn	18	13	7	359	542
Southeast Kansas Hospital	Gen	NPAssn	25	19	10	402	1,989
Colby, 2,458—Thomas							
St. Thomas Hospital	Gen	Church	32	39	13	331	1,820
Concordia, 6,255—Cloud							
St. Joseph's Hospital▲○	Gen	Church	97	88	22	494	3,525
...	Gen	Indiv	54	47	15	312	1,772
...	Gen	Church	70	58	22	438	3,198
Susan B. Allen Memorial Hospital▲○	Gen	NPAssn	60	40	14	499	2,275
Ellsworth, 2,227—Ellsworth							
Ellsworth County Veterans Memorial Hospital	Gen	NPAssn	45	34	9	240	1,177
Emporia, 13,188—Lyon							
Newman Memorial County Hospital▲○	Gen	County	85	87	20	506	3,072
St. Mary's Hospital▲	Gen	Church	65	53	18	345	1,974
Fort Leavenworth, 4,982—Leavenworth							
Station Hospital▲	Gen	Army	100	58	18	171	2,194
Station Hospital, U. S. Disciplinary Barracks	Gen	Army	100	45	..	...	714
Fort Riley,—Geary							
Station Hospital▲	Gen	Army	515	87	13	185	2,621
Fort Scott, 10.577—Bourbon							
Mercy Hospital▲○	Gen	Church	110	99	18	544	3,617
Garden City, 6 285—Finney							
St. Catherine's Hospital▲○	Gen	Church	68	60	17	594	3,170
Gardner, 510—Johnson							
Reece Hospital	Gen	Indiv	17	12	6	184	367
Girard, 2,554—Crawford							
Girard General Hospital	Gen	City	25	14	5	117	552
Goessel, 300—Marion							
Mennonite Bethesda Hospital	Gen	NPAssn	17	10	8	109	688
Goodland, 3,306—Sherman							
Boothroy Memorial Hospital	Gen	Church	27	24	11	300	1,793
Great Bend, 9,044—Barton							
St. Rose Hospital▲○	Gen	Church	135	115	24	1,069	4,875
Halstead, 1,397—Harvey							
Halstead Hospital▲○	Gen	Church	160	140	8	75	4,033
Harper, 1,695—Harper							
Joslin Hospital	Gen	Indiv	10	7	4	63	231
Hays, 6,285—Ellis							
Hadley Memorial Hospital	Gen	Church	40	30	11	170	1,454
St. Anthony's Hospital▲	Gen	Church	110	114	25	692	3,730
Hillsboro, 1,580—Marion							
Salem Hospital	Gen	Church	20	14	8	139	590
Hoisington, 3,719—Barton							
Hoisington Hospital	Gen	NPAssn	15	7	4	53	341
Holton, 2,885—Jackson							
Holton Hospital	Gen	NPAssn	22	16	6	189	470
Horton, 2,872—Brown							
Horton Hospital	Gen	Part	30	22	13	258	970

KANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
	Gen	Church	140	126	30	744	4,748
	Gen	Church	65	58	20	557	2,183
...	Gen	Church	72	62	20	576	2,241
Iola, 7,211—Allen							
St. John's Hospital	Gen	Church	35	23	12	377	1,136
Junction City, 8,507—Geary							
Junction City Municipal Hosp.	Gen	City	67	55	20	363	1,961
Kansas City, 121,458—Wyandotte							
Bell Memorial Hospital	Unit of University of Kansas Hospitals						
...	Gen	Church	150	132	30	835	5,061
...	Gen	Church	50	21	14	121	644
...	Gen	Church	155	130	50	1,324	5,151
★+▲○	Gen	Church	203	144	25	602	5,059
Hospitals★+▲○	Gen	State	370	320	30	1,007	8,463
Larned, 3,533—Pawnee							
Larned State Hospital	Ment	State	1,569	1,527	..	...	237
Lawrence, 14,390—Douglas							
Haskell Institute Hospital	Inst	IA	40	2	..	...	201
Lawrence "		City	72	58	25	929	4,033
Watkins "		State	62	19	..	...	1,535
Leavenwort							
Cushing "		NPAssn	69	43	15	393	1,810
St. John's	Gen	Church	65	53	12	297	1,493
U. S. Penitentiary Hospital▲	Inst	USPHS	215	65	..	...	1,426
Liberal, 4,410—Seward							
Epworth Hospital	Gen	Church	38	40	16	427	1,503
Little River, 693—Rice							
Hoffman Memorial Hospital	Gen	City	16	4	3	22	107
Lyons, 4,497—Rice							
Lyons Hospital	Gen	NPAssn	20	10	6	140	604
Manhattan, 11,659—Riley							
St. Mary Hospital▲○	Gen	Church	98	79	25	720	2,525
Marion, 2,086—Marion							
Marion Hospital	Gen	NPAssn	10	5	4	83	262
Marysville, 4,055—Marshall							
Marysville Hospital	Gen	Indiv	12	6	6	132	251
Randell Hospital	Gen	Indiv	16	6	6	114	200
McPherson, 7,194—McPherson							
McPherson County Hospital	Gen	County	53	53	12	400	1,007
Neodesha, 3.376—Wilson							
Wilson County Hospital	Gen	County	30	18	10	214	801
Newton, 11 078—Harvey							
Axtell Christian Hospital▲○	Gen	Church	50	33	14	165	1,894
Bethel Deaconess Hospital▲○	Gen	Church	78	70	14	447	2,581
Norton, 2,762—Norton							
Kenney Memorial Hospital	Unit of State Sanatorium for Tuberculosis						
Norton County Hospital	Gen	County	21	16	11	291	992
State Sanatorium for Tuberculosis▲	TB	State	411	379	..	10	371
Oberlin, 1,878—Decatur							
Benton Memorial Hospital	Gen	Part	22	9	8	108	452
...ospital	Ment	State	1,715	1,702	..	...	251
...ospital	Gen	County	38	26	14	492	1,655
...	Gen	Church	75	45	22	549	2,250
... Rail-road Employes' Hospital	Indus	NPAssn	50	20	..	...	670
State Hospital for Epileptics	Epil	State	865	710	..	...	60
Pittsburg, 17,571—Crawford							
Mount Carmel Hospital▲○	Gen	Church	80	89	12	781	3,449
Pratt, 6,501—Pratt							
Ninnescah Hospital	Gen	Corp	28	19	10	200	1,835
Quinter, 481—Gove							
Quinter Community Hospital	Gen	NPAssn	8	8	6	146	510
Russell, 4,819—Russell							
Russell City Hospital	Gen	City	24	18	12	267	1,105
Sabetha, 2,241—Nemaha							
St. Anthony Murdock Memorial Hospital▲○	Gen	Church	50	36	12	193	1,613
...	Gen	Church	80	69	20	495	2,241
...	Gen	Church	85	74	20	597	2,718
...	Gen	Army	100	67	6	126	542
...	Gen	Church	23	18	12	156	853
...	Gen	City	30	20	10	175	677
...ospital	Gen	County	22	15	12	126	435
Topeka, 67,833—Shawnee							
Santa ...	Indus	NPAssn	140	102	..	...	3,590
...	Gen	NPAssn	100	94	25	1,104	4,060
...ital▲○	Gen	NPAssn	84	69	30	788	2,934
Menninger Sanitarium+▲	N&M	NPAssn	60	54	..	...	88
St. Francis Hospital▲○	Gen	Church	101	80	26	870	2,806
Security Benefit Clinic and Hospital	Gen	NPAssn	165	92	..	...	3,316
Station Hospital	Gen	Army	25	3	..	...	524
Topeka State Hospital	Ment	State	1,893	1,828	..	...	346
Veterans Admin. Hospital+▲⊙	Ment	Vet	1,400	903	..	...	4,318
Wadsworth, 2,300—Leavenworth							
Veterans Admin. Hospital+▲⊙	Gen	Vet	1,017	853	..	...	7,440
Wamego, 1,767—Pottawatomie							
Genn Hospital	Gen	City	12	7	8	147	445
Wellington, 7,246—Sumner							
Hatcher Hospital	Gen	NPAssn	23	11	5	41	615
St. Luke's Hospital	Gen	City	35	20	8	214	1,239

Key to symbols and abbreviations is on page 1396

KANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Wichita, 114,966—Sedgwick							
Coffman Hospital	Gen	Corp	10	1	2	1	100
St. Francis Hospital*+○	Gen	Church	380	350	70	2,303	13,155
St. Joseph's Hospital○	Gen	Church	118	103	..	...	3,011
Sedgwick County Hospital	Gen	County	60	53	6	93	534
Sedgwick County Tuberculosis Sanitarium	TB	County	40	20	..	...	29
Veterans Admin. Hospital▲	Gen	Vet	256	251	..	...	3,021
Wesley Hospital*+○	Gen	Church	325	279	54	1,814	9,504
Wichita Hospital*○	Gen	Church	110	115	25	950	3,702
Winfield, 9,506—Cowley							
St. Mary's Hospital▲○	Gen	Church	60	42	9	204	1,578
William Newton Memorial Hospital▲○	Gen	City	53	55	10	509	2,310

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Ashland, 1,186—Clark							
Ashland Hospital	Gen	NPAssn	11	4	1	88	290
Fort Dodge, 550—Ford							
Kansas State Soldiers' Home Hospital	Inst	State	32	6	..	...	131
Lansing, 812—Leavenworth							
Kansas State Penitentiary Hospital	Inst	State	55	10	..	...	581
Manhattan, 11,659—Riley							
Kansas State College Hosp.	Inst	State	69	10	..	...	837
St. Francis, 1,041—Cheyenne							
St. Francis Hospital	Gen	Indiv	28	13	8	138	890
Topeka, 67,833—Shawnee							
Florence Crittenton Home	Mat	NPAssn	20	10	10	36	45
Wichita, 114,966—Sedgwick							
Booth Memorial Hospital	Mat	Church	50	28	30	123	133
Suburban Rest Sanitarium	N&M	Part	40	26	..	...	70
Winfield, 9,506—Cowley							
State Training School	McDe	State	1,331	1,327	..	...	100

KENTUCKY

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Albany, 1,259—Clinton							
Maple Hill Hospital	Gen	Indiv	13	6	6	213	489
Anchorage, 629—Jefferson							
Pleasant Grove Hospital	N&M	NPAssn	63	46	..	...	634
Ashland, 29,537—Boyd							
Federal Correctional Institution	Inst	USPHS	31	15	..	...	494
Kings Daughters Hospital	Gen	NPAssn	130	102	35	1,537	5,135
Barbourville, 2,420—Knox							
Knox Hospital	Gen	Part	22	10	7	127	579
Berea, 2,176—Madison							
Berea College Hospital▲○	Gen	NPAssn	120	33	8	329	2,532
Beverly, 300—Bell							
Red Bird Evangelical Hosp.	Gen	Church	11	4	4	57	189
Bowling Green, 14,585—Warren							
City Hospital	Gen	City	55	44	14	785	2,652
Camp Campbell,—Christian							
Station Hospital	Gen	Army	75	76	7	107	2,118
Corbin, 7,893—Whitley							
Smith Hospital	Gen	Indiv	38	18	9	247	1,016
Covington, 62,018—Kenton							
Covington-Kenton County Tuberculosis Sanatorium	TB	County	17	17	..	...	26
St. Elizabeth Hospital*▲○	Gen	Church	308	236	56	2,181	8,430
Wm. Booth Memorial Hosp.▲	Gen	Church	104	97	50	1,490	3,768
Cynthiana, 4,840—Harrison							
Harrison Memorial Hospital	Gen	NPAssn	38	25	12	330	938
Danville, 6,734—Boyle							
Ephraim McDowell Memorial	Gen	NPAssn	76	67	24	624	3,067
	Ment	State	1,200	744	..	...	1,072
Speers Memorial Hospital▲○	Gen	County	100	80	18	813	2,731
Fort Knox,—Hardin							
Station Hospital▲	Gen	Army	1,064	464	32	516	10,286
Frankfort, 11,492—Franklin							
Kings Daughters Hospital	Gen	NPAssn	75	60	16	547	2,991
Frenchburg, 289—Menifee							
Jane Cook Hospital	Gen	Church	15	5	5	53	335
Fulton, 3,308—Fulton							
Fulton Hospital	Gen	Corp	53	27	6	200	1,200
Georgetown, 4,420—Scott							
John Graves Ford Memorial Hospital	Gen	Corp	33	25	11	270	1,201
Glasgow, 5,815—Barren							
T. J. Samson Community Hospital▲	Gen	NPAssn	89	77	16	748	4,961
osp.	Gen	Corp	18	14	12	151	811
osp.	Gen	NPAssn	54	42	12	620	2,857
Harlan Hospital	Gen	Corp	75	45	10	230	3,658
Harrodsburg, 4,673—Mercer							
A. D. Price Memorial Hosp.	Gen	NPAssn	23	17	10	288	1,076
	Gen	Corp	25	18	6	167	1,224
Henderson Hospital	Gen	Fed	80	40	20	550	2,031
Hopkinsville, 11,724—Christian							
Jennie Stuart Memorial Hosp.	Gen	NPAssn	65	67	18	437	3,274
Western State Hospital	Ment	State	1,900	1,767	..	...	446

KENTUCKY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Hyden, 500—Leslie							
Hyden Hospital	Gen	NPAssn	19	11	8	199	586
Jenkins, 9,428—Letcher							
Jenkins Hospital	Gen	Indiv	55	30	5	81	1,290
La Grange, 1,331—Oldham							
Mallory Taylor Memorial Hospital	Gen	City	21	15	8	200	1,000
Lakeland, 55—Jefferson							
Central State Hospital	Ment	State	2,477	2,210	..	...	549
Lebanon, 3,786—Marion							
Mary Immaculate Infirmary	Gen	Church	33	27	12	659	1,786
Lexington, 49,304—Fayette							
Eastern State Hospital	Ment	State	2,000	1,822	..	...	621
*Good Samaritan Hospital**▲○	Gen	Church	285	238	35	1,321	8,013
Julius Marks Sanatorium▲	TB	County	115	105	..	...	176
St. Joseph Hospital*+▲○	Gen	Church	276	261	40	1,351	11,332
Shriners Hospital for Crippled Children▲	Orth	NPAssn	25	20	..	...	52
U. S. Public Health Service Hospital+▲⊙	DrugMent	USPHS	1,410	1,241	..	...	2,430
Veterans Admin. Hospital+▲⊙	Ment	Vet	1,230	896	..	...	1,952
London, 2,263—Laurel							
Marymount Hospital	Gen	NPAssn	35	...	10	...	...
Louisa, 2,023—Lawrence							
Riverview Hospital	Gen	Indiv	10	7	8	191	659
Louisville, 319,077—Jefferson							
Children's Free Hospital▲⊙	Chil	NPAssn	75	45	..	...	1,597
Jewish Hospital+▲	Gen	NPAssn	85	76	15	570	3,304
Kentucky Baptist Hosp.*▲○	Gen	Church	190	175	40	1,763	7,014
Kentucky Treatment Center	Ven	State	150	90	..	...	3,304
Kosair Crippled Children Hospital+▲	Orth	NPAssn	100	94	..	...	223
Louisville General Hosp.*+▲○	Gen	CyCo	267	213	43	1,490	8,053
Methodist Deaconess Hosp.▲○	Gen	Church	85	80	12	631	3,170
Norton Memorial Infirmary*+▲○	Gen	NPAssn	157	144	30	1,251	6,195
Red Cross Hospital	Gen	NPAssn	57	35	10	170	1,102
St. Anthony's Hospital*▲○	Gen	Church	145	132	31	1,506	5,413
St. Joseph's Infirmary*+▲○	Gen	Church	350	306	50	2,521	11,958
SS. Mary and Elizabeth Hospital*▲	Gen	Church	202	161	65	2,800	7,508
St. [illegible]	TB	State	108	106	..	...	142
Stokes Sanitarium	N&M	Indiv	40	15	..	...	133
Veterans Admin. Hospital+▲	Gen	Vet	931	736	..	...	8,712
Lynch, 10,600—Harlan							
Lynch Hospital	Gen	NPAssn	55	17	8	216	1,218
Madisonville, 8,209—Hopkins							
Hopkins County Hospital	Gen	NPAssn	70	45	14	577	2,354
Marion, 2,163—Crittenden							
Crittenden County Hospital	Gen	NPAssn	23	15	9	276	490
Mayfield, 8,619—Graves							
Fuller-Gilliam Hospital	Gen	Corp	35	24	8	335	1,599
Mayfield Hospital	Gen	NPAssn	40	20	10	150	700
	Gen	NPAssn	65	70	14	724	3,133
	Gen	Corp	60	44	12	341	2,184
	Gen	Church	35	13	7	130	723
Oneida, 300—Clay							
Oneida Maternity Hospital	Mat	State	25	13	20	425	622
	TB	Vet	376	303	..	...	1,075
Hospital▲○	Gen	CyCo	150	112	25	1,357	5,739
[illegible]	Unit of Riverside Hospital						
Illinois Central Hospital▲	Indus	NPAssn	90	46	..	...	..
Riverside Hospital▲	Gen	City	114	86	28	1,238	4,990
Paintsville, 2,324—Johnson							
Paintsville Clinic-Hospital	Gen	Indiv	30	8	5	157	661
Paintsville Hospital	Gen	Corp	65	36	12	500	3,637
Paris, 6,697—Bourbon							
Massie Memorial Hospital▲	Gen	City	50	26	5	289	1,184
Pewee Valley, 625—Oldham							
Pewee Valley Sanitarium and Hospital	Gen	NPAssn	50	40	6	84	411
Pikeville, 4,185—Pike							
Methodist Hospital	Gen	Church	90	93	10	978	6,211
Pineville, 3,882—Bell							
Pineville Community Hosp.	Gen	Corp	70	60	11	321	2,956
Richmond, 7,335—Madison							
Gibson Hospital	Gen	Indiv	50	30	8	93	1,059
Irvine-McDowell Memorial Trachoma Hospital▲	Trac	State	38	20	..	...	155
Pattie A. Clay Infirmary	Gen	NPAssn	70	47	15	294	2,439
Riverside, 25—Warren							
Warren County Tuberculosis Hospital	TB	County	25	22	..	...	45
Russellville, 3,983—Logan							
Logan County Hospital	Gen	County	25	20	6	184	756
Shelbyville, 4,392—Shelby							
Kings Daughters Hospital	Gen	NPAssn	42	26	14	371	1,694
Somerset, 6,154—Pulaski							
Somerset City Hospital	Gen	City	69	41	21	629	2,553
Stanford, 1,940—Lincoln							
Stanford Hospital	Gen	Indiv	14	13	7	198	589
Versailles, 2,548—Woodford							
Woodford County Memorial Hospital	Gen	NPAssn	32	18	8	232	1,256

KENTUCKY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Waverly Hills, 250—Jefferson							
Waverly Hills Sanatorium▲	TB	CyCo	600	357	..	...	322
Winchester, 8,594—Clark							
Clark County Hospital	Gen	NPAssn	50	37	8	281	1,311
Guerrant Memorial Hospital	Gen	NPAssn	25	14	4	44	401

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Fleming, 1,193—Letcher							
Fleming Hospital	Gen	Part	30	14	4	106	695
Frankfort, 11,492—Franklin							
Kentucky Training Home	MeDe	State	705	705	..	...	114
La Grange, 1,334—Oldham							
State Reformatory Hospital	Inst	State	139	18	..	...	778
Lexington, 49,304—Lafayette							
Our Lady of the Oaks Hosp.⊙	N&M	Church	34	23	..	...	301
Louisville, 319,077—Jefferson							
Kings Daughters Home for Incurables	Incur	NPAssn	100	98	..	...	100
Susan Speed Davis Home and Hospital	Mat	Church	29	22	20	88	103

LOUISIANA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Abbeville, 6,672—Vermilion							
Abbeville Clinic Hospital	Gen	Indiv	21	6	4	182	776
Alexandria, 27,066—Rapides							
Baptist Hospital★▲○	Gen	Church	172	116	28	1,058	7,858
Murrell Hospital-Clinic	Gen	Indiv	35	30	5	156	1,579
Texada Clinic-Hospital	Gen	Part	14	9	5	256	914
Veterans Admin. Hospital+▲	Gen	Vet	662	529	..	...	3,716
Bastrop, 6,626—Morehouse							
Bastrop General Hospital	Gen	Church	28	24	8	262	1,442
Baton Rouge, 34,719—East Baton Rouge							
Baton Rouge General Hosp.○	Gen	NPAssn	57	56	24	868	3,533
Our Lady of the Lake Sanitarium▲○	Gen	Church	200	191	58	2,330	13,265
Bogalusa, 14,604—Washington							
Elizabeth Sullivan Memorial Hospital▲○	Gen	NPAssn	116	77	20	640	4,993
Breaux Bridge, 1,608—St. Martin							
St. Paul Hospital	Gen	Indiv	16	6	6	267	667
Bunkie, 3,575—Avoyelles							
Knoll Infirmary	Gen	Part	15	4	8	131	364
Carville, 250—Iberville							
U. S. Marine Hospital▲	Lepr	USPHS	338	379	..	...	80
Converse, 314—Sabine							
Allen Sanitarium	Gen	Corp	15	10	6	100	850
Covington, 4,123—St. Tammany							
Fenwick Sanitarium	N&M	Indiv	30	24	..	...	299
Crowley, 9,523—Acadia							
Acadia Hospital	Gen	Part	12	8	5	198	609
Legion Memorial Hospital	Gen	NPAssn	30	4	10	300	500
Delhi, 1,192—Richland							
Delhi Clinic and Sanitarium	Gen	Part	16	9	12	304	745
De Ridder, 3,750—Beauregard							
Frazar Clinic and Hospital	Gen	Indiv	25	15	12	550	730
Donaldsonville, 3,889—Ascension							
Donaldsonville General Hosp.	Gen	Indiv	12	2	6	77	253
Ferriday, 2,857—Concordia							
Ferriday Hospital	Gen	Part	26	10	8	178	950
Greenwell Springs, 130—East Baton Rouge							
Greenwell Springs Tuberculosis Hospital	TB	State	233	138	..	...	145
Haynesville, 2,418—Claiborne							
Haynesville Hospital▲	Gen	Corp	25	12	8	126	912
Hodge, 1,445—Jackson							
Hodge Clinic-Hospital	Gen	NPAssn	18	2	3	73	475
Houma, 9,052—Terrebonne							
Ellender Memorial Hospital	Gen	Part	23	15	8	938	2,408
Independence, 1,498—Tangipahoa							
Florida Parishes Charity Hospital	Gen	State	66	48	14	633	2,698
Jackson, 5,384—East Feliciana							
East Louisiana State Hosp.	Ment	State	4,501	4,169	..	...	1,020
Parker Hospital▲	Unit of East Louisiana State Hospital						
Lafayette, 19,210—Lafayette							
Des Ormeaux Clinic Hospital	Gen	Indiv	10	5	2	39	418
Lafayette Charity Hospital▲	Gen	State	204	167	18	1,313	5,727
Lafayette Sanitarium	Gen	NPAssn	27	15	8	326	1,485
St. Ann Infirmary	Gen	Indiv	11	8	10	247	912
Lake Charles, 21,207—Calcasieu							
St. Patrick's Hospital▲	Gen	Church	90	68	39	1,574	5,336
Lecompte, 1,311—Rapides							
Lecompte Sanitarium	Gen	Part	17	7	4	100	700
Mansfield, 4,065—De Soto							
Mansfield Sanitarium	Gen	Corp	32	11	4	98	988
Many, 1,474—Sabine							
Fraser Sanitarium	Gen	Indiv	17	8	8	258	782
Marksville, 1,811—Avoyelles							
Marksville Hospital	Gen	Indiv	17	8	4	208	694
Minden, 6,677—Webster							
Minden Sanitarium	Gen	Corp	45	38	12	544	2,994
Monroe, 28,309—Ouachita							
E. A. Conway Memorial Hospital+	Gen	State	160	152	16	803	7,494
G. B. Cooley Sanatorium	TB	NPAssn	73	47	..	...	32
Monroe Charity Hospital	See E. A. Conway Memorial Hospital						
Riverside Sanitarium▲	Gen	Indiv	26	14	8	78	1,206

LOUISIANA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
[illegible] Sanitarium▲○	Gen	Church	145	143	25	1,101	8,435
[illegible]	Gen	Part	36	36	10	184	1,784
New Iberia, 13,747—Iberia							
Dauterive Hospital	Gen	Part	26	14	6	264	1,549
Iberia General Hospital	Gen	Indiv	16	11	4	144	395
New Orleans, 494,537—Orleans							
Charity Hospital of Louisiana★+▲○	Gen	State	3,464	2,071	212	8,145	45,751
City Hospital for Mental Diseases	Ment	City	100	34	..	...	317
De Paul Sanitarium+▲⊙	N&M	Church	233	215	..	...	875
Eye, Ear, Nose and Throat Hospital+▲	ENT	NPAssn	85	62	..	...	5,855
Flint Goodridge Hospital of Dillard University★▲○	Gen	NPAssn	97	70	20	561	2,402
French Hospital	Gen	NPAssn	62	39	12	307	2,067
Hotel Dieu, Sisters' Hosp[illegible]★+▲○	Gen	Church	300	238	56	2,646	11,348
Illinois [illegible] ▲	Indus	NPAssn	60	30	..	...	872
John [illegible] culo	Unit of Charity Hospital						
Lakeshore [illegible]	Gen	NPAssn	175	91	25	631	4,755
Mercy Hospital-Soniat Memorial★▲○	Gen	Church	125	96	32	1,362	5,196
Metairie Hospital	Gen	NPAssn	22	...	8	Estab. 1947	
Ochsner Foundation Hosp.+▲	Gen	NPAssn	262	...	..	Estab. 1947	
Richard Milliken Memorial Hospital	Unit of Charity Hospital						
Sara Mayo Hospital▲	Gen	NPAssn	60	38	32	799	2,114
Southern Baptist Hosp.★+▲○	Gen	Church	375	323	70	2,556	23,966
Station Hospital	Gen	Army	100	40	..	...	1,472
Touro Infirmary★+▲○	Gen	NPAssn	383	340	41	2,111	13,039
U. S. Marine Hospital★+▲	Gen	USPHS	558	388	12	227	6,097
Veterans Admin. Hospital+▲	Gen	Vet	600	367	..	...	4,034
Opelousas, 8,980—St. Landry							
St. Landry Clinic-Hospital	Gen	Corp	20	11	4	275	1,266
Pineville, 4,297—Rapides							
Central Louisiana State Hospital	Ment	State	2,560	2,452	..	...	715
Fuqua Memorial Hospital▲	Unit of Central Louisiana State Hospital						
Huey P. Long Charity Hosp.▲	Gen	State	275	185	18	1,154	6,758
Plaquemine, 5,049—Iberville							
Plaquemine Sanitarium	Gen	NPAssn	35	26	9	340	2,230
Port Sulphur, 550—Plaquemines							
Port Sulphur Hospital	Gen	NPAssn	13	8	7	120	387
Ruston, 7,107—Lincoln							
Ruston-Lincoln Sanitarium	Gen	NPAssn	50	29	16	307	1,889
St. Martinsville, 3,501—St. Martin							
St. Martin Infirmary	Gen	Indiv	12	6	6	120	449
Shreveport, 98,167—Caddo							
Gilmer Chest Hospital	TB	Indiv	32	24	..	...	123
Gowen Sanatorium	TB	Corp	40	35	..	...	143
Highland Sanitarium★▲○	Gen	Part	102	80	16	403	4,164
North Louisiana Sanitarium★▲○	Gen	Corp	130	84	17	457	5,262
Pines Sanatorium	TB	NPAssn	100	55	..	...	140
T. E. Schumpert Memorial Sanitarium★▲○	Gen	Church	103	91	27	1,211	4,722
Shreveport Charity Hosp.★+▲○	Gen	State	650	455	52	2,502	13,666
Shriners Hospital for Crippled Children+▲	Orth	NPAssn	60	35	..	...	102
Station Hospital▲	Gen	Army	125	55	16	238	2,771
Tri-State Hospital★▲○	Gen	Corp	120	103	20	925	5,453
Thibodaux, 5,851—La Fourche							
St. Joseph Hospital	Gen	NPAssn	35	15	8	467	1,534
Winnsboro, 2,834—Franklin							
Winnsboro Sanitarium	Gen	Corp	20	9	4	122	678

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Alexandria, 27,066—Rapides							
State Colony and Training School	MeDe	State	950	850	..	...	56
Angola, 18—West Feliciana							
Angola General Hospital	Inst	State	110	47	..	...	1,167
Morgan City, 6,969—St. Mary							
Morgan City General Hosp.	Gen	NPAssn	24	10	6	290	1,152
New Orleans, 494,537—Orleans							
Memorial Mercy Home-Hosp.	Mat	Church	61	58	15	101	114
New Orleans Convalescent Home	Conv	NPAssn	33	10	..	...	145
Pleasant Hill, 737—Sabine							
Prothro Clinic and Hospital	Gen	Indiv	14	9	5	108	700

MAINE

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Augusta, 19,360—Kennebec							
Augusta General Hospital▲○	Gen	NPAssn	75	57	20	675	2,574
Augusta State Hospital	Ment	State	1,606	1,528	..	...	565
Bangor, 29,822—Penobscot							
Bangor Sanatorium	TB	NPAssn	30	19	..	...	50
Bangor State Hospital⊙	Ment	State	1,232	1,175	..	...	423
Eastern Maine General Hospital★+▲○	Gen	NPAssn	213	213	30	1,263	7,366
St. Joseph Hospital	Gen	Church	30	...	..	Estab. 1947	
Stinson Private Hospital	Gen	Indiv	23	17	12	282	889

MAINE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bar Harbor, 4,378—Hancock							
Mount Desert Island Hosp.▲..	Gen	NPAssn	58	27	10	241	1,069
Bath, 10,235—Sagadahoc							
Bath Memorial Hospital▲....	Gen	NPAssn	70	53	20	371	1,528
Belfast, 5,540—Waldo							
Bradbury Memorial Hospital	Gen	NPAssn	18	7	..	...	164
Waldo County General Hosp.▲	Gen	NPAssn	45	24	10	221	920
Biddeford, 19,790—York							
Trull Hospital○	Gen	Corp	48	38	10	281	1,190
Webber Hospital○	Gen	NPAssn	55	57	15	531	2,001
Blue Hill, 1,343—Hancock							
Blue Hill Memorial Hospital..	Gen	NPAssn	25	7	6	41	267
Boothbay Harbor, 2,121—Lincoln							
St. Andrews Hospital▲........	Gen	Corp	25	15	4	99	520
Brunswick, 8,658—Cumberland							
Brunswick Hospital	Gen	Indiv	45	20	10	271	965
Dr. Wilson's Private Hospital	Gen	Indiv	17	10	6	120	1,328
Camden, 3,554—Knox							
Camden Community Hospital	Gen	NPAssn	18	10	6	117	530
Caribou, 8,216—Aroostook							
Cary Memorial Hospital▲....	Gen	City	40	28	11	386	1,322
Castine, 662—Hancock							
Castine Community Hospital	Gen	NPAssn	12	10	6	152	492
Damariscotta, 844—Lincoln							
Miles Memorial Hospital......	Gen	NPAssn	28	18	9	261	950
Dexter, 3,714—Penobscot							
Plummer Memorial Hospital..	Gen	NPAssn	20	10	7	185	515
Dover-Foxcroft, 4,015—Piscataquis							
Mayo Memorial Hospital.....	Gen	City	21	15	8	204	712
Ellsworth, 3,911—Hancock							
Eastern Memorial Hospital...	Gen	NPAssn	15	8	8	197	1,318
Fairfield, 5,294—Somerset							
Central Maine Sanatorium▲..	TB	State	203	148	..	...	202
Farmington, 3,743—Franklin							
Franklin County Memorial Hospital▲	Gen	NPAssn	49	20	14	389	1,062
Fort Fairfield, 5,607—Aroostook							
Fort Fairfield Clinic Hosp...	Gen	Corp	22	14	10	241	678
Gardiner, 6,044—Kennebec							
Gardiner General Hospital▲..	Gen	NPAssn	54	32	16	382	1,530
Greenville Junction, 600—Piscataquis							
Charles A. Dean Memorial Hospital	Gen	NPAssn	25	8	4	110	510
Greenwood Mountain, 250—Oxford							
Western Maine Sanatorium+▲	TB	State	150	93	..	...	151
Hartland, 1,240—Somerset							
Scott-Webb Memorial Hosp...	Gen	NPAssn	24	21	10	172	760
Houlton, 7,771—Aroostook							
Aroostook General Hospital..	Gen	NPAssn	35	26	10	194	1,119
Madigan Memorial Hospital○	Gen	Church	53	41	15	224	1,885
Island Falls, 1,370—Aroostook							
Emma V. Milliken Memorial Hospital	Gen	NPAssn	25	12	7	153	602
Lewiston, 38,598—Androscoggin							
Central Maine General Hospital★+▲○	Gen	NPAssn	226	199	38	1,205	5,721
St. Mary's General Hosp.★▲○	Gen	Church	155	131	25	1,043	4,154
Old Town, 7,688—Penobscot							
Home Private Hospital......	Gen	Indiv	15	8	8	230	400
Portland, 73,643—Cumberland							
Children's Hospital▲	Chil	NPAssn	90	58	..	...	350
Maine Eye and Ear Infirmary▲○	Gen	NPAssn	125	93	30	792	4,678
Maine General Hospital★+▲○.	Gen	NPAssn	330	288	55	1,269	8,100
Mercy Hospital▲○	Gen	Church	156	135	30	1,369	4,707
Portland City Hospital......	Gen	City	175	87	15	21	651
U. S. Marine Hospital▲.......	Gen	USPHS	90	62	..	...	1,529
Presque Isle, 7,939—Aroostook							
Northern Maine Sanatorium..	TB	State	124	80	..	...	99
Presque Isle General Hosp.▲..	Gen	NPAssn	50	35	10	374	1,722
Rockland, 8,899—Knox							
Knox County General Hosp.▲	Gen	NPAssn	65	32	12	336	1,342
Rumford, 10,230—Oxford							
Rumford Community Hosp.▲○	Gen	NPAssn	65	46	12	588	2,392
Sanford, 14,886—York							
Henrietta D. Goodall Hosp.▲	Gen	NPAssn	46	45	14	457	2,432
Skowhegan, 7,159—Somerset							
Redington Memorial Hospital	Gen	NPAssn	26	24	8	344	1,090
Togus, 2,350—Kennebec							
Veterans Admin. Center▲.....	Gen	Vet	924	735	..	...	3,681
Waterville, 16,688—Kennebec							
Sisters' Hospital▲○	Gen	Church	102	75	18	806	3,855
Thayer Hospital▲	Gen	NPAssn	35	31	8	185	1,538
Westbrook, 11,087—Cumberland							
Westbrook Hospital	Gen	Corp	25	18	10	247	896

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bangor, 29,822—Penobscot							
Gay Private Hospital.........	N&M	Indiv	18	18	..	...	140
Eagle Lake, 1,891—Aroostook							
Northern Maine General Hosp.	Gen	Church	40	36	7	125	1,064
Pownal, 575—Cumberland							
Pownal State School..........	MeDe	State	1,120	1,074	2	2	210
Union, 1,150—Knox							
Jones Sanitarium	N&M	Corp	30	18	..	...	6
Van Buren, 5,380—Aroostook							
Hotel Dieu Hospital..........	Gen	Church	15	9	6	178	512
Yarmouth, 2,214—Cumberland							
Gilbert Maternity Home......	Mat	Indiv	16	12	6	22	22
York Village, 1,500—York							
York Hospital	Gen	NPAssn	22	11	6	137	655

MARYLAND

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Aberdeen Proving Ground,—Harford							
Station Hospital	Gen	Army	150	131	11	99	2,714
Annapolis, 13,069—Anne Arundel							
Annapolis Emergency Hosp.▲	Gen	NPAssn	70	52	15	597	2,584
U. S. Naval Hospital+▲.......	Gen	Navy	200	111	20	378	2,482
Army Chemical Center,—Harford							
Station Hospital	Gen	Army	50	11	..	...	294
Baltimore, 859,100—Baltimore City							
Baltimore City Hospitals★+▲⊙	Gen'Tb	City	2,030	1,558	80	1,784	7,180
Baltimore City Tuberculosis Hospital	Unit of Baltimore City Hospitals						
Baltimore Eye, Ear and Throat Charity Hospital+▲	ENT	NPAssn	60	54	6	...	1,011
Beck Diagnostic Clinic-Hosp..	Gen	Indiv	14	11	..	...	243
Bon Secours Hospital★+▲○..	Gen	Church	145	135	35	1,317	4,786
Children's Hospital School+▲	Orth	NPAssn	130	100	..	...	493
Church Home and Hosp.★+▲○	Gen	Church	165	128	28	1,176	5,177
Franklin Square Hosp.★+▲○..	Gen	NPAssn	218	138	56	1,917	5,927
Gundry Sanitarium	N&M	Indiv	45	37	..	...	30
Hospital for Women★+▲○....	Gen	NPAssn	124	128	38	1,437	4,119
James Lawrence Kernan Hospital and Industrial School for Crippled Children+▲....	Orth	NPAssn	85	66	..	...	242
Johns Hopkins Hospital★+▲○	Gen	NPAssn	990	777	75	2,655	19,857
Johnston Memorial Children's Hospital	Unit of Union Memorial Hospital						
Maryland General Hosp.★+▲○	Gen	Church	242	205	26	1,109	6,073
Mercy Hospital★+▲○	Gen	Church	289	242	50	1,877	8,911
Phipps Psychiatric Clinic.....	Unit of Johns Hopkins Hospital						
Presbyterian Eye, Ear and Throat Charity Hospital...	ENT	Church	40	2	..	..	1,141
Provident Hospital and Free Dispensary★+▲○	Gen	NPAssn	125	93	20	1,086	2,737
St. Agnes' Hospital★+▲○......	Gen	Church	221	175	56	1,765	6,717
St. Joseph's Hospital★+▲○....	Gen	Church	250	199	37	1,372	7,184
Seton Institute+	N&M	Church	412	371	..	...	276
Sinai Hospital★+▲○	Gen	NPAssn	310	258	58	2,604	9,227
South Baltimore General Hospital★+▲○	Gen	NPAssn	157	119	24	1,219	6,122
Sydenham Hospital+▲⊙	Iso	City	110	43	6	2	1,103
Union Memorial Hosp.★+▲○..	Gen	NPAssn	341	304	36	1,129	9,108
U. S. Marine Hospital★+▲...	Gen	USPHS	500	405	..	...	7,963
University Hospital★+▲○ . ..	Gen	State	435	403	70	2,486	10,618
West Baltimore General Hospital★+▲○	Gen	NPAssn	187	140	35	1,991	6,378
Bethesda, 30,000—Montgomery							
Suburban Hospital★+▲	Gen	NPAssn	102	74	22	875	3,577
U. S. Naval Hospital★+▲.....	Gen	Navy	1,400	1,200	40	1,050	14,298
Cambridge, 10,102—Dorchester							
Cambridge-Maryland Hosp.▲○	Gen	NPAssn	75	46	15	453	2,124
Eastern Shore State Hospital	Ment	State	500	471	..	...	193
Catonsville, 7,647—Baltimore							
Haarlem Lodge	N&M	Indiv	50	42	..	..	174
Spring Grove State Hosp.+...	Ment	State	2,227	2,202	..	...	585
Chestertown, 2,700—Kent							
Kent and Upper Queen Anne's General Hospital	Gen	NPAssn	30	20	12	253	869
Cheverly (Hyattsville P.O.), 996—Prince Georges							
Prince George's General Hosp.	Gen	County	102	76	18	787	3,959
Crisfield, 3,908—Somerset							
Edward W. McCready Memorial Hospital	Gen	NPAssn	38	24	14	187	782
Crownsville, 30—Anne Arundel							
Crownsville State Hospital...	Ment	State	1,690	1,675	..	...	603
Hospital for Colored Feeble-minded Children	Unit of Crownsville State Hospital						
Cumberland, 39,483—Allegany							
Allegany Hospital of the Sisters of Charity▲○	Gen	Church	127	108	30	960	5,145
Memorial Hospital▲○	Gen	CyCo	218	186	50	1,556	6,766
Easton, 4,528—Talbot							
Memorial Hospital▲○	Gen	NPAssn	125	73	19	537	5,162
Elkton, 3,518—Cecil							
Union Hosp. of Cecil County	Gen	NPAssn	73	48	25	476	1,565
Fort George G. Meade,—Anne Arundel							
Station Hospital▲	Gen	Army	1,053	410	10	341	6,203
Fort Howard,—Baltimore							
Veterans Admin. Hospital+▲..	Gen	Vet	443	392	..	...	4,050
Frederick, 15,802—Frederick							
Emergency Hospital	Gen	County	38	32	16	262	1,095
Frederick Memorial Hosp.▲○	Gen	NPAssn	125	96	24	1,096	4,090
Frostburg, 7,659—Allegany							
Miners Hospital	Gen	State	51	38	14	460	1,403
Glenn Dale, 205—Prince Georges							
Tuberculosis Sanatorium	See Washington, D. C.						
Hagerstown, 32,491—Washington							
Washington County Hosp.★▲○	Gen	NPAssn	158	150	48	1,626	6,467
Havre de Grace, 4,967—Harford							
Harford Memorial Hospital▲	Gen	NPAssn	86	62	30	868	3,470
Henryton, 30—Carroll							
Maryland Tuberculosis Sanat.	TB	State	418	319	..	...	367
Ijamsville, 200—Frederick							
Riggs Cottage Sanitarium....	N&M	Indiv	26	19	..	...	37
La Plata, 488—Charles							
Physicians Memorial Hospital	Gen	NPAssn	32	16	16	216	748
Laurel, 2,823—Prince Georges							
District Training School......	See Washington, D. C.						
Laurel Sanitarium	N&M	Indiv	75	75	..	...	459
Warren Hospital	Gen	Part	16	10	8	165	463
Leonardtown, 668—St. Marys							
St. Mary's Hospital..........	Gen	NPAssn	45	25	11	303	1,219

Key to symbols and abbreviations is on page 1396

MARYLAND—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Mount Wilson, 225—Baltimore							
Mount Wilson Branch. Maryland Tuberculosis Sanat.	TB	State	200	176	..	...	171
Olney, 100—Montgomery							
Montgomery County General Hospital	Gen	NPAssn	40	32	14	383	1,527
Patuxent River,—St. Marys							
U. S. Naval Air Station Dispensary	Gen	Navy	218	46	14	322	2,405
Perry Point, 80—Cecil							
Veterans Admin. Hospital+▲	Ment	Vet	1,830	1,635	..	...	1,110
Prince Frederick, 300—Calvert							
C[illegible] Hospital	Gen	Corp	26	10	9	217	753
Re[illegible]							
[illegible]	TB	NPAssn	60	50	..	...	50
Relay, 2,016—[illegible]							
Relay Sanitarium	N&M	Part	35	29	..	...	252
Riverdale, 2,330—Prince Georges							
Eugene Leland Memorial Hospital	Gen	Corp	58	15	21	480	1,852
Rockville, 2,047—Montgomery							
Chestnut Lodge Sanitarium+▲⊙	N&M	Indiv	60	49	..	...	35
Salisbury, 13,313—Wicomico							
Maryland Tuberculosis Sanatorium, *Eastern Shore Branch*	*TB*	*State*	*60*	51	..	...	72
Peninsula General Hosp.★▲○	Gen	NPAssn	177	171	31	1,285	[illegible]
Silver Spring, 28,000—Montgomery							
Cedarcroft Sanitarium	N&M	Part	50	30	..	...	760
State Sanatorium, 200—Frederick							
Maryland Tuberculosis Sanat.	TB	State	523	384	..	..	403
Sykesville, 806—Carroll							
Springfield State Hospital+	Ment	State	3,000	2,933	..	...	650
Takoma Park, 8,938—Montgomery							
Walter Reed General Hospital	See Washington, D. C.						
Washington Sanitarium and Hospital	See Washington, D. C.						
Towson, 2,074—Baltimore							
Aigburth Manor Hospital	Nerv	Indiv	25	23	..	...	53
Hospital for Consumptives (Eudowood Sanatorium)	TB	NPAssn	180	161	..	...	171
Sheppard and Enoch Pratt Hospital+▲⊙	N&M	NPAssn	285	198	..	...	191
Western Port, 3,565—Allegany							
Reeves Clinic Hospital	Gen	Part	10	4	1	6	230

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Baltimore, 859,100—Baltimore City							
Baltimore City Jail Hospital	Inst	City	24	2	..	...	465
Happy Hills Convalescent Home for Children	Conv	NPAssn	80	57	..	...	191
Home for Incurables	Incur	NPAssn	152	130	..	...	22
Levindale Hebrew Home and Infirmary	Inst	NPAssn	175	170	..	...	65
[illegible] osp.	Inst	State	50	21	..	...	202
El[illegible]							
[illegible]	N&M	Corp	26	30	..	...	177
Jessups, 400—Anne Arundel							
Maryland House of Correction Hospital	Inst	State	25	6	..	...	301
Owings Mills, 130—Baltimore							
Rosewood State Training School	MeDe	State	1,239	1,249	..	...	77
Rockville, 2,017—Montgomery							
Christ Child Farm for Convalescent Children	Conv	NPAssn	31	27	..	...	86

MASSACHUSETTS

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Acushnet (New Bedford P.O.),—Bristol							
Acushnet Hospital	Gen	NPAssn	52	39	17	924	1,961
Adams, 12,608—Berkshire							
W. B. Plunkett Memorial Hospital▲	Gen	City	50	29	15	340	[illegible],191
Amesbury, 10,862—Essex							
Amesbury Hospital▲	Gen	City	35	22	10	339	2,415
Arlington, 40,013—Middlesex							
Ring Sanatorium and Hosp.	N&M	Corp	60	46	..	...	418
Symmes Arlington Hospital▲	Gen	NPAssn	68	51	19	348	2,082
Attleboro, 22,071—Bristol							
Bristol County Tuberculosis Hospital	TB	County	60	55	..	...	128
Sturdy Memorial Hospital▲○	Gen	NPAssn	118	89	32	1,162	3,943
Ayer, 3,572—Middlesex							
Community Memorial Hosp.▲	Gen	NPAssn	27	16	10	309	810
Baldwinsville, 2,200—Worcester							
Hospital Cottages for Children▲	Chil	NPAssn	115	53	15	...	477
Bedford, 3,807—Middlesex							
Veterans Admin. Hospital+▲	Ment	Vet	1,875	1,809	..	...	534
Beverly, 25,537—Essex							
Beverly Hospital★+▲○	Gen	NPAssn	166	150	41	1,090	5,312
Bost[illegible] [illegible]816—Suffolk							
A[illegible] Nervine	Nerv	NPAssn	35	30	..	...	78
Audubon [illegible]	Gen	Corp	37	20	6	135	1,106
Beth-Israel Hospital★+▲○	Gen	NPAssn	215	199	..	...	5,917
Boston City Hospital★+▲○	Gen	City	2,378	1,717	159	2,614	36,794
Boston Floating Hospital+▲⊙	Chil	NPAssn	56	46	..	...	1,577
Boston Lying-In Hosp.+▲⊙	Mat	NPAssn	138	83	125	2,632	3,425

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Boston Psychopathic Hospital+▲⊙	Ment	State	117	115	..	...	1,251
Boston Sanatorium+	TB	City	573	419	..	...	572
Boston State Hospital+▲⊙	Ment	State	3,047	2,858	..	...	1,220
Carney Hospital★+▲○	Gen	Church	228	203	34	1,254	6,161
Channing Home	TB	NPAssn	28	26	..	...	43
Children's Hospital★+▲○	Chil	NPAssn	345	251	..	...	8,329
Doctors Hospital	Gen	Corp	27	14	10	212	615
Faulkner Hospital★+▲○	Gen	NPAssn	136	102	25	792	3,570
Glenside Hospital	N&M	Corp	118	115	..	...	190
Hurley Hospital	Gen	Corp	55	38	20	469	1,850
Haynes Memorial Hospital⊙	Unit of Massachusetts Memorial Hospitals						
House of the Good Samaritan+▲⊙	Card	NPAssn	79	45	..	..	150
Huntington Clinic	Maintained by Massachusetts Gen. Hosp.						
Infants Hospital	Unit of Children's Hospital						
Jewish Memorial Hospital	GenChr	NPAssn	86	86	..	..	111
Joseph H. Pratt Diagnostic Hospital+▲	Gen	NPAssn	83	42	..	...	2,709
Long Island Hospital+	GenChr	City	516	434	..	...	678
Massachusetts Eye and Ear Infirmary+▲⊙	ENT	NPAssn	201	137	..	..	6,372
Massachusetts General Hospital★+▲○	Gen	NPAssn	419	342	..	...	7,534
Massachusetts General Hospital, Baker Memorial▲	Gen	NPAssn	303	251	42	882	6,650
Massachusetts General Hospital, Phillips House▲	Gen	NPAssn	94	85	22	356	2,310
Massachusetts Memorial Hospitals★+▲○	Gen	NPAssn	484	281	45	931	7,449
Massachusetts Women's Hospital▲	Gen	NPAssn	60	41	22	637	1,810
New England Baptist Hosp.▲○	Gen	NPAssn	227	209	..	...	5,201
New England Deaconess Hospital+▲○	Gen	Church	300	270	..	...	6,835
New England Hospital for Women and Children★+▲○	Gen	NPAssn	185	124	75	2,375	5,027
Palmer Memorial Hospital+	Unit of New England Deaconess Hospital						
Peter Bent Brigham Hospital★+▲○	Gen	NPAssn	250	203	..	...	4,937
Robert Breck Brigham Hosp.▲	*Gen*	*NPAssn*	*103*	*67*	..	...	786
Robert Dawson Evans Memorial+	Unit of Massachusetts Memorial Hosps.						
St. Elizabeth's Hospital★+▲○	Gen	Church	258	215	64	1,902	6,900
St. Margaret's Hospital▲○	Gen	Church	125	128	75	2,000	4,100
St. Mary's Lying-In Hosp.▲	MatChil	Church	51	56	21	170	250
U. S. Marine Hospital★+▲	Gen	USPHS	361	300	..	...	4,000
Veterans Admin. Hospital+▲	Gen	Vet	382	337	..	...	5,233
Wolfson Nose and Throat Hospital	ENT	Indiv	9	4	..	...	450
Bridgewater, 8,902—Plymouth							
Bridgewater State Hospital	See State Farm, Mass.						
Brockton, 62,343—Plymouth							
Brockton Hospital★▲○	Gen	NPAssn	128	92	23	714	3,254
Goddard Hospital▲	Gen	Corp	67	60	25	847	2,650
Moore Hospital	Gen	Indiv	22	16	8	267	626
Brookline, 49,786—Norfolk							
Allerton Hospital	Gen	NPAssn	60	55	20	721	2,572
Bellevue Hospital	Gen	NPAssn	33	24	10	201	...
Board of Health Hospital▲	TbIso	City	55	14	..	...	16
Bournewood Hospital	N&M	Indiv	69	53	..	...	663
Brooks Hospital▲	Gen	NPAssn	50	38	.	...	1,328
Evangeline Booth Maternity Hospital and Home+▲	Mat	Church	67	28	48	850	1,225
Free Hospital for Women+▲	Gen	NPAssn	89	69	..	...	2,986
Parkway Hospital	Unit of Free Hospital for Women						
Cambridge, 110,879—Middlesex							
Cambridge City Hospital★+▲○	Gen	City	300	181	100	1,706	6,110
Cambridge Sanatorium	TB	City	100	91	..	...	201
Charlesgate Hospital	Gen	Corp	85	64	10	407	3,370
Chester Hospital	Gen	Corp	35	27	12	284	1,023
Mount Auburn Hospital★+▲○	Gen	NPAssn	221	200	51	1,653	6,873
Canton, 6,381—Norfolk							
Massachusetts Hospital School	Orth	State	260	120	..	..	56
Chelsea, 41,259—Suffolk							
Captain John Adams Hosp.▲	Gen	State	208	200	..	...	2,263
Chelsea Memorial Hospital▲○	Gen	NPAssn	98	75	25	905	2,982
U. S. Naval Hospital★+▲	Gen	Navy	1,000	667	20	693	9,693
Chicopee Falls, 16,941—Hampden							
Station Hospital▲	Gen	Army	125	45	.	...	1,200
Clinton, 12,440—Worcester							
Clinton Hospital▲○	Gen	NPAssn	63	59	20	378	1,906
Concord, 7,972—Middlesex							
Emerson Hospital▲	Gen	NPAssn	37	30	18	402	1,426
Danvers, 14,179—Essex							
Danvers State Hospital	See Hathorne						
Hunt Memorial Hospital	Gen	City	16	9	8	95	623
Everett, 46,784—Middlesex							
Whidden Memorial Hosp.▲○	Gen	NPAssn	95	97	20	1,136	3,553
Fall River, 115,428—Bristol							
Fall River General Hospital	GenTb	City	269	148	..	...	1,378
St. Anne's Hospital+▲○	Gen	Church	105	91	32	1,244	3,684
Truesdale Hospital★+▲○	Gen	NPAssn	168	120	32	1,033	4,803
Union Hospital★▲○	Gen	NPAssn	165	144	42	1,447	5,246
Fitchburg, 41,824—Worcester							
Burbank Hospital★○	Gen	City	249	192	37	1,051	5,556
Lucy Helen Memorial Hosp.	Unit of Burbank Hospital						
Foxboro, 6,303—Norfolk							
Foxboro State Hospital+▲	Ment	State	1,232	1,241	..	..	283
Framingham, 23,214—Middlesex							
Framingham Union Hosp.+▲○	Gen	NPAssn	104	80	30	898	3,961
Veterans Admin. Hospital+▲	Gen	Vet	1,000	680	..	...	5,998

Key to symbols and abbreviations is on page 1396

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Gardner, 20,206—Worcester							
Gardner State Hospital+▲....	Ment	State	1,112	1,519	..	...	213
Henry Heywood Memorial Hospital▲○	Gen	NPAssn	114	92	20	669	3,221
Georgetown, 1,803—Essex							
[illegible]	N&M	Corp	12	28	..	...	202
[illegible]	Gen	NPAssn	85	73	15	611	2,657
[illegible]	Gen	NPAssn	50	38	11	327	1,207
Greenfield, 15,672—Franklin							
Franklin County Public Hospital▲○	Gen	NPAssn	102	91	25	801	3,335
Hanson, 2,570—Plymouth							
Plymouth County Hospital▲.	TB	County	110	52	..	...	50
Hathorne, 146—Essex							
Danvers State Hospital+▲⊙...	Ment	State	2,383	2,291	..	...	759
Haverhill, 46,752—Essex							
Benson Hospital	Gen	Corp	32	18	17	153	1,090
Haverhill Municipal Hospital (Hale)▲	Gen	City	161	107	30	1,024	8,962
Haydenville, 1,000—Hampshire							
Hampshire County Sanatorium See Northampton							
Holden, 3,924—Worcester							
Holden District Hospital▲....	Gen	NPAssn	32	No data supplied			
Holyoke, 53,750—Hampden							
Holyoke Hospital★▲○	Gen	NPAssn	110	123	24	784	3,611
Providence Hospital★▲○	Gen	Church	168	152	32	1,362	4,817
Hyannis, 1,800—Barnstable							
Cape Cod Hospital▲..........	Gen	NPAssn	65	67	15	635	2,289
Ipswich, 6,348—Essex							
Benjamin Stickney Cable Memorial Hospital▲	Gen	NPAssn	26	15	10	193	693
Lawrence, 84,323—Essex							
Bessie Burke Memorial Hosp.	Gen	City	93	60	5	32	3,278
Clover Hill Hospital..........	Gen	Corp	55	13	24	801	2,246
Lawrence General Hosp.★+▲○	Gen	NPAssn	191	193	42	1,736	8,180
Leominster, 22,226—Worcester							
Leominster Hospital▲○	Gen	NPAssn	108	67	22	603	3,008
Lowell, 101,389—Middlesex							
Lowell General Hospital★▲○..	Gen	NPAssn	183	143	30	1,078	4,961
St. John's Hospital★▲○.......	Gen	Church	189	175	35	937	5,539
St. Joseph's Hospital★▲○.....	Gen	Church	140	112	30	1,175	4,734
Shaw Hospital	Gen	Indiv	20	10	11	216	357
Ludlow, 8,181—Hampden							
Ludlow Hospital	Gen	NPAssn	35	24	16	482	1,079
Lynn, 98,123—Essex							
Lynn Hospital★▲○	Gen	NPAssn	242	194	74	2,128	8,110
[illegible]	Gen	NPAssn	55	39	22	653	2,053
[illegible]	Gen	NPAssn	220	133	40	1,301	6,327
Marblehead, 10,856—Essex							
Mary A. Alley Emergency [illegible]	Gen	City	18	11	10	93	482
[illegible]	Gen	NPAssn	63	50	20	477	1,965
[illegible]	Ment	State	1,543	1,665	..	...	335
Lawrence Memorial Hosp.▲○..	Gen	NPAssn	76	64	34	1,083	3,021
Melrose, 25,333—Middlesex							
Melrose Hospital▲○	Gen	NPAssn	125	91	24	546	3,010
[illegible]	Gen	Church	145	133	19	369	3,363
[illegible] Hospital	Gen	Corp	23	29	9	428	1,079
Middleboro, 9,032—Plymouth							
Lakeville State Sanatorium▲.	TB	State	304	143	..	...	157
St. Luke's Hospital▲..........	Gen	NPAssn	32	25	15	314	1,012
Middleton, 2,348—Essex							
Essex County Tuberculosis Hospital▲	TB	County	360	216	..	...	207
Milford, 15,388—Worcester							
Milford Hospital▲○	Gen	Corp	61	48	15	704	2,590
Milton, 18,708—Norfolk							
Milton Hospital and Convalescent Home▲	Gen	NPAssn	23	11	6	73	498
Montague City, 635—Franklin							
Farren Memorial Hospital▲..	Gen	Church	71	57	12	285	2,592
Nantucket, 3,401—Nantucket							
[illegible]	Gen	NPAssn	27	18	5	67	572
[illegible]	Gen	NPAssn	58	42	17	483	1,937
[illegible]							
Glover Memorial Hospital....	Gen	City	24	19	10	216	812
New Bedford, 110,341—Bristol							
St. Luke's Hospital★▲○.......	Gen	NPAssn	294	198	45	2,262	7,635
[illegible]	TB	NPAssn	124	99	..	...	133
[illegible]	Gen	Corp	38	34	..	...	1,300
Anna Jaques Hospital▲.......	Gen	NPAssn	53	42	10	342	1,717
Worcester Memorial Hosp.▲..	Gen	NPAssn	20	14	5	138	550
Newton, 69,873—Middlesex							
New England Peabody Home for Crippled Children▲......	Orth	NPAssn	100	61	..	...	11
Newton-Wellesley Hosp.★+▲○..	Gen	NPAssn	240	182	55	1,617	6,652
Norfolk, 2,294—Norfolk							
State Prison Colony Hosp.▲..	Inst	State	75	37	..	...	680
[illegible]		NPAssn	91	49	19	549	2,046
[illegible]		NPAssn	151	133	35	1,200	5,357
[illegible]		County	60	47	..	...	68

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Northampton State Hosp.+▲⊙	Ment	State	1,788	2,163	..	...	765
Veterans Admin. Hospital▲...	Ment	Vet	1,095	1,077	..	...	515
North Grafton, 1,150—Worcester							
Grafton State Hospital+▲....	Ment	State	1,563	1,801	..	...	235
North Reading, 472—Middlesex							
North Reading State Sanat.▲	TB	State	240	109	..	...	67
Norwood, 15,383—Norfolk							
Norwood Hospital▲	Gen	NPAssn	122	96	30	910	3,904
Oak Bluffs, 1,584—Dukes							
Martha's Vineyard Hospital▲	Gen	NPAssn	35	22	10	118	639
Palmer, 9,149—Hampden							
Monson State Hospital+▲....	Epil	State	1,613	1,162	..	...	111
Wing Memorial Hospital▲....	Gen	NPAssn	29	27	12	184	1,007
Peabody, 21,711—Essex							
Josiah B. Thomas Hospital..	Gen	City	65	46	15	415	1,874
Pittsfield, 49,684—Berkshire							
Hillcrest Hospital	Gen	NPAssn	42	39	10	274	1,690
House of Mercy Hospital★▲○	Gen	NPAssn	189	114	31	588	4,632
St. Luke's Hospital★▲○.......	Gen	Church	150	126	38	1,080	4,106
Plymouth, 13,100—Plymouth							
Jordan Hospital▲	Gen	NPAssn	89	35	15	348	1,701
Pocasset, 365—Barnstable							
Barnstable County Sanat....	TbIso	County	70	55	..	...	207
Quincy, 75,810—Norfolk							
Quincy City Hospital★+▲○....	Gen	City	321	214	60	1,767	8,149
Rutland, 2,181—Worcester							
Jewish Tuberculosis Sanat....	TB	NPAssn	30	25	..	...	43
Rutland State Sanatorium+▲	TB	State	300	223	..	...	102
Rutland Heights, 800—Worcester							
Veterans Admin. Hospital+▲	TB	Vet	491	470	..	...	588
Salem, 41,213—Essex							
North Shore Babies' Hosp.▲..	Chil	NPAssn	35	29	13	...	592
Salem Hospital★+▲○	Gen	NPAssn	225	190	29	1,391	6,077
Somerville, 102,177—Middlesex							
Somerville Hospital▲○	Gen	NPAssn	120	93	30	1,100	5,318
South Braintree,—Norfolk							
Norfolk County Hospital+▲..	TB	County	154	116	..	...	73
[illegible]							
[illegible]	Gen	NPAssn	40	30	18	539	1,433
[illegible]							
Sol-e-Mar Orthopedic Hospital for Children	Orth	NPAssn	40	25	..	...	16
Springfield, 149,554—Hampden							
Health Department Hosp.▲...	TbIso	City	100	48	..	...	425
Mercy Hospital★▲○	Gen	Church	340	322	60	1,796	11,048
Shriners Hospital for Crippled Children+▲⊙	Orth	NPAssn	60	51	..	...	271
Springfield Hospital★+▲○	Gen	NPAssn	281	249	4	14	7,490
Wesson Maternity Hospital▲⊙	Mat	NPAssn	70	69	76	2,965	3,203
Wesson Memorial Hospital★▲	Gen	NPAssn	112	81	..	...	3,459
State Farm, 200—Plymouth							
Bridgewater State Hospital...	Ment	State	975	926	..	...	116
Stockbridge, 1,815—Berkshire							
Austen Riggs Foundation+...	Ment	NPAssn	50	19	..	...	147
Taunton, 37,395—Bristol							
Morton Hospital▲○	Gen	NPAssn	100	65	45	903	3,218
Taunton State Hospital+▲⊙..	Ment	State	1,961	1,918	..	...	647
Tewksbury, 6,261—Middlesex							
Tewksbury State Hospital and Infirmary+▲	GenChr	State	3,425	1,864	40	90	1,335
Vineyard Haven, 1,500—Dukes							
U. S. Marine Hospital........	Gen	USPHS	39	20	..	...	333
Walpole, 7,443—Norfolk							
Pondville Hospital+▲	Cancer	State	50	40	..	...	777
Waltham, 40,020—Middlesex							
Metropolitan State Hosp.+▲⊙	Ment	State	1,589	1,976	..	...	776
Middlesex County Sanat.+▲..	TB	County	380	250	..	...	289
Murphy General Hospital.....	Gen	Army	566	433	20	269	3,277
Waltham Contagious Hosp...	Unit of Waltham Hospital						
Waltham Hospital★▲○	Gen	NPAssn	174	106	37	841	4,346
Ware, 7,557—Hampshire							
[illegible]	Gen	NPAssn	60	26	18	498	1,426
[illegible]	Gen	NPAssn	40	32	16	528	1,502
[illegible]							
McLean Hospital+▲○	N&M	NPAssn	232	189	..	...	251
Webster, 13,186—Worcester							
Webster District Hospital▲...	Gen	NPAssn	28	29	14	400	1,228
Wellesley, 15,127—Norfolk							
Channing Sanitarium	N&M	Corp	35	27	..	...	29
Wiswall Sanatorium	N&M	Indiv	30	25	..	...	14
Westboro, 6,463—Worcester							
Westboro State Hospital+▲..	Ment	State	1,799	1,686	..	...	536
Westfield, 18,793—Hampden							
Noble Hospital▲	Gen	Corp	75	41	15	541	3,053
Westfield State Sanato- [illegible]		State	239	165	..	...	590
[illegible]		Corp	21	16	..	...	50
South Shore Hospital▲........	Gen	NPAssn	118	90	40	1,397	5,503
Whitinsville, 7,000—Worcester							
Whitinsville Hospital	Gen	NPAssn	25	9	13	150	870
Winchendon, 6,575—Worcester							
Winchendon Hospital	Gen	NPAssn	25	19	8	326	1,070
Winchester, 15,081—Middlesex							
Winchester Hospital▲	Gen	NPAssn	72	66	20	1,023	2,833
Winthrop, 16,768—Suffolk							
Winthrop Community Hosp.▲	Gen	NPAssn	64	53	20	912	2,365
Woburn, 19,751—Middlesex							
Charles Choate Memorial Hospital▲○	Gen	NPAssn	52	41	18	450	1,700

Key to symbols and abbreviations is on page 1396

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Worcester, 193,694—Worcester							
Belmont Hospital+▲⊙	TbIso	City	250	107	..	...	797
Fairlawn Hospital▲	Gen	NPAssn	53	42	16	577	1,666
Harvard Private Hospital	Gen	Corp.	25	11	5	43	353
Memorial Hospital★+▲○	Gen	NPAssn	185	215	30	1,358	10,197
St. Vincent Hospital★+▲○	Gen	Church	242	217	35	1,309	7,715
Worcester City Hospital★+▲○	Gen	City	480	381	60	1,236	7,859
Worcester County Sanat.▲	TB	County	130	97	..	...	74
Worcester Hahnemann Hospital★▲○	Gen	NPAssn	120	103	13	1,318	4,417
Worcester State Hospital+▲⊙	Ment	State	2,830	2,735	12	17	751

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Andover, 11,122—Essex							
Isham Infirmary	Inst	NPAssn	50	4	..	...	689
Belchertown, 3,503—Hampshire							
Belchertown State School▲	MeDe	State	1,323	1,260	..	...	93
Boston, 77,816—Suffolk							
Bay State Hospital	Gen	Corp	35	25	8	281	2,126
Boston Home for Incurables	Incur	NPAssn	56	43	..	...	9
Florence Crittenton Home and Hospital	Mat	NPAssn	52	32	17	84	107
Hastings Home	Mat	NPAssn	26	22	11	53	98
Prendergast Preventorium	TB	NPAssn	160	50	..	...	178
Washingtonian Hospital	Drug	NPAssn	35	27	..	...	1,601
Cambridge, 110,879—Middlesex							
Holy Ghost Hospital for Incurables	Incur	Church	260	222	..	...	213
Framingham, 23,214—Middlesex							
Woodside Cottages	N&M	Corp	21	20	..	...	37
Greenfield, 15,672—Franklin							
Greenfield Isolation Hospital	Iso	City	20	3	..	...	103
Haverhill, 46,752—Essex							
Haverhill City Infirmary	Chr	City	82	76	..	...	122
Lynn, 98,123—Essex							
Lynn Health Department Hospital	Iso	City	50	15	..	...	269
Pittsfield, 49,684—Berkshire							
Pittsfield Anti-Tuberculosis Hospital	TB	NPAssn	12	11	..	...	19
Salem, 41,213—Essex							
for	Iso	City	35	7	..	...	152
Sc							
Disease Hospital	Iso	City	31	2	..	...	67
Springfield, 149,554—Hampden							
Buscall Nursing Home	Conv	Indiv	25	9	..	...	21
City of Springfield Infirmary	Inst	City	116	103	10	...	356
Waltham, 40,020—Middlesex							
Walter E. Fernald State School▲	MeDe	State	1,540	1,826	..	...	204
Wellesley, 15,127—Norfolk							
Simpson Infirmary of Wellesley College	Inst	NPAssn	29	16	..	...	1,026
Wellesley Hills,—Norfolk							
Convalescent Home for Children	Orth	NPAssn	75	45	..	...	332
W							
Reformatory Hospital	Inst	State	30	3	..	...	393
Williamstown, 4,294—Berkshire							
Williams College Infirmary	Inst	NPAssn	20	4	..	...	310
Wrentham, 4,674—Norfolk							
Wrentham State School	MeDe	State	2,075	1,829	..	...	295

MICHIGAN

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Adrian, 14,230—Lenawee							
Emma L. Bixby Hospital	Gen	City	75	44	24	969	2,843
Albion, 8,345—Calhoun							
James W. Sheldon Memorial Hospital▲	Gen	City	45	31	14	534	1,721
Allegan, 4,526—Allegan							
Allegan Health Center▲	Gen	NPAssn	40	23	13	462	1,536
Alma, 7,202—Gratiot							
Carney-Wilcox-Miller Hospital	Gen	Part	34	18	10	249	917
Michigan Masonic Home and Hospital	Inst	NPAssn	60	52	..	...	137
R. B. Smith Memorial Hosp.	Gen	NPAssn	29	20	11	569	1,772
Almont, 924—Lapeer							
Bishop Hospital	Gen	Indiv	14	8	5	173	461
Alpena, 12,808—Alpena							
Alpena General Hospital	Gen	City	78	73	21	892	3,478
Ann Arbor, 29,815—Washtenaw							
Mercywood Neuropsychiatric Hospital⊙	N&M	Church	40	36	..	...	448
Michigan Rapid Treatment Center	Ven	State	150	93	6	...	3,589
Neuropsychiatric Institute	Unit of University Hospital						
St. Joseph's Mercy Hosp.★+▲○	Gen	Church	250	189	64	1,410	7,591
University Hospital★+▲○	Gen	State	849	748	35	852	16,101
Bad Axe, 2,624—Huron							
Hubbard Memorial Hospital	Gen	NPAssn	46	30	12	352	1,130
Battle Creek, 43,453—Calhoun							
American Legion Hospital+	TB	NPAssn	350	192	..	...	321
Arthur S. Kimball Sanat.	TB	County	70	59	..	...	121
Battle Creek Sanitarium▲	Gen	NPAssn	307	199	..	...	4,015
Community Hospital▲○	Gen	NPAssn	100	80	25	1,264	5,192

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Leila Y. Post Montgomery Hospital★+▲○	Gen	Church	175	127	25	983	7,157
Percy Jones General Hosp.★+▲	Gen	Army	3,861	2,931	20	267	9,335
Bay City, 47,956—Bay							
Bay City General Hospital▲	Gen	City	125	124	25	1,411	5,710
Bay City Samaritan Hospital	Gen	NPAssn	41	28	4	1	1,163
Mercy Hospital★▲○	Gen	Church	135	111	25	963	5,976
Benton Harbor, 16,668—Berrien							
Mercy Hospital▲○	Gen	NPAssn	90	83	26	1,402	4,483
Berrien Center, 241—Berrien							
Berrien County Hospital	Gen	County	60	26	5	21	533
Big Rapids, 4,987—Mecosta							
Community Hospital	Gen	City	37	27	12	321	1,355
Brighton, 1,357—Livingston							
Mellus Memorial Hospital	Gen	NPAssn	13	7	6	94	2,765
Cadillac, 9,855—Wexford							
Mercy Hospital▲	Gen	Church	120	47	30	655	2,582
Calumet, 1,460—Houghton							
Calumet and Hecla Hospital	Indus	NPAssn	24	18	..	...	414
Caro, 3,070—Tuscola							
Caro Community Hospital	Gen	City	15	6	9	204	520
Caro State Hospital for Epileptics	Epil	State	1,428	1,349	..	...	92
Cass City, 1,392—Tuscola							
Pleasant Home Hospital	Gen	Indiv	13	13	5	156	793
Charlevoix, 2,299—Charlevoix							
Charlevoix Hospital	Gen	NPAssn	30	19	8	253	1,085
Charlotte, 5,544—Eaton							
Hayes-Green-Beach County Memorial Hospital	Gen	County	24	15	10	307	859
Cheboygan, 5,673—Cheboygan							
Community Memorial Hosp.	Gen	NPAssn	48	34	12	417	2,373
Clare, 1,844—Clare							
Clare Hospital	Gen	NPAssn	25	11	6	65	400
Coldwater, 7,343—Branch							
Community Health Center▲	Gen	County	52	42	24	606	2,208
Crystal Falls, 2,611—Iron							
Crystal Falls Municipal Hosp.	Gen	City	17	11	5	128	636
Cutlerville (Grand Rapids P. O.), 560—Kent							
Pine Rest Sanitarium	Unit of Christian Psychopathic Hospital, Grand Rapids						
Dearborn, 63,584—Wayne							
Dearborn Diagnostic Hospital	Gen	NPAssn	65	10	20	55	548
Dearborn General Hospital	Gen	Indiv	15	2	14	386	842
Dearborn Industrial and General Hospital	Gen	NPAssn	50	37	16	1,058	2,232
St. Joseph's Retreat+⊙	N&M	Church	350	300	..	...	892
Veterans Admin. Hospital+▲	Gen	Vet	455	447	..	...	3,437
Detroit, 1,623,452—Wayne							
Alexander Blain Hospital+▲	Gen	NPAssn	60	50	5	106	1,980
▲	TB	NPAssn	83	66	..	...	158
	Gen	NPAssn	83	56	25	335	2,616
▲	Chil	NPAssn	225	166	..	...	5,577
Hospital★+▲	Gen	City	633	604	..	...	18,183
City of Hospita		City	50	33	..	...	1,344
Delray Ge		NPAssn	72	51	20	699	2,552
Detroit Medical Hospital▲	N&M	NPAssn	102	86	..	...	1,781
Detroit Tuberculosis Sanat.▲	TB	NPAssn	200	164	..	...	821
Dorothy Rogers General Hosp.	Gen	NPAssn	50	35	6	130	2,088
East Side General Hospital▲	Gen	NPAssn	79	65	45	1,560	4,281
Edyth K. Thomas Memorial Hospital▲	Gen	NPAssn	125	46	12	219	1,353
▲	Gen	Church	185	119	40	1,829	8,747
	TB	NPAssn	66	63	..	...	159
Florence Crittenton Hosp.+▲	Gen	NPAssn	300	210	75	2,023	5,751
Grace Hospital★+▲○	Gen	NPAssn	450	431	64	2,324	17,762
Grace Hospital, Northwestern Branch▲	Unit of Grace Hospital						
Harper Hospital★+▲○	Gen	NPAssn	600	468	85	3,084	20,945
Henry Ford Hospital★+▲○	Gen	NPAssn	587	587	61	1,920	16,116
Herman Kiefer Hosp.+▲⊙	TbMatIso	City	1,200	921	68	2,652	5,441
Holy Cross Hospital	Gen	Church	103	82	50	2,003	4,551
Kretzschmar Diagnostic Clinic and Hospital	Gen	NPAssn	12	8	4	81	406
Lincoln Hospital▲	Gen	NPAssn	62	51	22	1,014	2,611
Martin Place Hospital	Gen	NPAssn	20	7	6	25	227
McGregor Convalescent Home	Conv	NPAssn	40	29	..	...	267
Mercy General Hospital	Gen	Indiv	35	20	9	22	130
Mercy Hall Hospital	Cancer	NPAssn	60	45	..	...	441
Michigan Mutual Industrial Hospital▲	Indus	NPAssn	26	21	..	...	875
Miriam Memorial Hospital	Unit of Grace Hospital						
Mt. Carmel Mercy Hosp.★+▲○	Gen	Church	450	442	125	5,077	15,327
North Detroit General Hosp.	Gen	NPAssn	44	29	15	564	2,063
Parkside Hospital+▲	Gen	NPAssn	52	35	12	379	1,345
Providence Hospital★+▲○	Gen	Church	346	306	114	3,855	13,667
St. Joseph's Mercy Hosp.★+▲○	Gen	Church	186	118	60	2,017	6,566
St. Mary's Hospital★+▲○	Gen	Church	293	211	57	2,145	9,979
Saratoga General Hospital+▲	Gen	NPAssn	110	107	35	1,290	4,767
Trinity Hospital▲	Gen	NPAssn	100	80	20	480	1,794
Trumbull General Hospital	Gen	NPAssn	43	26	13	668	...
U. S. Marine Hospital★+▲	Gen	USPHS	266	231	2	15	2,812
Warren Diagnostic Hospital	Gen	Indiv	18	10	3	69	441
Wayne Diagnostic Hospital	Gen	NPAssn	110	100	34	1,070	2,752
William Booth Memorial Hospital	Mat	Church	35	29	30	1,359	1,073
Woman's Hospital★+▲⊙	Gen	NPAssn	242	177	109	3,722	8,457

Key to symbols and abbreviations is on page 1396

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Dowagiac, 5,007—Cass							
Lee Memorial Hospital	Gen	Church	33	31	13	105	1,182
Durand, 3,127—Shiawassee							
Durand Hospital	Gen	NPAssn	16	12	6	263	773
East Grand Rapids (Reeds Lake P. O.), 4,880—Kent							
Burleson Hospital	Proct	Corp	20	19	..	...	700
Eaton Rapids, 3,060—Eaton							
Stimson Hospital	Gen	Part	15	7	8	101	150
Edmore, 825—Montcalm							
Edmore Hospital	Gen	NPAssn	18	7	5	113	315
Eloise, 1,700—Wayne							
Wayne County General Hospital and Infirmary +▲	Ment	County	3,807	*1,210*	..	...	*1,003*
Wayne County General Hospital and Infirmary ★+▲	GenChr	County	5,127	2,628	..	18	6,503
William J. Seymour Hosp.★+▲	Unit of Wayne County General Hospital and Infirmary						
Escanaba, 14,830—Delta							
St. Francis Hospital	Gen	Church	100	95	20	872	3,311
Flint, 151,513—Genesee							
Hurley Hospital★+▲○	Gen	City	425	349	59	3,070	18,009
St. Joseph Hospital★▲	Gen	Church	230	179	45	2,826	9,333
Women's Hospital▲	Gen	NPAssn	40	32	25	812	1,386
Fort Custer,—Calhoun							
Veterans Admin. Hospital+▲	Ment	Vet	2,150	1,970	..	...	1,138
Fremont, 2,520—Newaygo							
Gerber Memorial Hospital	Gen	City	25	17	12	416	1,311
Gaylord, 2,055—Otsego							
Northern Michigan Tuberculosis Sanatorium▲	TB	State	128	122	..	...	100
Gladwin, 1,600—Gladwin							
Gladwin Hospital	Gen	Part	16	10	6	224	*620*
Goodrich, 470—Genesee							
Goodrich General Hospital▲	Gen	NPAssn	48	25	15	244	1,821
Grand Haven, 8,799—Ottawa							
Grand Haven Municipal Hosp.	Gen	City	44	30	18	410	2,312
Gr							
•+▲○	Gen	NPAssn	170	145	40	1,186	5,611
▲ ...	Gen	NPAssn	270	243	*60*	2,595	*10,704*
osp.	N&M	NPAssn	400	370	..	...	362
City General Hospital	Conv	City	30	16	..	...	128
Ferguson-Droste-Ferguson Rectal Clinic and *Hospital*	Proct	Corp	*100*	*64*	..	...	1,880
Pine Rest Sanitarium	*Unit of Christian Psychopathic Hospital*						
St. Mary's Hospital★+▲○	Gen	Church	256	221	62	3,032	8,916
Sunshine Sanatorium	TB	County	135	*99*	..	...	117
Grayling, 2,124—Crawford							
Mercy Hospital▲	Gen	Church	45	34	5	50	1,470
Greenville, 5,321—Montcalm							
United Memorial Hospital	Gen	NPAssn	30	20	8	461	1,273
Grosse							
Bon	Gen	Church	32	30	..	...	1,107
Cott ▲	Gen	NPAssn	36	38	25	723	2,637
Hamtramck, 49,839—Wayne							
St. Francis Hospital▲○	Gen	Church	106	83	30	1,213	4,501
Hancock, 5,554—Houghton							
St. Joseph's Hospital▲○	Gen	Church	86	67	20	691	3,116
Hart, 1,922—Oceana							
Oceana *Hospital*	Gen	NPAssn	20	19	7	253	2,217
Hartford, 1,694—Van Buren							
Van Buren County Hospital	*Gen*	*County*	31	30	3	30	*350*
Hastings, 5,175—Barry							
Pennock Hospital▲	Gen	NPAssn	35	34	8	495	1,852
Hazel Park,—Oakland							
Helene Meinke Hospital	Gen	Indiv	12	9	8	207	548
▲	Gen	City	255	210	45	2,011	8,428
Center▲	Gen	City	75	49	20	558	2,522
Holland, 14,616—Ottawa							
Holland City Hospital	Gen	*City*	*56*	48	20	890	2,739
Houghton, 3,693—Houghton							
Copper Country Sanatorium	TB	County	66	64	..	...	82
Howell, 3,748—Livingston							
McPherson Memorial Hosp.	Gen	City	29	20	12	338	811
Michigan State Sanatorium+▲	TB	State	*434*	*389*	..	...	286
Hudson, 2,426—Lenawee							
Thorn Memorial Hospital	Gen	*City*	18	12	7	*243*	*529*
Ionia, 6,392—Ionia							
Ionia County Memorial Hosp.	Gen	County	21	19	9	433	1,362
Ionia State Hospital	Ment	State	1,055	1,028	..	...	167
Iron Mountain, 11,080—Dickinson							
Iron Mountain General Hosp.	Gen	NPAssn	*29*	27	8	331	1,266
Ironwood, 13,369—Gogebic							
Grand View Hospital▲	GenTb	County	120	100	13	344	2,387
Newport Hospital	Gen	NPAssn	12	9	5	178	398
Ishpeming, 9,491—Marquette							
Ishpeming Hospital▲	Gen	NPAssn	59	46	18	362	1,462
Jackson, 49,656—Jackson							
W. A. Foote Memorial Hospital★▲○	Gen	City	150	145	35	1,157	8,061
Jackson County *Sanatorium*⊙	*TB*	*County*	*68*	*68*	..	...	*46*
Mercy Hospital★▲○	Gen	Church	125	101	30	1,561	5,265
▲	Gen	Church	247	195	35	1,608	7,220
▲	Gen	Church	145	132	30	1,406	5,567
▲	TbIso	County	93	42	..	...	*70*
	Ment	State	3,380	3,305	..	...	567
Lakeview, 824—Montcalm							
Kelsey Hospital	Gen	Part	20	11	5	220	742

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Lansing, 78,753—Ingham							
Edward W. Sparrow Hosp.★▲○	Gen	NPAssn	*200*	*184*	53	2,163	*8,208*
Ingham Sanatorium+▲	*TB*	*County*	*130*	*128*	..	...	*267*
St. Lawrence Hospital★▲○	Gen	Church	210	176	50	2,269	7,812
Lapeer, 5,365—Lapeer							
Lapeer City Hospital	Gen	Part	18	9	4	183	675
▲	MeDe	State	1,275	1,091	3	3	192
Calumet Public Hospital	Gen	*NPAssn*	*37*	*26*	*12*	*268*	*1,311*
Ludington, 8,701—Mason							
Paulina Stearns *Hospital*	*Gen*	*NPAssn*	*16*	*30*	*10*	*462*	1,901
Manistee, 8,694—Manistee							
Mercy Hospital and Sanit.▲	Gen	Church	50	33	12	367	1,339
Manistique, 5,399—Schoolcraft							
Shaw General Hospital	Gen	Indiv	20	14	10	*216*	487
Marquette, 15,928—Marquette							
Morgan Height Sanat.+▲	TB	County	90	61	..	...	71
St. Luke's Hospital▲○	Gen	NPAssn	155	126	12	180	3,872
St. Mary's Hospital	Gen	Church	65	4	11	363	1,067
Marshall, 5,253—Calhoun							
Oaklawn Hospital	*Gen*	*NPAssn*	21	16	12	289	895
Menominee, 10,230—Menominee							
St. Joseph's Hospital	Gen	Church	60	60	13	579	2,679
Midland, 10,329—Midland							
Midland Hospital▲	Gen	NPAssn	55	45	20	726	3,271
Milan, 2,340—Washtenaw							
Federal Correctional Institution	Inst	USPHS	34	17	..	...	613
Monroe, 18,478—Monroe							
Mercy Hospital▲	Gen	Church	66	56	24	1,016	3,317
Monroe Hospital	Gen	NPAssn	66	48	19	579	3,706
Morenci, 1,845—Lenawee							
Blanchard Hospital	Gen	*NPAssn*	*14*	*8*	*6*	*100*	*472*
Mount Clemens, 14,389—Macomb							
St. Joseph Hospital▲○	Gen	Church	128	143	42	1,782	5,838
Station Hospital	Gen	Army	30	28	..	3	1,513
Mount Pleasant, 8,413—Isabella							
Central Michigan Community Hospital▲	Gen	NPAssn	50	47	12	545	2,625
Munising, 4,409—Alger							
Munising Hospital	Gen	NPAssn	28	11	5	121	479
Muskegon, 47,697—Muskegon							
Hackley Hospital★+○	Gen	NPAssn	155	144	34	1,922	6,986
Mercy Hospital+○	Gen	Church	110	89	33	1,337	4,417
Muskegon County Sanat.▲	TB	County	75	70	..	...	72
Newberry, 2,732—Luce							
Newberry Clinic Hospital	Gen	*Indiv*	*22*	*16*	7	*245*	*940*
Newberry State Hospital+	Ment	State	1,720	1,639	..	...	708
Niles, 11,328—Berrien							
Pawating Hospital	*Gen*	NPAssn	72	58	25	764	2,960
Northville, 3,032—Wayne							
East Lawn Sanatorium	TB	Corp	95	86	..	...	*131*
Sessions Hospital	Gen	NPAssn	25	20	10	355	860
Wm. H. Maybury Sanatorium (Detroit Municipal Tuberculosis Sanatorium)+▲	TB	City	843	600	..	...	841
Norway, 3,728—*Dickinson*							
Penn Hospital	Gen	City	15	11	7	201	546
Omer, 295—Arenac							
Omer Hospital	Gen	Indiv	16	8	5	133	270
Ontonagon, 2,290—Ontonagon							
Ontonagon Memorial Hosp.	Gen	*City*	32	22	8	169	1,178
Oshtemo, 235—Kalamazoo							
Pine Crest State Sanatorium	TB	State	*100*	83	..	...	92
Owosso, 14,424—Shiawassee							
Memorial Hospital▲	Gen	NPAssn	80	65	20	*980*	3,577
Paw Paw, 1,910—Van Buren							
Lake View Municipal Hospital	Gen	City	22	17	7	206	927
Petoskey, 6,019—Emmet							
Little Traverse Hospital▲	Gen	NPAssn	103	88	10	310	3,216
Lockwood General Hospital	Gen	*NPAssn*	50	44	10	232	1,777
Pigeon, 949—Huron							
Scheurer Hospital	Gen	NPAssn	20	13	10	226	671
	Gen	City	25	20	11	338	856
Plymouth Hospital	Gen	Part	7	2	3	45	122
Pontiac, *66,626*—Oakland							
Oakland County Contagious Hospital	VenIso	County	85	35	20	...	654
Oakland County Tuberculosis Sa ▲	TB	County	248	157	..	...	212
Pon ▲		*City*	*178*	*147*	*46*	*1,616*	*7,380*
Pon t		State	2,416	2,346	..	...	560
St.		Church	259	200	77	2,243	*9,522*
Port							
Port ▲		NPAssn	120	116	24	1,306	6,070
Powers, 258—Menominee							
Pinecrest Sanatorium▲	TB	Counties	145	126	..	...	113
Reed City, 1,845—*Osceola*							
Reed City Hospital	Gen	City	31	34	8	393	2,213
River Rouge, 17,008—Wayne							
Sidney A. Sumby Memorial Hospital	Gen	NPAssn	38	17	12	191	734
Rochester, 3,759—Oakland							
Haven Sanitarium	N&M	Corp	43	39	..	...	337
Romeo, 2,627—Macomb							
Wehenkel Tuberculosis Sanatorium	TB	Indiv	40	36	..	...	171
Royal Oak, 25,087—Oakland							
Oakland Center Hospital	Gen	NPAssn	12	8	..	...	342
Royal Oak General Hospital	Gen	City	24	21	12	404	1,469

Key to symbols and abbreviations is on page 1396

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Saginaw, 82,794—Saginaw							
Saginaw County Hospital▲	TbIso	County	175	161	..	...	457
Saginaw County Infirmary Hospital	Gen	County	44	10	..	...	255
Saginaw General Hosp.★+▲◇	Gen	NPAssn	204	158	50	1,680	7,845
St. Luke's Hospital▲	Gen	Church	61	49	18	,67	2,909
St. Mary's Hospital★▲◇	Gen	Church	168	139	26	1,254	6,410
St. Clair, 3,471—St. Clair							
St. Clair Community Hosp.	Gen	City	19	12	10	398	782
St. Johns, 4,422—Clinton							
Clinton Memorial Hospital▲	Gen	NPAssn	50	45	20	607	2,236
St. Joseph, 8,963—Berrien							
St. Joseph Michigan Hosp.▲	Gen	NPAssn	38	26	12	284	1,713
Sault Ste. Marie, 15,847—Chippewa							
Chippewa County War Memorial Hospital▲	Gen	County	130	109	21	883	4,569
Sault Ste. Marie State Hosp.	Ment	State	530	483	..	...	41
Shelby, 1,367—Oceana							
Shelby Hospital	Gen	City	10	6	5	85	797
South Haven, 4,745—Van Buren							
South Haven Hospital▲	Gen	City	42	34	12	391	1,590
Stambaugh, 2,081—Iron							
General Hospital Company of Iron River District	Gen	NPAssn	28	6	12	330	923
Sturgis, 7,214—St. Joseph							
Sturgis Memorial Hospital▲	Gen	City	40	33	10	681	1,785
Tecumseh, 2,921—Lenawee							
Tecumseh Hospital	Gen	City	34	27	16	381	1,319
Three Rivers, 6,710—St. Joseph							
Three Rivers Hospital▲	Gen	City	34	31	8	455	1,530
Traverse City, 14,455—Grand Traverse							
Boardman Valley Hospital	Gen	County	24	16	4	39	287
James Decker Munson Hosp.▲	Gen	State	128	118	17	770	3,964
Traverse City State Hosp.+▲◇	Ment	State	2,781	2,708	..	...	662
Wakefield, 3,591—Gogebic							
[illegible]	Gen	Church	15	12	6	179	536
W[illegible]							
[illegible]	Gen	Indiv	15	8	6	148	572
Wayne General Ho[illegible]	Gen	Indiv	25	16	8	315	1,290
West Branch, 1,962—Ogemaw							
Tolfree Memorial Hospital	Gen	City	20	16	5	295	1,246
Wyandotte, 30,618—Wayne							
Wyandotte General Hosp.+▲	Gen	City	173	133	42	2,129	7,238
Ypsilanti, 12,121—Washtenaw							
Beyer Memorial Hospital▲	Gen	City	137	81	37	1,706	4,879
Hull Memorial City Hospital. Unit of Beyer Memorial Hospital							
Leland Sanatorium▲	TB	NPAssn	100	57	..	...	69
Ypsilanti State Hospital+▲◇	Ment	State	3,400	3,364	..	...	739
Zeeland, 3,007—Ottawa							
Thomas G. Huizinga Memorial Hospital	Gen	NPAssn	15	10	8	297	654

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Ann Arbor, 29,815—Washtenaw							
Ann Arbor School	MeDe	Indiv	50	40	..	...	20
Coldwater, 7,343—Branch							
Coldwater State Home and Training School	MeDe	State	1,246	1,111	..	...	142
Detroit, 1,623,452—Wayne							
Barnett Clinic and Hospital	ENT	NPAssn	15	1	..	...	416
Central Hospital	Gen	Indiv	21	10	..	...	182
Denike Sanitarium	AlcohN&M	Corp	130	94	..	...	170
Doctors' Hospital	Conv	Indiv	35	28	..	...	435
General Hospital and Clinic	TB	Indiv	46	44	..	...	122
Good Samaritan Hospital	Conv	NPAssn	29	23	..	...	18
Douglas, 421—Allegan							
Community Hospital	Gen	NPAssn	15	8	6	100	326
East Grand Rapids (Reeds Lake P. O.), 4,899—Kent							
O'Keefe Sanitarium	Conv	Corp	31	30	..	...	47
Farmington, 1,510—Oakland							
Children's Hospital Convalescent Home	Conv	NPAssn	200	62	..	...	288
Ferndale, 22,523—Oakland							
Ardmore Hospital	Gen	NPAssn	22	14	12	328	1,177
Flint, 151,543—Genesee							
Genesee County Hospital and Infirmary	InstGen	County	100	90	10	...	232
Grand Rapids, 164,292—Kent							
Kent County Receiving Hosp.	Ment	County	28	14	..	...	479
Mary Free Bed Guild Convalescent Home	Orth	NPAssn	96	59	4	...	311
Michigan Veterans Facility Hospital	Inst	State	275	250	..	...	270
Salvation Army Evangeline Booth Home and Hospital	Mat	Church	40	40	30	188	237
Jackson, 49,656—Jackson							
Florence Crittenton Home and Hospital	Mat	NPAssn	20	18	10	58	64
Jackson County Isolationn Hospital	Iso	County	40	9	..	...	297
Southern Michigan Prison Hospital	Inst	State	200	119	..	...	2,333
Lansing, 78,753—Ingham							
Boys' Vocational School Hospital	Inst	State	45	9	..	...	1,822
Ingham County Convalescent Hospital	Conv	County	50	7	..	...	107
Marquette, 15,928—Marquette							
Marquette Branch Prison Hospital	Inst	State	24	4	..	...	60
Mount Clemens, 14,389—Macomb							
Sigma Gamma Hosp. School⊙	Orth	NPAssn	50	34	..	...	141

MICHIGAN—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
[illegible]	MeDe	State	380	374	..	...	22
[illegible]							
Wayne County Training School	MeDe	County	835	685	..	...	152
Plainwell, 2,424—Allegan							
Del Vista Sanitarium	N&M	Corp	35	20	..	...	220
Pontiac, 66 626—Oakland							
Oakland County Infirmary	Inst	County	200	200	..	...	493
Port Huron, 32,759—St. Clair							
Port Huron Emergency Hosp.	Iso	City	18	3	5	...	84
Romulus, 755—Wayne							
Romulus Hospital	Gen	NPAssn	15	3	6	46	122
[illegible]tal	Gen	Indiv	10	4	5	158	270
[illegible]							
[illegible]	Mat	Indiv	17	14	17	346	352
Vicksburg, 1,774—Kalamazoo							
Franklin Memorial Hospital	Gen	City	11	7	6	113	435

MINNESOTA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Ada, 1,938—Norman							
Ada Municipal Hospital	Gen	City	25	18	8	199	730
Adrian, 1,006—Nobles							
Adrian Hospital	Gen	NPAssn	17	14	6	168	671
Ah-gwah-ching, 15—Cass							
Minnesota State Sanatorium▲	TB	State	355	201	..	...	429
[illegible]							
[illegible]	Gen	NPAssn	85	70	25	929	5,216
[illegible]							
Our Lady of Mercy Hosp.▲	Gen	Church	28	23	10	260	1,488
St. Luke's Hospital	Gen	NPAssn	33	23	12	218	828
Anoka, 6,426—Anoka							
Anoka Hospital	Gen	NPAssn	16	8	9	184	492
Anoka State Hospital▲	Ment	State	1,400	1,339	..	...	120
Appleton, 1,877—Swift							
[illegible]	Gen	Indiv	25	10	5	93	645
A[illegible]							
St. [illegible]	Gen	NPAssn	105	90	20	919	4,155
Battle Lake, 623—Otter Tail							
Otter Tail County Sanatorium	TB	County	48	25	..	...	17
Bemidji, 9,427—Beltrami							
Lutheran Hospital▲	Gen	NPAssn	75	48	18	451	2,524
Benson, 2,729—Swift							
Swift County Hospital	Gen	NPAssn	27	18	10	268	1,009
Bertha, 578—Todd							
Thiel Hospital	Gen	NPAssn	20	15	8	278	915
Bigfork, 382—Itasca							
Northern Itasca Hospital	Gen	City	11	10	4	82	466
Biwabik, 1,304—St. Louis							
Biwabik Hospital	Gen	Indiv	10	7	7	117	306
Braham, 578—Isanti							
Braham Community Hospital	Gen	NPAssn	26	6	7	16	112
Brainerd, 12,071—Crow Wing							
St. Joseph's Hospital▲	Gen	Church	75	69	16	791	4,045
Breckenridge, 2,745—Wilkin							
St. Francis Hospital▲◇	Gen	Church	86	77	14	516	2,903
Buffalo, 1 695—Wright							
Catlin Hospital	Gen	Part	10	4	4	59	172
Buhl, 1,600—St. Louis							
Range Hospital	InstGen	County	46	44	..	...	168
Caledonia, 1,985—Houston							
Caledonia Hospital	Gen	Indiv	14	9	6	121	562
Cambridge, 1,592—Isanti							
Minnesota Colony for Epileptics	Epil	State	1,108	1,054	..	...	64
Cannon Falls, 1,544—Goodhue							
Mineral Springs Sanatorium	TB	Counties	110	97	..	...	130
Cass Lake, 1,904—Cass							
Cass Lake Indian Hospital	Gen	IA	36	17	4	136	933
Chisholm, 7,487—St. Louis							
Mesaba Clinic Hospital	Gen	Part	18	10	5	154	509
Cloquet, 7,304—Carlton							
Fond du Lac Indian Hospital	Gen	IA	22	12	4	62	404
Raiter Hospital▲	Gen	NPAssn	36	20	12	220	1,245
[illegible]	Gen	Indiv	19	10	6	100	466
[illegible]	Gen	Church	54	54	12	274	2,259
[illegible]	Gen	Church	65	66	15	370	2,207
Sunnycrest Sanatorium	TB	Counties	60	56	..	...	48
Crosby, 2,954—Crow Wing							
Miner's Hospital	Gen	NPAssn	25	5	6	172	683
Dawson, 1,646—Lac Qui Parle							
Dawson Hospital	Gen	NPAssn	45	25	7	103	922
Deerwood, 570—Crow Wing							
Deerwood Sanatorium	TB	Counties	26	14	..	...	20
Detroit Lakes, 5,015—Becker							
St. Mary's Hospital▲	Gen	Church	60	57	15	437	3,022
Duluth, 101,065—St. Louis							
Miller Memorial Hospital▲	Gen	City	83	73	..	...	1,172
St. Luke's Hospital★+▲◇	Gen	NPAssn	237	246	33	1,941	9,738
St. [illegible]	Gen	Church	265	270	35	1,517	10,008
Ely, [illegible]							
Shi[illegible]	Gen	Part	18	10	5	81	500
Eveleth, 6,887—St. Louis							
More Hospital and Clinic▲	Gen	NPAssn	30	18	10	141	721

Key to symbols and abbreviations is on page 1396

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Fairmont, 6,988—Martin							
Fairmont Community Hosp..	Gen	NPAssn	50	44	11	531	2,010
Faribault, 14,527—Rice							
Minnesota School for Feebleminded▲	McDo	State	2,335	2,503	10	11	215
St. Lucas Evangelical Deaconess Hospital○	Gen	Church	64	51	20	303	2,870
Farmington, 1,580—Dakota							
Sanford Hospital	Gen	NPAssn	30	13	4	112	529
Fergus Falls, 10,848—Otter Tail							
Fergus Falls State Hospital▲⊙	Ment	State	2,000	1,960	..	...	419
George B. Wright Memorial Hospital▲	Gen	NPAssn	50	47	12	307	1,874
St. Luke's Hospital▲	Gen	NPAssn	97	71	15	469	1,997
Fosston, 1,271—Polk							
Fosston Hospital	Gen	Part	12	8	6	223	543
Glencoe, 2,387—McLeod							
Glencoe Municipal Hospital...	Gen	City	38	30	12	330	1,335
Glenwood, 2,561—Pope							
Glenwood Community Hosp.▲	Gen	City	26	24	10	252	1,115
Graceville, 1,020—Big Stone							
Holy Trinity Hospital▲	Gen	Church	28	27	10	261	1,550
Grand Rapids, 4,875—Itasca							
Itasca County Hospital▲	Gen	County	66	48	20	707	2,602
Granite Falls, 2,388—Yellow Medicine							
Granite Falls Hospital	Gen	NPAssn	17	14	5	188	536
Riverside Sanatorium	TB	Counties	48	30	..	...	35
Hallock, 1,353—Kittson							
Kittson War Veterans' Memorial Hospital	Gen	NPAssn	32	25	10	195	976
Hastings, 5,662—Dakota							
Hastings State Hospital	Ment	State	1,131	1,093	..	...	75
Hendricks, 740—Lincoln							
Hendricks Community Hosp.	Gen	NPAssn	30	29	8	196	1,738
Heron Lake, 852—Jackson							
Heron Lake Hospital	Gen	NPAssn	10	No data supplied			
Hibbing, 16,385—St. Louis							
Hibbing General Hospital+▲○	Gen	Church	132	107	20	742	4,340
Hutchinson, 3,887—McLeod							
Hutchinson Community Hospital	Gen	NPAssn	45	37	12	413	1,360
Lake City, 3,204—Wabasha							
Lake City Hospital	Gen	City	32	26	8	152	804
Lake Park, 654—Becker							
Sand Beach Sanatorium	TB	Counties	42	21	..	...	21
Litchfield, 3,920—Meeker							
Litchfield Hospital	Gen	NPAssn	45	37	12	367	1,987
Little Falls, 6,047—Morrison							
St. Gabriel's Hospital▲○	Gen	Church	100	81	20	632	3,720
Littlefork, 608—Koochiching							
Littlefork Hospital	Gen	NPAssn	22	20	8	241	1,055
Long Prairie, 2,311—Todd							
Long Prairie Hospital	Gen	NPAssn	20	13	8	190	618
Luverne, 3,114—Rock							
Luverne Municipal Hospital..	Gen	City	15	12	10	250	963
Madison, 2,312—Lac Qui Parle							
Ebenezer Lutheran Hospital..	Gen	Church	19	16	7	146	852
Mahnomen, 1,429—Mahnomen							
St. Anthony's Hospital	Gen	Church	19	10	6	170	631
Mankato, 15,654—Blue Earth							
Immanuel Hospital▲	Gen	Church	65	68	15	504	2,052
St. Joseph's Hospital▲	Gen	Church	116	78	26	674	3,730
Marshall, 4,590—Lyon							
Anna Maria Memorial Hosp..	Gen	Indiv	16	15	8	345	815
Marshall Hospital	Gen	NPAssn	30	15	5	109	634
Melrose, 2,015—Stearns							
Melrose Hospital	Gen	Corp	23	16	8	338	1,195
Milaca, 1,627—Mille Lacs							
Memorial Hospital	Gen	NPAssn	15	14	6	255	713
Minneapolis, 492,370—Hennepin							
Abbott Hospital★+▲○	Gen	Church	150	129	24	1,018	7,353
Asbury Hospital★▲○	Gen	Church	148	138	25	791	6,203
Eitel Hospital+▲○	Gen	NPAssn	120	107	18	805	4,431
Elizabeth Kenny Institute	Orth	NPAssn	120	115	..	...	219
Elliot Memorial Hospital	Unit of University Hospitals						
Fairview Hospital+▲○	Gen	Church	186	160	43	1,661	7,508
Franklin Hospital	ChrConv	Corp	70	68	..	...	159
George Chase Christian Memorial Cancer Institute	Unit of University Hospitals						
Janney Children's Hospital...	Unit of Abbott Hospital						
Lutheran Deaconess Home and Hospital★+▲○	Gen	Church	120	116	40	1,374	5,825
Maternity Hospital+▲⊙	Mat	NPAssn	36	25	45	1,209	1,408
Minneapolis General Hospital★+▲○	Gen	City	574	557	55	591	9,259
Minnesota General Hospital..	See University Hospitals						
Northwestern Hospital★+▲○..	Gen	NPAssn	292	230	40	1,747	9,200
Ripley Memorial Hospital	Unit of Maternity Hospital						
St. Andrew's Hospital▲○	Gen	NPAssn	82	65	18	455	2,520
St. Barnabas Hospital★+▲○..	Gen	NPAssn	199	162	50	2,143	8,419
St. Mary's Hospital★+▲○	Gen	Church	310	290	65	3,020	12,800
Sheltering Arms Hospital▲...	Orth	NPAssn	49	54	..	...	93
Shriners Hospital for Crippled Children+▲	Orth	NPAssn	60	51	..	...	116
Swedish Hospital★+▲○	Gen	NPAssn	300	248	72	2,955	11,734
Todd Memorial Eye, Ear, Nose and Throat Hospital	Unit of University Hospitals						
University Hospitals★+▲○	Gen	State	450	397	25	328	9,532
Veterans Admin. Hospital+▲..	Gen	Vet	1,050	865	..	...	8,216
William Henry Eustis Children's Hospital	Unit of University Hospitals						
Montevideo, 5,220—Chippewa							
Montevideo Hospital	Gen	NPAssn	50	35	10	442	1,918
Moorehead, 9,491—Clay							
St. Ansgars Hospital	Gen	Church	52	37	10	312	1,510
Moose Lake, 1,432—Carlton							
Moose Lake Community Hospital	Gen	Indiv	18	10	4	171	808
Moose Lake State Hospital▲⊙	Ment	State	1,012	971	..	...	351
Mora, 1,494—Kanabec							
Kanabec Hospital	Gen	County	22	26	8	293	1,950
Morris, 3,214—Stevens							
Morris Hospital	Gen	Indiv	16	12	6	123	513
Stevens County Hospital	Gen	NPAssn	18	12	7	168	690
Mountain Lake, 1,745—Cottonwood							
Basinger Clinic Hospital	Gen	NPAssn	30	16	..	...	663
Bethel Hospital	Gen	NPAssn	21	13	8	194	656
New Prague, 1,645—Le Sueur							
New Prague Community Hospital	Gen	NPAssn	18	12	6	264	624
New Ulm, 8,743—Brown							
Loretto Hospital	Gen	Church	50	37	10	334	1,578
Union Hospital	Gen	NPAssn	69	48	12	300	1,776
Nopeming, 75—St. Louis							
Nopeming Sanatorium+▲	TB	County	280	277	..	...	217
Northfield, 4,533—Rice							
Northfield City Hospital	Gen	City	32	23	12	308	1,424
Oak Terrace, 200—Hennepin							
Christian Memorial Tuberculosis Hospital	Unit of Glen Lake Sanatorium						
Glen Lake Sanatorium+▲⊙	TB	County	650	542	..	11	484
Ortonville, 2,469—Big Stone							
Ortonville Municipal Hosp.	Gen	City	20	13	8	200	712
Owatonna, 8,694—Steele							
Owatonna City Hospital	Gen	City	50	42	15	484	1,970
Parkers Prairie, 781—Otter Tail							
Leibold Hospital	Gen	NPAssn	14	4	6	102	254
Park Rapids, 2,643—Hubbard							
St. Joseph's Hospital	Gen	Church	44	17	13	251	895
Paynesville, 1,317—Stearns							
Myre Hospital	Gen	Part	9	4	3	48	208
Perham, 1,534—Otter Tail							
St. James' Hospital	Gen	Church	40	28	6	207	1,402
Pine City, 1,718—Pine							
Lakeside Memorial Hospital..	Gen	NPAssn	30	16	6	65	332
Pipestone, 4,682—Pipestone							
Ashton Memorial Hospital	Gen	NPAssn	45	32	12	386	2,101
Preston, 1,447—Fillmore							
Preston Hospital	Gen	Indiv	13	11	7	177	226
Princeton, 1,865—Mille Lacs							
Community Hospital	Gen	NPAssn	25	...	9	Estab. 1947	
Puposky, 75—Beltrami							
Lake Julia Tuberculosis Sanatorium	TB	Counties	52	42	..	...	38
Redlake, 150—Beltrami							
Redlake Indian Hospital	Gen	IA	23	10	6	108	497
Red Wing, 9,962—Goodhue							
Red Wing Hospital	Gen	City	40	28	9	149	1,046
St. John's Hospital▲○	Gen	NPAssn	90	73	20	744	2,827
Redwood Falls, 3,270—Redwood							
Redwood Falls Municipal Hospital	Gen	City	23	14	8	301	909
Richmond, 634—Stearns							
Richmond Hospital	Gen	NPAssn	11	8	4	96	600
Rochester, 26,312—Olmsted							
Colonial Hospital▲○	Gen	Corp	258	242	..	...	8,422
Kahler Hospital▲○	Gen	Corp	130	121	..	...	4,651
Rochester State Hospital+▲⊙..	Ment	State	1,571	1,600	..	...	661
St. Mary's Hospital▲○	Gen	Church	848	735	61	1,237	16,906
Worrall Hospital▲○	ENTSkCa	Corp	190	167	..	...	7,236
Roseau, 1,775—Roseau							
Budd Hospital	Gen	NPAssn	25	12	10	273	791
Rush City, 1,020—Chisago							
Rush City Hospital	Gen	City	21	22	7	343	1,044
St. Cloud, 24,173—Stearns							
Minnesota State Reformatory Hospital	Inst	State	30	9	..	...	288
St. Cloud Hospital▲○	Gen	Church	276	227	54	2,037	10,007
Veterans Admin. Hospital+▲⊙	Ment	Vet	1,532	1,317	..	...	508
St. James, 3,400—Watonwan							
St. James Hospital	Gen	Church	26	23	10	148	816
St. Paul, 287,736—Ramsey							
Ancker Hospital★+▲○	GenTb	CyCo	850	540	55	222	7,029
Bethesda Hospital★▲○	Gen	Church	162	144	38	1,992	7,102
Charles T. Miller Hosp.★+▲...	Gen	NPAssn	275	241	50	2,191	8,683
Children's Hospital▲⊙	Chil	NPAssn	82	66	..	...	2,260
Gillette State Hospital for Crippled Children+▲⊙	Orth	State	225	170	..	...	753
Midway Hospital+▲○	Gen	Church	125	103	33	1,642	5,389
Mounds Park Hospital▲○	Gen	Church	132	129	14	624	2,718
Northern Pacific Beneficial Association Hospital+▲	Gen	NPAssn	135	90	..	...	3,492
Ramsey County Tuberculosis Pavilion	Unit of Ancker Hospital						
St. John's Hospital▲	Gen	Church	70	80	15	721	3,415
St. Joseph's Hospital★+▲○	Gen	Church	260	239	50	2,368	9,497
St. Luke's Hospital	Gen	NPAssn	105	78	24	641	3,360
Salvation Army Booth Memorial Hospital	Mat	Church	50	47	9	208	263
Samaritan Hospital	Gen	NPAssn	28	23	..	...	398
West Side General Hospital...	Gen	Church	55	47	15	413	2,123
St. Peter, 5,870—Nicollet							
Community Hospital	Gen	City	30	8	11	275	1,095
St. Peter State Hospital+▲⊙..	Ment	State	2,330	2,209	..	...	723
Sandstone, 1,559—Pine							
Federal Correctional Institution▲	Inst	USPHS	27	4	..	...	189

Key to symbols and abbreviations is on page 1396

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Shakopee, 2,418—Scott							
St. Francis Home and Hosp..	Gen	Church	20	16	8	276	796
Slayton, 1,587—Murray							
Home Hospital	Gen	NPAssn	25	19	8	298	1,127
Sleepy Eye, 2,923—Brown							
Sleepy Eye Municipal Hosp...	Gen	City	30	13	10	242	688
Springfield, 2,261—Brown							
St. John's Hospital...........	Gen	Church	25	19	8	160	985
Spring Grove, 867—Houston							
Spring Grove Hospital........	Gen	NPAssn	18	12	7	98	207
Staples, 2,952—Todd							
Staples Municipal Hospital...	Gen	City	25	18	8	152	1,342
Starbuck, 972—Pope							
Minnewaska Hospital	Gen	NPAssn	15	12	4	80	390
Stillwater, 7,013—Washington							
Lakeview Memorial Hospital▲	Gen	CyCo	57	37	8	373	1,415
Minnesota State Prison Hospital▲	Inst	State	65	30	..	...	560
Thief River Falls, 6,019—Pennington							
Mercy Hospital	Gen	NPAssn	28	24	8	375	1,447
Oakland Park Sanatorium....	TB	Counties	65	43	..	...	17
St. Luke's Hospital▲..........	Gen	NPAssn	46	30	6	190	1,469
Tracy, 3,085—Lyon							
Clinic Hospital	Gen	Corp	16	7	6	109	516
Tracy Hospital	Gen	NPAssn	35	23	12	188	899
Two Harbors, 4,046—Lake							
Two Harbors Hospital.......	Gen	NPAssn	33	23	8	131	740
Tyler, 1,005—Lincoln							
Tyler Hospital	Gen	City	35	30	10	283	1,210
Virginia, 12,264—St. Louis							
Virginia Municipal Hospital▲	Gen	City	101	77	25	685	3,539
Wabasha, 2,368—Wabasha							
Buena Vista Sanatorium.....	TB	Counties	30	27	..	...	61
St. Elizabeth's Hospital......	Gen	Church	78	41	10	309	1,370
Waconia, 1,315—Carver							
Nagel Hospital	Gen	Indiv	28	19	8	91	542
Wadena, 2,916—Wadena							
Fair Oaks Lodge Sanatorium	TB	Counties	31	20	..	...	28
Wesley Hospital▲	Gen	NPAssn	45	35	12	499	1,793
Walker, 939—Cass							
Walker Hospital	Gen	Indiv	13	3	6	59	184
Warren, 1,639—Marshall							
Warren Hospital▲	Gen	Church	40	29	10	216	1,281
Warroad, 1,309—Roseau							
Warroad Municipal Hospital.	Gen	City	25	13	6	123	521
Waseca, 4,270—Waseca							
Waseca Memorial Hospital...	Gen	CyCo	25	7	9	308	917
White Earth, 350—Becker							
White Earth Indian Hospital	Gen	IA	21	13	8	117	492
Willmar, 7,623—Kandiyohi							
Rice Memorial Hospital.......	Gen	City	95	90	18	898	3,651
Willmar State Hospital......	Ment	State	1,450	1,426	..	...	298
Windom, 2,807—Cottonwood							
Windom *Hospital*	Gen	NPAssn	28	24	10	284	934
Winnebago, 1,992—Faribault							
Winnebago Community Hosp.	Gen	Part	12	10	4	134	602
Winona, 22,490—Winona							
Winona General Hospital▲...	Gen	NPAssn	112	100	20	983	2,980
Worthington, 5,918—Nobles							
Southwestern Minnesota Sanatorium	TB	Counties	54	36	..	...	35
Worthington Hospital	Gen	NPAssn	34	31	12	371	1,920

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Blue Earth, 3,702—Faribault							
Blue Earth Community Hosp.	Gen	City	14	...	8	Estab. 1947	
Comfrey, 555—Brown							
Comfrey Hospital	Gen	NPAssn	8	...	4	...	...
Hastings, 5,662—Dakota							
St. Francis Hospital..........	Gen	NPAssn	30	16	3	14	156
Madelia, 1,652—Watonwan							
Madelia Hospital	Gen	City	10	4	4	76	292
Minneapolis, 492,370—Hennepin							
Glenwood Hills Hospitals....	N&M	NPAssn	48	52	..	...	507
Homewood Hospital	Unit of Glenwood Hills Hospitals						
Minnesota Soldiers Home Hospital	Inst	State	85	62	..	...	236
Parkview Hospital	Chr	NPAssn	165	140	..	...	292
Rest Hospital	N&M	Part	21	21	..	...	259
Vocational Nursing Home....	Conv	NPAssn	33	29	..	...	25
Women's Welfare League Home for Convalescents	Conv	NPAssn	25	19	..	...	34
Owatonna, 8,694—Steele							
Minnesota State Public School Hospital	Inst	State	50	11	..	...	637
Pelican Rapids, 1,560—Otter Tail							
Pelican Valley Hospital... ...	Gen	NPAssn	15	5	3	76	429
Pipestone, 4,682—Pipestone							
Pipestone General Indian Hospital	Gen	IA	36	9	4	12	335
Red Wing, 9,962—Goodhue							
Minnesota State Training School for Boys	Inst	State	25	6	..	...	831
St. Paul, 287,736—Ramsey							
Children's Preventorium of Ramsey County	TB	CyCo	80	63	..	...	8
Summit Ave. Rest Hospital..	N&M	Indiv	28	28	..	...	96
Shakopee, 2,418—Scott							
Mudcura Sanitarium	Conv	Corp	75	45	..	...	1,803
Wayzata, 1,473—Hennepin							
Minnetonka Hospital	Gen	NPAssn	15	8	7	89	353

MISSISSIPPI

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Aberdeen, 4,746—Monroe							
Aberdeen Hospital	Gen	NPAssn	28	8	8	184	625
Amory, 3,727—Monroe							
Gilmore Sanitarium	Gen	NPAssn	24	14	6	204	1,133
Baldwyn, 1,279—Lee							
Baldwyn Hospital	Gen	NPAssn	12	10	3	136	726
Biloxi, 17,475—Harrison							
New Biloxi Hospital◇.........	Gen	City	72	35	18	796	3,059
Station Hospital▲	Gen	Army	400	180	18	340	3,835
Veterans Admin. Center▲.....	Gen	Vet	238	206	..	...	2,345
Booneville, 1,893—Prentiss							
North East Mississippi Hosp.	Gen	NPAssn	40	43	15	393	1,662
Brandon, 1,184—Rankin							
Brandon Hospital	Gen	Indiv	50	17	6	174	660
Brookhaven, 6,232—Lincoln							
Kings Daughters Hospital....	Gen	NPAssn	96	65	24	657	4,200
Canton, 6,011—Madison							
Kings Daughters Hospital....	Gen	NPAssn	40	18	8	237	1,410
Centreville, 1,163—Wilkinson							
Field Memorial Community Hospital	Gen	Counties	28	21	8	165	1,091
Charleston, 2,100—Tallahatchie							
Tallahatchie Hospital	Gen	Indiv	35	22	6	145	1,229
Clarksdale, 12,168—Coahoma							
Clarksdale Hospital	Gen	NPAssn	32	23	14	335	1,507
Cleveland, 4,189—Bolivar							
City Hospital	Gen	City	25	17	10	208	1,076
Columbia, 6,064—Marion							
Columbia Clinic-Hospital	Gen	NPAssn	37	19	6	78	1,118
Daly Hospital	Gen	Indiv	25	20	6	247	1,876
Columbus, 13,645—Lowndes							
Columbus Hospital	Gen	NPAssn	30	24	11	280	1,574
Doster Hospital and Clinic◇..	Gen	NPAssn	38	25	11	171	1,476
Corinth, 7,818—Alcorn							
Corinth Hospital	Gen	Indiv	20	13	9	253	802
Greenville, 20,892—Washington							
Kings Daughters Hospital▲◇	Gen	NPAssn	118	96	24	522	4,550
Greenwood, 14,767—Leflore							
Delta Medical Center..........	Ven	State	250	193	..	...	7,277
Greenwood Colored Hospital..	Gen	Part	25	9	2	24	754
Greenwood-Leflore Hospital◇	Gen	CyCo	58	49	27	552	2,526
Grenada, 5,831—Grenada							
Grenada General Hospital◇...	Gen	Indiv	68	33	15	238	1,790
Gulfport, 15,195—Harrison							
Memorial Hospital	Gen	CyCo	106	49	18	702	3,160
Veterans Admin. Hospital▲...	Ment	Vet	1,098	1,032	..	...	1,250
Hattiesburg, 21,026—Forrest							
Methodist Hospital◇	Gen	Church	75	68	18	1,019	3,523
South Mississippi Infirmary..	Gen	Indiv	70	34	15	357	2,555
Houston, 1,729—Chickasaw							
Houston Hospital	Gen	NPAssn	50	39	8	244	1,509
Indianola, 3,604—Sunflower							
Kings Daughters Hospital....	Gen	NPAssn	27	15	6	142	1,036
Jackson, 62,107—Hinds							
Mississippi Baptist Hosp.*+▲◇	Gen	Church	180	197	35	1,692	10,991
Mississippi State Charity Hospital	Gen	State	103	72	4	27	1,513
St. Dominic's Hospital	Gen	Church	76	55	13	567	4,055
Veterans Admin. Hospital....	Gen	Vet	650	458	..	...	6,954
Dr. Willis Walley Hospital...	Gen	NPAssn	25	10	10	95	630
Kosciusko, 4,291—Attala							
Montfort Jones Memorial Hospital	Gen	City	50	34	12	464	2,280
Laurel, 20,598—Jones							
Laurel General Hospital◇.....	Gen	Indiv	60	48	8	370	2,905
South Mississippi Charity Hospital◇	Gen	State	110	50	15	322	2,400
Lexington, 2,930—Holmes							
Holmes County Community Hospital	Gen	County	25	14	6	183	1,313
Macon, 2,261—Noxubee							
Macon Hospital	Gen	NPAssn	30	14	7	132	849
Magee, 1,221—Simpson							
Magee General Hospital......	Gen	Part	28	21	10	418	1,824
Marks, 1,818—Quitman							
Marks Hospital	Gen	Indiv	11	1	4	120	404
McComb, 9,898—Pike							
McComb City Hospital◇......	Gen	NPAssn	28	20	7	292	1,669
McComb Infirmary◇	Gen	NPAssn	28	28	4	260	1,671
Meridian, 35,481—Lauderdale							
Anderson Infirmary◇	Gen	NPAssn	68	63	14	539	3,350
East Mississippi State Hosp..	Ment	State	800	725	..	...	241
Hoye's Sanitarium	N&M	Indiv	37	24	..	...	618
Lewis Hospital	Gen	Indiv	12	7	5	52	545
Matty Hersee Hospital◇......	Gen	State	100	53	8	186	1,449
Meridian Public Health Treatment Center	Ven	State	500	204	6	6	8,163
Riley's Hospital	Gen	NPAssn	45	27	10	238	1,839
Rush's Infirmary▲◇	Gen	Part	92	51	16	190	3,070
St. Joseph Hospital◇.........	Gen	Church	40	30	14	345	1,874
Morton, 934—Scott							
Scott County Hospital.......	Gen	Part	22	9	7	252	910
Natchez, 15,296—Adams							
Natchez Charity Hospital....	Gen	State	100	46	16	124	1,085
Natchez Sanatorium	Gen	NPAssn	30	23	11	246	1,997
New Albany, 3,602—Union							
Mayes Hospital	Gen	NPAssn	50	44	12	450	2,700
New Albany Hosp. and Clinic	Gen	NPAssn	15	6	3	36	348
Newton, 1,800—Newton							
Newton Hospital	Gen	NPAssn	25	15	6	259	1,177
Oxford, 3,435—Lafayette							
Bramlett Hospital	Gen	Indiv	45	21	10	84	1,009
Oxford Hospital	Gen	Indiv	32	21	5	222	1,450

Key to symbols and abbreviations is on page 1396

MISSISSIPPI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Pascagoula, 5,900—Jackson							
Jackson County Hospital....	Gen	County	85	35	25	875	2,879
Philadelphia, 3,711—Neshoba							
Choctaw-Mississippi Indian Hospital	Gen	IA	35	15	7	65	570
Picayune, 5,129—Pearl River							
Martin Sanatorium	Gen	NPAssn	26	19	4	251	1,370
Pontotoc, 1,832—Pontotoc							
Pontotoc Clinic-Hospital	Gen	Part	17	13	3	255	843
Poplarville, 1,661—Pearl River							
Poplarville Hospital	Gen	Indiv	25	6	4	182	997
Rosedale, 2,163—Bolivar							
Dr. Nobles' Clinic-Hospital...	Gen	Indiv	25	21	1	30	1,500
Rosedale-Bolivar County Hospital	Gen	City	17	0	1	11	323
Sanatorium, 200—Simpson							
Mississippi State Tuberculosis Sanatorium+▲	TB	State	457	231	..	...	368
Starkville, 4,900—Oktibbeha							
J. W. Eckford Memorial Clinic-Hospital	Gen	Indiv	15	...	8	Estab. 1947	
State College, 300—Oktibbeha							
James Z. George Memorial Hospital	Inst	State	75	6	..	...	878
Tupelo, 8,212—Lee							
North Mississippi Community Hospital▲	Gen	NPAssn	49	48	10	655	3,255
Tylertown, 1,376—Walthal							
Pittman Hospital	Gen	NPAssn	28	19	8	260	1,700
Walthall Hospital	Gen	NPAssn	25	19	4	274	1,280
Union, 1,543—Newton							
Laird's Hospital	Gen	NPAssn	30	19	10	371	1,208
Vicksburg, 24,460—Warren							
Mercy Hospital-Street Memorial★▲◇	Gen	Church	125	93	17	467	4,225
Mississippi State Charity Hospital	Gen	State	65	45	10	131	1,620
Vicksburg Hospital+▲◇	Gen	NPAssn	90	75	12	209	2,866
Vicksburg Infirmary▲◇	Gen	NPAssn	57	38	11	219	1,314
Water Valley, 3,340—Yalobusha							
Water Valley Hospital........	Gen	Part	25	8	5	82	615
West Point, 5,627—Clay							
Flowers Hospital	Gen	Part	21	13	8	147	783
Whitfield, 300—Rankin							
Mississippi State Hospital▲...	Ment	State	3,000	3,598	..	...	1,648
Winona, 2,533—Montgomery							
Winona Infirmary▲◇	Gen	NPAssn	30	18	5	159	881
Yazoo City, 7,258—Yazoo							
Kings Daughters Hospital....	Gen	NPAssn	30	19	12	274	1,692
Yazoo Clinic and Hospital...	Gen	Part	20	10	2	3	596

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bay St. Louis, 4,138—Hancock							
Kings Daughters and Sons Hospital	Gen	NPAssn	15	18	7	136	1,659
Ellisville, 2,607—Jones							
Ellisville State School.........	MeDe	State	375	365	..	...	25
Greenville, 20,892—Washington							
Colored Kings Daughters Hospital	Gen	Indiv	65	55	2	39	1,033
Jackson, 62,107—Hinds							
Schmid Sanitarium	N&M	Corp	18	10	..	...	321
Z. T. Hubert Health Center of Jackson College..........	Gen	NPAssn	24	7	4	65	282

MISSOURI

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Aurora, 4,056—Lawrence							
Aurora Hospital	Gen	City	20	11	5	236	817
Bethany, 2,682—Harrison							
Bethany Hospital and Clinic..	Gen	Indiv	20	11	7	124	643
Bonne Terre, 3,730—St. Francois							
Bonne Terre Hospital.........	Gen	NPAssn	46	33	11	613	1,976
Boonville, 6,089—Cooper							
St. Joseph's Hospital▲◇.......	Gen	Church	75	54	15	393	2,092
Butler, 2,958—Bates							
Butler Memorial Hospital....	Gen	City	34	30	9	285	1,035
California, 2,525—Moniteau							
Latham Sanitarium	Gen	Indiv	33	15	9	145	952
Cape Girardeau, 19,426—Cape Girardeau							
St. Francis Hospital▲.........	Gen	Church	115	92	31	1,015	3,527
Southeast Missouri Hospital	Gen	NPAssn	65	72	20	622	2,079
Carthage, 10,585—Jasper							
McCune-Brooks Hospital	Gen	City	50	35	16	523	1,581
Cassville, 1,214—Barry							
Barry County Clinic and Hospital	Gen	Indiv	20	10	4	126	732
Clayton, 13,069—St. Louis							
St. Louis County Hosp.★+▲..	Gen	County	236	150	32	507	3,226
Clinton, 6,041—Henry							
Clinton General Hospital.....	Gen	Corp	30	18	5	170	735
Columbia, 18,399—Boone							
Boone County General Hosp.▲	Gen	County	52	33	10	368	1,694
Ellis Fischel State Cancer Hospital+▲⊙	Cancer	State	103	75	..	...	1,116
Noyes Hospital	Unit of University Hospitals						
Parker Memorial Hospital....	Unit of University Hospitals						

MISSOURI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
State Hospital for Crippled Children	Unit of University Hospitals						
University Hospitals+▲	Gen	State	150	76	10	317	3,317
Excelsior Springs, 4,864—Clay							
Excelsior Springs Sanitarium and Hospital	Gen	NPAssn	40	25	10	257	804
Veterans Admin. Hospital+▲..	TB	Vet	252	225	..	...	633
Farmington, 3,738—St. Francois							
State Hospital No. 4▲........	Ment	State	1,000	1,808	..	...	570
Fayette, 2,608—Howard							
Lee Hospital	Gen	Part	32	22	7	160	1,200
Fulton, 829—Callaway							
State Hospital No. 1+▲......	Ment	State	2,852	2,502	..	...	536
Hannibal, 20,865—Marion							
Levering Hospital▲	Gen	City	150	107	21	460	4,176
St. Elizabeth's Hospital▲....	Gen	Church	100	81	26	645	3,824
Independence, 16,066—Jackson							
Independence Sanitarium and Hospital▲◇	Gen	Church	141	99	36	1,061	4,662
Rural Jackson County Emergency Hospital	Gen	County	65	35	9	60	558
Ironton, 1,082—Iron							
Arcadia Valley Hospital......	Gen	Church	28	28	12	350	1,380
Jefferson Barracks, 812—St. Louis							
Veterans Admin. Hospital+▲⊙	Gen	Vet	710	674	..	...	7,857
Jefferson City, 24,268—Cole							
Missouri State Penitentiary Hospital▲	Inst	State	203	55	..	...	1,069
St. Mary's Hospital...........	Gen	Church	100	98	24	927	4,006
Joplin, 37,144—Jasper							
Freeman Methodist Hospital.	Gen	Church	80	77	20	606	2,852
St. John's Hospital◇..........	Gen	Church	150	105	26	887	4,781
Kansas City, 399,178—Jackson							
Children's Mercy Hospital+▲⊙	Chil	NPAssn	145	134	.	...	2,162
Fairmount Maternity Hosp..	Mat	Corp	60	50	36	212	209
Kansas City General Hospital No. 1★+▲◇	Gen	City	550	384	50	700	9,583
Kansas City General Hospital No. 2★▲◇	Gen	City	262	178	24	689	3,722
Kansas City Municipal Tuberculosis Hospital+▲	TB	City	232	187	..	...	353
Major Clinic and Hospital...	N&M	Indiv	28	15	..	...	184
Menorah Hospital★+▲	Gen	NPAssn	160	145	26	702	5,605
Municipal Contagious Disease Hospital	Unit of Kansas City General Hospital No. 1						
Neurological Hospital▲	N&M	NPAssn	55	53	..	...	766
Ralph Sanitarium	Drug	Part	25	12	..	...	241
Research Hospital★+▲◇	Gen	NPAssn	211	229	40	1,689	7,628
St. Joseph Hospital★+▲◇.....	*Gen*	*Church*	*319*	*299*	*42*	*2,229*	*12,163*
St. Luke's Hospital★+▲◇.....	Gen	Church	375	280	55	1,908	8,630
St. Mary's Hospital★+▲◇.....	Gen	Church	170	160	40	1,149	6,417
St. Vincent's Hospital▲.......	Mat	Church	36	19	30	693	798
Trinity Lutheran Hospital★▲◇	Gen	Church	120	102	25	1,220	4,571
Wheatley-Provident Hosp.▲..	Gen	NPAssn	67	33	5	73	878
Willows Maternity Sanitarium	Mat	Corp	120	72	55	300	295
Kennett, 6,335—Dunklin							
Presnell Hospital	Gen	Part	45	31	18	383	2,377
Kirksville, 10,080—Adair							
Grim-Smith Memorial Hosp..	Gen	Corp	52	41	15	342	1,975
Stickler Hospital	Gen	Corp	25	11	6	33	399
Kirkwood, 12,132—St. Louis							
Oakland Park Hospital......	N&M	Corp	15	6	..	...	9
U. S. Marine Hospital▲......	Gen	USPHS	163	107	..	...	1,452
Koch, 900—St. Louis							
Robert Koch Hospital+▲⊙....	TB	City	650	462	..	...	429
Lebanon, 5,025—Laclede							
Louise G. Wallace Hospital..	Gen	NPAssn	57	35	20	460	2,043
Louisiana, 4,669—Pike							
Pike County Hospital........	Gen	County	50	40	10	341	1,689
Marceline, 3,206—Linn							
St. Francis Hospital..........	Gen	Church	17	7	8	78	558
Marshall, 8,533—Saline							
Georgia Brown Blosser Home for Crippled Children......	Orth	NPAssn	30	16	..	...	107
John Fitzgibbon Memorial Hospital	*Gen*	*NPAssn*	*37*	*29*	*9*	*306*	*1,487*
Maryville, 5,700—Nodaway							
St. Francis Hospital▲.........	Gen	Church	100	76	18	710	3,430
Mexico, 9,053—Audrain							
Audrain Hospital▲	Gen	County	56	55	14	578	2,493
Moberly, 12,920—Randolph							
Wabash Employes' Hospital▲	Indus	NPAssn	36	20	..	...	700
Woodland Hospital	Gen	Corp	40	29	10	258	1,249
Monett, 4,395—Barry							
St. Vincent Hospital..........	Gen	Church	20	20	8	256	899
Mount Vernon, 1,982—Lawrence							
Missouri State Sanatorium▲..	TB	State	650	544	..	...	695
Neosho, 5,318—Newton							
Sale Memorial Hospital......	Gen	Indiv	40	21	18	202	1,692
Nevada, 8,181—Vernon							
Nevada City Hospital.........	Gen	City	35	33	7	418	1,431
State Hospital No. 3▲........	Ment	State	2,206	2,106	..	...	335
Ozark, 961—Christian							
Haguewood Hospital	Gen	Indiv	15	...	5	Estab. 1947	
Poplar Bluff, 11,163—Butler							
Brandon Hospital	Gen	Indiv	40	10	4	52	591
Lucy Lee Hospital...........	Gen	Indiv	63	46	14	490	3,078
Poplar Bluff Hospital........	Gen	Indiv	75	66	18	488	3,471
Princeton, 1,584—Mercer							
Lambert Hospital	Gen	Indiv	10	...	4	Estab. 1947	
Robertson, 300—St. Louis							
Jewish Sanatorium	Chr	NPAssn	81	66	..	...	62

Key to symbols and abbreviations is on page 1396

MISSOURI—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Rolla, 5,141—Phelps							
Missouri Trachoma Hospital..	Trach	State	65	45	..	...	443
St. Charles, 10,803—St. Charles							
St. Joseph's Hospital▲.......	Gen	Church	90	70	20	705	3,073
St. Joseph, 75,711—Buchanan							
Missouri Methodist Hosp★▲○	Gen	Church	225	165	25	807	6,876
St. Joseph's Hospital★▲○.....	Gen	Church	140	113	30	1,136	5,001
State Hospital No. 2+▲.......	Ment	State	2,674	2,492	..	...	359
St. Louis, 816,048—St. Louis City							
Alexia[illegible]thers Hosp.+▲○..	Gen	Church	175	118	..	...	2,739
Barna[illegible] cer [illegible]▲		NPAssn	42	27	..	...	722
Barnes [illegible]▲		Church	585	495	..	...	15,018
Bethesda General Hosp.▲.....		NPAssn	100	65	20	511	1,854
Christian Hospital★▲	Gen	NPAssn	125	97	35	1,125	3,600
De Paul Hospital★+▲○........	Gen	Church	275	259	64	3,046	9,091
Evangelical Deaconess Hospital★▲○	Gen	Church	250	224	40	1,352	11,689
Faith Hospital	Gen	NPAssn	35	24	12	260	1,182
Firmin Desloge Hosp.★+▲⊙...	Unit of St. Mary's Group of Hospitals						
Frisco Employes Hospital▲...	Indus	NPAssn	80	58	..	...	2,073
Homer G. Phillips Hosp.★+▲○	Gen	City	694	551	73	2,052	12,417
Jewish Hospital★+▲○	Gen	NPAssn	298	279	42	1,260	6,517
Josephine Heitkamp Memorial Hospital▲	Gen	Church	45	42	20	714	2,163
Lutheran Hospital★▲○	Gen	Church	165	156	40	1,573	6,081
McMillan Hospital▲⊙	Unit of Barnes Hospital						
Midwestern Medical Center...	Ven	USPHS	142	105	..	...	3,945
Missouri Baptist Hosp.★+▲○..	Gen	Church	450	378	50	1,210	11,853
Missouri Pacific Hospital+▲..	Indus	NPAssn	325	211	..	...	6,944
Mount St. Rose Sanat.+▲⊙..	Unit of St. Mary's Group of Hospitals						
Park Lane Memorial Hosp...	Gen	NPAssn	125	99	30	520	2,924
Peoples Hospital▲	Gen	NPAssn	83	65	20	226	1,746
St. Ann's Maternity Hospital	Mat	Church	27	3	31	77	78
St. Anthony's Hospital★+▲...	Gen	Church	256	215	60	2,898	7,700
St. John's Hospital★+▲○......	Gen	Church	347	294	74	2,010	9,376
St. Louis Children's Hosp.+▲⊙	Chil	NPAssn	129	133	..	...	3,235
St. Louis City Hospital★+▲○..	Gen	City	1,059	856	66	856	17,898
St. Louis City Sanitarium+▲⊙	Ment	City	3,500	3,406	..	...	578
St. Louis Maternity Hospital+▲⊙	Mat	NPAssn	135	111	125	2,898	4,437
St. Luke's Hospital★+▲○......	Gen	Church	184	163	36	1,061	5,219
St. Mary's Group of Hospitals★+▲○	GenTb	Church	673	709	78	3,963	15,720
St. [illegible] Hospital★+▲○.....	Unit of St. Mary's Group of Hospitals						
St. [illegible]▲	Gen	Church	146	121	33	1,066	3,794
St. [illegible]▲	N&M	Church	250	226	..	...	356
Shriners [illegible] pled Children+▲⊙	Orth	NPAssn	120	89	..	...	405
Sedalia, 20,428—Pettis							
John H. Bothwell Memorial Hospital▲	Gen	City	93	70	23	678	2,996
Sikeston, 7,944—Scott							
Sikeston General Hospital....	Gen	NPAssn	24	20	11	370	969
Smithville, 772—Clay							
Smithville Community Hosp.	Gen	NPAssn	24	11	10	104	611
Springfield, 61,238—Greene							
Burge Hospital▲○	Gen	Church	85	75	26	1,029	4,824
City Hospital	Gen	City	20	11	6	120	877
Medical Center for Federal Prisoners▲	Inst	Fed	1,192	877	..	...	791
St. John's Hospital▲○........	Gen	Church	140	125	30	1,424	5,889
Springfield Baptist Hosp.▲○..	Gen	NPAssn	100	92	14	542	3,607
Veterans Admin. Hospital⊙...	TB	Vet	500	...	..	Estab. 1947	
Trenton, 7,046—Grundy							
Cullers Hospital	Gen	Indiv	25	15	7	150	768
[illegible]	Gen	NPAssn	21	13	6	157	830
[illegible]	Gen	Corp	30	25	6	291	1,208
[illegible]	Gen	Church	58	62	15	754	3,380
Waynesville, 468—Pulaski							
Waynesville General Hospital	Gen	State	46	41	13	403	1,629
Webb City, 7,033—Jasper							
Jasper County Tuberculosis Hospital	TB	County	110	65	..	...	100
Webster Groves, 18,394—St. Louis							
Glenwood Sanatorium	N&M	Corp	65	63	..	...	168
West Plains, 4,026—Howell							
Christa Hogun Hospital......	Gen	Indiv	18	12	9	225	510

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Humansville, 786—Polk							
George Dimmitt Memorial Hospital	Gen	NPAssn	19	8	7	91	416
Independence, 16,066—Jackson							
Vaile Sanitarium	N&M	Indiv	23	10	..	...	10
Kansas City, 399,178—Jackson							
Florence Crittenton Home...	Mat	NPAssn	15	21	24	38	51
Florence Home for Colored Girls	Mat	NPAssn	48	14	8	40	48
Trowbridge Training School for Nervous and Backward Children	MeDe	Indiv	35	30	..	...	36
Liberty, 3,598—Clay							
Missouri Odd Fellows Home Hospital	Inst	NPAssn	50	32	..	...	406
Marshall, 8,533—Saline							
Missouri State School........	MeDe	State	1,845	1,674	..	...	121
Marthasville, 321—Warren							
Evangelical Emmaus Home for Epileptics and Feeble-minded	MeDe	Church	100	89	..	...	5
Mountain Grove, 2,431—Wright							
Ryan Hospital	Gen	Indiv	10	No data supplied			
Rolla, 5,141—Phelps							
Missouri School of Mines Hospital	Inst	State	21	1	..	...	269
St. Charles, 10,803—St. Charles							
Evangelical Emmaus Home for Epileptics and Feeble-minded	MeDe	Church	150	144	..	...	14
St. James, 1,812—Phelps							
State Federal Soldiers Home Hospital	Inst	State	56	32	..	...	133
St. Louis, 816,048—St. Louis City							
Booth Memorial Hospital.....	Mat	Church	60	39	40	545	636
City Infirmary Hospital.....	InstChr	City	1,508	1,334	..	...	621
Hospital of Masonic Home...	Inst	NPAssn	123	59	..	...	261
Mother of Good Counsel Home and Hospital.........	Conv	Church	74	74	..	...	77
St. Louis Training School....	MeDe	City	525	416	..	...	56
Valley Park, 2,091—St. Louis							
Ridge Farm	Unit of St. Louis Children's Hospital						
Webster Groves, 18,394—St. Louis							
Rose Bry Miriam Convalescent Home	Conv	NPAssn	37	24	..	...	263

MONTANA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Anaconda, 11,004—Deer Lodge							
St. Ann's Hospital▲..........	Gen	Church	75	59	15	352	2,123
Billings, 23,261—Yellowstone							
Billings Deaconess Hospital▲○	Gen	Church	78	74	25	842	3,448
St. Vincent Hospital▲○......	GenOrth	Church	185	170	29	1,034	6,327
Bozeman, 8,655—Gallatin							
Bozeman Deaconess Hosp.○..	Gen	Church	54	60	12	601	2,603
Browning, 1,825—Glacier							
Blackfeet Indian Hospital....	Gen	IA	45	30	8	142	1,098
Butte, 37,081—Silver Bow							
Murray Hospital★▲	Gen	Corp	100	83	20	374	2,912
St. James Hospital★▲○.......	Gen	Church	160	110	30	800	4,201
Silver Bow County Hosp....	InstGen	County	125	83	8	9	372
Choteau, 1,181—Teton							
Choteau Hospital	Gen	Indiv	17	9	4	20	157
Conrad, 1,471—Pondera							
St. Mary's Hospital..........	Gen	Church	58	33	10	206	1,431
Crow Agency, 900—Big Horn							
Crow Indian Hospital.......	Gen	IA	36	20	4	99	940
Deer Lodge, 3,278—Powell							
Montana State Tuberculosis Sanitarium▲⊙	TB	State	250	216	..	...	233
St. Joseph Hospital..........	Gen	Church	35	30	10	132	606
Forsyth, 1,696—Rosebud							
Rosebud Community Hosp...	Gen	Church	26	13	6	120	499
Fort Benton, 1,227—Chouteau							
St. Clare Hospital...........	Gen	Church	40	30	6	61	493
Fort Harrison, 300—Lewis and Clark							
Veterans Admin. Hospital▲...	Gen	Vet	294	190	..	...	2,313
Glasgow, 3,799—Valley							
Frances Mahon Deaconess Hospital	Gen	Church	60	38	15	359	1,640
Glendive, 4,524—Dawson							
Glendive General Hospital....	Gen	County	30	21	5	62	244
Northern Pacific Hospital▲...	Gen	NPAssn	57	42	12	239	2,197
Great Falls, 29,928—Cascade							
Columbus Hospital▲○	Gen	Church	235	182	50	884	6,370
Montana Deaconess Hospital★+▲○	Gen	Church	200	161	46	741	6,976
Hamilton, 2,332—Ravalli							
Marcus Daly Memorial Hosp..	Gen	NPAssn	40	30	12	284	1,327
Harlem, 1,166—Blaine							
Fort Belknap Indian Hospital and Sanatorium	Gen	IA	47	16	8	65	674
Havre, 6,427—Hill							
Kenned[illegible] Deaconess Hospital▲	Gen	Church	60	36	14	250	2,133
Sacred [illegible]▲	Gen	Church	125	88	19	370	3,001
Helena, [illegible]							
St. Jo[illegible]▲	Gen	Church	85	66	20	353	2,922
St. Peter's [illegible]▲	Gen	NPAssn	60	44	18	295	1,502
Shodair Crippled Children's Hospital▲	Orth	NPAssn	24	28	17	...	304
Jordan, 500—Garfield							
Good Samaritan Hospital....	Gen	Church	18	14	4	75	103
Kalispell, 8,245—Flathead							
Kalispell General Hospital▲...	Gen	Church	54	51	18	629	2,503
Lewiston, 5,874—Fergus							
St. Joseph's Hospital▲○......	Gen	Church	120	82	18	431	4,268
Libby, 1,837—Lincoln							
St. John Lutheran Hospital..	Gen	Church	20	12	5	110	395
Livingston, 6,642—Park							
Park Hospital	Gen	Indiv	28	19	6	98	755
Miles City, 7,313—Custer							
Miles City Hospital (Holy Rosary Hospital)▲○	Gen	Church	135	122	15	494	5,236
Missoula, 18,449—Missoula							
Memorial Hospital	Gen	NPAssn	35	...	12	Estab. 1947	
Northern Pacific Hospital▲...	Indus	NPAssn	85	40	..	...	2,128
St. Patrick Hospital▲○.......	Gen	Church	128	137	22	811	5,143
Plentywood, 1,574—Sheridan							
Sheridan Memorial Hospital..	Gen	NPAssn	18	13	6	124	585

Key to symbols and abbreviations is on page 1396

MONTANA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Poplar, 1,412—Roosevelt							
Fort Peck Indian Agency Hospital	Gen	IA	23	*9*	7	65	1,081
Roundup, 2,644—Musselshell							
Musselshell Valley Hospital	Gen	Indiv	20	10	4	60	730
St. Ignatius, 768—Lake							
Holy Family Hospital	Gen	Church	50	21	6	160	1,307
Terry, 1,012—Prairie							
Lutheran Good Samaritan Hospital	Gen	Church	15	6	5	47	221
Townsend, 1,309—Broadwater							
Broadwater Hospital	Gen	Corp	36	15	6	132	831
Warmsprings, 1,900—Deer Lodge							
Montana State Hospital⊙	Ment	State	1,850	1,853	..	...	220
Wolf Point, 1,960—Roosevelt							
Lutheran Trinity Hospital	Gen	NPAssn	18	15	8	193	600

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Columbus, 962—Stillwater							
Stillwater Community Hosp.	Gen	Church	18	11	4	77	635
Great Falls, 29,928—Cascade							
City-County Isolation Hosp.	Iso	CyCo	25	8	..	...	200
Hardin, 1,886—Big Horn							
Big Horn County Community Hospital	Gen	NPAssn	24	...	4	...	...
Helena, 15,056—Lewis and Clark							
Lewis and Clark County Hospital	InstGen	County	100	61	3	...	140
Polson, 2,136—Lake							
Hotel Dieu Hospital	Gen	Church	20	18	7	131	583
Scobey, 1,311—Daniels							
Scobey Clinic Hospital	Gen	Indiv	15	10	4	40	196

NEBRASKA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Ainsworth, 1,833—Brown							
Ainsworth Clinic and Hosp.	Gen	Part	28	15	5	199	1,107
Alliance, 6,253—Box Butte							
St. Joseph's Hospital▲○	Gen	Church	111	75	22	431	2,663
Auburn, 3,639—*Nemaha*							
Auburn Hospital	Gen	Indiv	16	9	6	148	500
Tushla General Hospital	Gen	Indiv	15	6	5	72	314
Aurora, 2,419—Hamilton							
Aurora Hospital	Gen	Part	28	14	10	123	552
Bassett, 931—Rock							
Bassett Hospital	Gen	Part	26	9	9	72	415
Beatrice, 10,883—Gage							
Lutheran Hospital	Gen	Church	85	61	21	478	1,984
Mennonite Deaconess Home and Hospital	Gen	Church	32	29	10	178	939
Benkelman, 1,448—Dundy							
Morehouse Hospital	Gen	Indiv	10	8	4	73	577
Blair, 3,289—Washington							
Blair Hospital	Gen	Indiv	14	9	3	178	509
Broken Bow, 2,968—Custer							
Broken Bow Hospital	Gen	Indiv	35	26	7	...	978
Cambridge, 1,054—Furnas							
Republican Valley Hospital	Gen	Indiv	18	11	5	36	275
Chadron, 4,262—Dawes							
Chadron Municipal Hospital	Gen	City	25	13	8	138	573
Columbus, 7,632—Platte							
Lutheran Hospital	Gen	Church	30	17	7	271	862
St. Mary's Hospital▲	Gen	Church	153	65	15	445	3,267
Dalton, 358—Cheyenne							
Pioneer Memorial Hospital	Gen	Indiv	15	10	5	73	376
David City, 2,272—Butler							
David City Hospital	Gen	NPAssn	25	12	8	194	772
Fairbury, 6,304—Jefferson							
Fairbury Hospital	Gen	Indiv	40	28	12	270	957
Falls City, 6,146—Richardson							
Our Lady of Perpetual Help Hospital	Gen	Church	27	22	8	290	981
Fort Crook,—Sarpy							
Station Hospital	Gen	Army	81	40	7	63	1,385
Fremont, 11,862—Dodge							
Dodge County Hospital	Gen	County	85	43	18	629	2,066
Friend, 1,169—Saline							
Warren Memorial Hospital	Gen	City	32	30	6	129	241
Genoa, 1,231—Nance							
Emergency Hospital	Gen	Indiv	9	3	3	56	184
Genoa Hospital	Gen	Indiv	11	6	3	61	221
Gordon, 1,967—Sheridan							
City Hospital	Gen	Indiv	9	4	6	28	164
Grand Island, 19,130—Hall							
Grand Island Lutheran Hosp.	Gen	Church	40	27	14	364	1,519
St. Francis Hospital▲○	Gen	Church	141	119	24	598	4,647
Hastings, 15,145—Adams							
Mary Lanning Memorial Hospital▲○	Gen	NPAssn	138	88	25	989	3,515
Holdrege, 3,360—Phelps							
Brewster Hospital	Gen	Corp	60	35	15	307	1,760
....	Gen	Indiv	22	15	5	92	702
....	Gen	Indiv	17	13	7	127	600
Imperial, 1,195—Chase							
Imperial Community Hospital	Gen	Corp	18	6	5	213	765
Ingleside, 1,699—Adams							
Hastings State Hospital+▲⊙	Ment	State	1,700	1,658	..	...	379
Kearney, 9,643—Buffalo							
Good Samaritan Hospital▲	Gen	Church	68	44	20	564	2,711
Nebraska Hospital for the Tuberculous▲	TB	State	200	147	..	...	254
Lewellen, 532—Garden							
Lewellen Community Hospital	Gen	NPAssn	16	8	4	106	617
Lexington, 3,688—Dawson							
Lexington Community Hosp.	Gen	NPAssn	24	6	10	312	916
Lincoln, 81,984—Lancaster							
Bryan Memorial Hospital★▲○	Gen	*Church*	*110*	93	20	602	*3,467*
Dr. Benj. F. Bailey Sanat.	N&M	Corp	115	111	..	...	336
Lincoln General Hospital★+▲○	Gen	NPAssn	183	188	40	1,261	6,662
Lincoln State Hospital▲	Ment	State	1,500	1,490	..	...	274
Nebraska Orthopedic Hosp.+▲	Orth	State	110	79	..	...	952
St. Elizabeth Hospital★▲○	Gen	Church	220	182	80	1,378	7,760
Veterans Admin. Hospital+▲	Gen	Vet	306	290	..	...	3,557
Loup City, 1,675—Sherman							
Sacred Heart Hospital	Gen	Church	27	16	10	204	745
Lynch, 487—Boyd							
Sacred Heart Hospital	Gen	Church	24	15	8	150	590
McCook, 6,212—Red Willow							
St. Catherine of Sienna Hospital▲	Gen	Church	50	41	16	439	2,293
Nebraska City, 7,339—Otoe							
St. Mary's Hospital▲	Gen	Church	60	52	15	418	1,896
Norfolk, 10,490—Madison							
Lutheran Hospital	Gen	Church	60	47	20	565	2,483
Norfolk State Hospital+▲	Ment	State	1,120	1,161	..	...	144
Our Lady of Lourdes Hosp.	Gen	Church	34	31	12	321	1,187
North Platte, 12,429—Lincoln							
North Platte Memorial Hosp.	Gen	NPAssn	32	18	10	158	915
St. Mary Hospital▲	Gen	Church	62	47	17	423	2,086
Oakland, 1,380—Burt							
Oakland Community Hosp.	Gen	Part	13	7	5	130	502
	Gen	Indiv	11	7	5	85	382
Ogallala Hospital	Gen	Indiv	16	8	7	131	460
Omaha, 223,844—Douglas							
Bishop Clarkson Memorial Hospital★+▲○	Gen	Church	160	162	17	692	6,234
Children's Memorial Hosp.⊙	Chil	NPAssn	100	...	12	Estab. 1947	
Creighton Memorial St. Joseph's Hospital★+▲○	Gen	Church	457	408	77	2,314	12,361
Doctors Hospital	Gen	NPAssn	103	89	16	382	7,013
Douglas County Hospital+▲⊙	GenIso	County	304	281	..	...	2,391
Douglas County Psychiatric Hospital	Unit of Douglas County Hospital						
Immanuel Deaconess Institute★▲○	Gen	Church	128	126	40	1,249	4,683
Lutheran Hospital+▲⊙	Gen	Church	130	108	16	352	3,656
Nebraska Methodist Hospital★+▲○	Gen	Church	167	146	24	1,073	6,532
St. Catherine's Hospital★▲○	Gen	Church	167	132	36	934	5,652
University of Nebraska Hospital★+▲○	Gen	State	197	172	15	423	2,895
Ord, 2,240—Valley							
Ord Hospital	Gen	Indiv	20	10	4	56	303
Osmond, 776—Pierce							
St. Joseph Hospital	Gen	Church	18	9	10	160	475
Pawnee City, 1,647—Pawnee							
Pawnee County Hospital	Gen	County	30	7	8	84	357
Pender, 1,135—Thurston							
Logan Valley Hospital	Gen	Part	13	7	6	82	383
Scottsbluff, 12,057—Scotts Bluff							
St. Mary Hospital	Gen	Church	41	31	15	457	2,833
West Nebraska Methodist Hospital○	Gen	Church	75	75	20	722	4,193
Seward, 2,826—Seward							
Seward Hospital	Gen	Indiv	10	7	8	126	323
Sidney, 3,388—Cheyenne							
Roche Hospital	Gen	Part	18	14	4	62	564
Station Hospital	Gen	Army	25	2	6	25	127
Taylor Hospital	Gen	Part	20	14	10	278	1,172
Stratton, 630—Hitchcock							
Dr. Stewart's Private Hosp.	Gen	Indiv	12	4	3	44	1,024
Stromsburg, 1,127—Polk							
Stromsburg Hospital	Gen	Indiv	20	10	8	122	536
Stuart, 760—Holt							
Clark Hospital	Gen	Indiv	17	12	4	47	251
Superior, 2,650—Nuckolls							
Brodstone Memorial Hospital	Gen	NPAssn	18	13	8	178	683
Tecumseh, 2,104—Johnson							
Tecumseh Hospital	Gen	Indiv	13	8	8	126	412
Valentine, 2,188—Cherry							
General Hospital	Gen	Indiv	22	15	7	219	1,173
Wahoo, 2,648—Saunders							
Wahoo Community Hospital	Gen	Part	20	12	10	167	640
Wayne, 2,719—Wayne							
Benthack Hospital	Gen	Indiv	20	10	8	226	637
Winnebago, 800—Thurston							
Winnebago Indian Hospital	Gen	IA	54	29	9	92	762
York, 5,383—York							
York General Hospital	Gen	NPAssn	46	36	12	418	1,742

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Beatrice, 10,883—Gage							
Beatrice State Home	MeDe	State	1,540	1,540	..	...	60
Lincoln, 81,984—Lancaster							
Nebraska State Penitentiary Hospital	Inst	State	20	8	..	...	528

Key to symbols and abbreviations is on page 1396

NEBRASKA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Milford, 759—Seward							
Nebraska Industrial Home...	Inst	State	18	3	12	59	59
Omaha, 223,844—Douglas							
Bramwell Booth Convalescent Hospital	Conv	Church	51	50	..	...	100
Hattie B. Munroe Home for Convalescent Crippled Children	Orth	NPAssn	30	26	..	...	75
Dr. M. L. Rich Memorial Hospital	N&M	Indiv	15	...	..	Estab. 1917	
Salvation Army Booth Memorial Hospital	Mat	Church	45	18	25	187	192
Orchard, 493—Antelope							
Orchard Hospital	Gen	Indiv	10	1	3	30	109
Oshkosh, 910—Garden							
Oshkosh Hospital	Gen	City	10	8	3	86	556
Plainview, 1,411—Pierce							
Plainview General Hospital...	Gen	Corp	10	5	5	88	431
Sutherland, 862—Lincoln							
Sutherland Hospital	Gen	NPAssn	15	12	8	110	545
Walthill, 1,201—Thurston							
Dr. Picotte Memorial Hosp...	Gen	Part	12	7	2	11	52
Westpoint, 2,510—Cuming							
St. Joseph Home and Hosp...	Gen	Church	23	19	6	251	840

NEVADA

Hospitals and Sanatoriums

Boulder City, 3,000—Clark							
Boulder City Hospital........	Gen	USPHS	23	11	6	166	855
Caliente, 1,800—Lincoln							
Lincoln County Hospital.....	Gen	County	27	12	7	79	564
East Ely, 750—White Pine							
Steptoe Valley Hospital▲.....	Gen	NPAssn	10	15	7	150	670
Elko, 4 094 Elko							
Elko General Hospital▲.......	Gen	County	50	23	12	206	958
Henderson, 6,500—Clark							
Rose de Lima Hospital.......	Gen	Church	57	23	12	200	1,667
Las Vegas, 8,422—Clark							
Las Vegas Hospital..........	Gen	Part	55	30	12	215	1,962
Owyhee, 100—Elko							
Western Shoshone Hospital..	Gen	IA	23	11	4	30	421
Reno, 21,317—Washoe							
Nevada State Hospital for Mental Diseases	Ment	State	375	350	..	...	137
St. Mary's Hospital+▲........	Gen	Church	75	73	20	676	3,181
Veterans Admin. Center▲.....	Gen	Vet	33	29	..	...	822
Washoe County General Hosp.	Gen	County	255	228	18	600	5,242
Schurz, 100—Mineral							
Walker River Indian Hosp...	Gen	IA	30	32	10	77	573
Winnemucca, 2,485—Humboldt							
Humboldt County General Hospital	Gen	County	63	26	11	140	1,226

Related Institutions

Pioche, 1,535—Lincoln							
Pioche Hospital	Gen	Indiv	18	5	4	55	547

NEW HAMPSHIRE

Hospitals and Sanatoriums

Berlin, 19,084—Coos							
St. Louis Hospital▲◇	Gen	Church	91	69	14	399	2,400
Claremont, 12,144—Sullivan							
Claremont General Hospital▲	Gen	NPAssn	59	38	20	391	1,614
Concord, 27,171—Merrimack							
Concord Hospital▲◇	Gen	NPAssn	162	126	22	911	4,983
Margaret Pillsbury General Hospital	Unit of Concord Hospital						
New Hampshire Memorial Hospital	Unit of Concord Hospital						
New Hampshire State Hospital+▲◇	Ment	State	2,527	2,405	..	...	917
Pembroke Sanatorium	TB	Corp	100	38	..	...	68
Dover, 14 990—Strafford							
Wentworth Hospital▲◇	Gen	City	69	49	15	484	2,978
East Derry,—Rockingham							
Alexander-Eastman Hospital..	Gen	NPAssn	20	18	6	181	564
Epping, 1 618—Rockingham							
Rockingham County Home and Hospital	Gen	County	35	10	12	5	114
Exeter, 5,398—Rockingham							
Exeter Hospital▲	Gen	NPAssn	76	47	22	625	2,402
Franklin, 6,749—Merrimack							
Franklin Hospital▲	Gen	NPAssn	50	29	15	273	1,460
Glencliff, 200—Grafton							
New Hampshire State Sanat.▲	TB	State	88	80	..	...	78
Grasmere, 200—Hillsboro							
Hillsborough County General Hospital▲◇	Gen	County	92	52	18	193	1,255
Hanover, 3,125—Grafton							
Mary Hitchcock Memorial Hospital★+▲◇	Gen	NPAssn	178	173	18	662	5,091
Keene, 13 832—Cheshire							
Elliot Community Hospital▲◇	Gen	NPAssn	89	62	20	809	2,697
Laconia, 13,484—Belknap							
Laconia Hospital▲◇	Gen	NPAssn	96	102	25	525	3,550

NEW HAMPSHIRE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Lancaster, 3,095—Coos							
Lancaster Hospital	Gen	NPAssn	22	17	8	204	737
Lebanon, 7,590—Grafton							
Alice Peck Day Memorial Hospital	Gen	NPAssn	30	11	12	399	708
Littleton, 4,571—Grafton							
Littleton Hospital	Gen	NPAssn	50	19	10	201	837
Manchester, 77 685—Hillsboro							
Balch Hospital	Unit of Elliot Hospital						
Elliot Hospital+▲◇	Gen	NPAssn	127	117	32	1,239	3,852
Notre Dame de Lourdes Hospital▲◇	Gen	Church	100	87	20	615	3,125
Our Lady of Perpetual Help Maternity Hospital	Unit of Sacred Heart Hospital						
Sacred Heart Hospital+▲◇....	Gen	Church	150	135	24	447	6,195
Nashua, 32 927—Hillsboro							
Nashua Memorial Hospital▲◇	Gen	NPAssn	84	78	16	719	2,432
St. Joseph's Hospital▲◇......	Gen	Church	120	83	18	669	3,132
New London, 1,039—Merrimack							
New London Hospital........	Gen	NPAssn	23	15	6	76	612
Newport, 5,304—Sullivan							
Carrie F. Wright Hospital...	Gen	NPAssn	25	15	10	158	585
North Conway, 900—Carroll							
Memorial Hospital	Gen	NPAssn	37	30	12	200	1,042
Peterborough, 2,470—Hillsboro							
Monadnock Community Hospital▲	Gen	NPAssn	36	27	9	255	1,453
Plymouth, 2 533—Grafton							
Seeva Speare Memorial Hosp.	Gen	NPAssn	35	24	8	230	1,034
Portsmouth, 14,821—Rockingham							
Portsmouth Hospital▲	Gen	NPAssn	101	62	28	598	3,176
U. S. Naval Hospital▲........	Gen	Navy	150	107	10	128	1,747
Rochester, 12,012—Strafford							
Frisbie Memorial Hospital▲..	Gen	NPAssn	69	51	20	851	3,390
West Stewartstown, 350—Coos							
Coos County Hospital.......	Gen	County	50	22	8	174	957
Whitefield, 1 831—Coos							
Morrison Hospital	Gen	NPAssn	56	16	9	64	327
Wolfeboro, 2 616—Carroll							
Huggins Hospital▲	Gen	NPAssn	36	29	6	177	1,174
Woodsville, 1,900—Grafton							
Cottage Hospital	Gen	NPAssn	24	20	10	190	1,141
Grafton County Hospital...	InstGen	County	30	22	4	1	89

Related Institutions

Exeter, 5,398—Rockingham							
Lamont Infirmary	Inst	NPAssn	53	9	..	...	529
Laconia, 13 484—Belknap							
Laconia State School.........	MeDe	State	720	723	..	...	62
Manchester, 77 685—Hillsboro							
Manchester Isolation Hosp...	Iso	City	61	23	..	...	265

NEW JERSEY

Hospitals and Sanatoriums

Allentown, 766—Monmouth							
Dr. Farmer's Private Hosp...	Gen	Indiv	41	20	11	107	803
Allenwood, 150—Monmouth							
Allenwood Sanatorium (Monmouth County Hospital for Tuberculosis)	TB	County	100	99	..	...	130
Atlantic City 64,094—Atlantic							
Atlantic City Hospital★+▲◇..	Gen	NPAssn	280	204	40	1,977	8,237
Children's Seashore House at Atlantic City for Invalid Children	Orth	NPAssn	146	80	..	...	308
Bayonne, 79,198—Hudson							
Bayonne Hospital and Dispensary★+▲◇	Gen	NPAssn	250	158	30	1,431	5,091
Swiney Sanatorium	Gen	Indiv	16	7	9	122	36
Beach Haven, 746—Ocean							
Seashore Branch of Babies' Hospital	Unit of Babies' Hospital, Philadelphia						
Bellemead, 51—Somerset							
Belle Mead Sanatorium.......	N&M	Corp	65	57	..	...	109
Belleville, 28,167—Essex							
Essex County Hospital for Contagious Diseases+▲⊙	Iso	County	260	94	..	...	2,581
Blackwood, 2,000—Camden							
Camden County General Hospital	Gen	County	250	158	..	...	845
Camden County Hospital for Mental Diseases	Ment	County	750	778	..	...	115
Camden County Tuberculosis Hospital	TB	County	220	138	..	...	209
Bound Brook, 7,616—Somerset							
Bound Brook Hospital▲......	Gen	NPAssn	35	20	10	117	701
Bridgeton, 15,992—Cumberland							
Bridgeton Hospital	Gen	NPAssn	91	64	21	775	2,467
Ivy Hall Sanitarium..........	Conv	NPAssn	45	33	..	...	58
Browns Mills, 500—Burlington							
Deborah Sanatorium	TB	NPAssn	103	87	..	...	92
Camden, 117,536—Camden							
Camden General Hospital....	Gen	NPAssn	30	21	14	602	1,376
Cooper Hospital★+▲◇	Gen	NPAssn	351	294	96	2,841	9,346
Municipal Hospital for Contagious Diseases	Iso	City	100	18	..	...	297
West Jersey Hospital★+▲◇....	Gen	NPAssn	269	199	72	2,570	8,172

Key to symbols and abbreviations is on page 1396

NEW JERSEY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Cedar Grove, 2,000—Essex							
Essex County Overbrook Hospital+▲⊝	Ment	County	2,636	2,506	..	...	823
Dover, 10,491—Morris							
Dover General Hospital▲	Gen	NPAssn	110	73	25	797	3,139
East Orange, 68,945—Essex							
East Orange General Hosp.★▲○	Gen	NPAssn	120	87	30	1,116	3,438
Elizabeth, 109,912—Union							
Alexian Brothers Hospital★▲	Gen	Church	150	130	..	...	2,790
Elizabeth General Hospital and Dispensary★▲○	Gen	NPAssn	197	145	40	1,791	5,794
St. Elizabeth Hospital★▲○	Gen	Church	226	148	44	2,025	5,541
Englewood, 18,966—Bergen							
Englewood Hospital★▲○	Gen	NPAssn	190	144	48	1,848	5,915
Fort Dix, 1,000—Burlington							
Tilton General Hospital▲	Gen	Army	3,707	3,471	10	207	21,634
Fort Monmouth,—Monmouth							
Station Hospital▲	Gen	Army	300	214	13	214	6,127
Franklin, 4,009—Sussex							
Franklin Hospital▲	Gen	NPAssn	37	25	7	306	1,150
Glen Gardner, 536—Hunterdon							
New Jersey Sanatorium for Tuberculous Diseases+▲	TB	State	387	303	..	...	270
Greystone Park,—Morris							
New Jersey State Hosp.+▲⊝	Ment	State	5,723	5,736	..	...	1,151
Hackensack, 26,279—Bergen							
Hackensack Hospital★+▲○	Gen	NPAssn	250	224	50	2,313	10,387
Hasbrouck Heights, 6,716—Bergen							
Hasbrouck Heights Hospital▲	Orth	NPAssn	27	24	..	...	772
Hoboken, 50,115—Hudson							
St. Mary's Hospital★▲○	Gen	Church	420	277	30	1,148	7,059
Irvington, 55,328—Essex							
Irvington General Hospital+▲	Gen	City	115	78	20	820	3,654
Jersey City, 301,173—Hudson							
Berthold S. Pollack Hospital for Chest Diseases+▲	TB	County	447	394	..	...	731
Christ Hospital★▲○	Gen	Church	206	193	31	1,349	6,157
Fairmount Hospital	Gen	NPAssn	59	42	15	410	1,780
Greenville Hospital▲○	Gen	NPAssn	60	59	16	214	916
Jersey City Hospital★+▲○	Gen	City	1,500	925	..	...	21,474
Jersey City Hospital for Communicable Diseases▲	Unit of Jersey City Hospital						
Margaret Hague Maternity Hospital+▲⊝	Mat	County	345	281	385	9,605	11,729
Psychopathic Hospital	Unit of Jersey City Hospital						
St. Francis Hospital★▲○	Gen	Church	250	150	..	...	3,798
Kearny (Arlington P.O.), 39,467—Hudson							
West Hudson Hospital▲	Gen	NPAssn	62	45	20	664	2,633
Lakehurst, 827—Ocean							
U. S. Naval Air Station Dispensary	*Gen*	Navy	46	9	8	93	679
Lakewood, 8,000—Ocean							
Paul Kimball Hospital▲	Gen	NPAssn	66	63	14	445	2,418
Long Branch, 17,408—Monmouth							
Dr. E. C. Hazard Hospital	Gen	NPAssn	95	36	30	268	1,529
Monmouth Memorial Hospital★+▲○	Gen	NPAssn	262	188	42	1,868	7,023
Lyons, —Somerset							
Veterans Admin. Hospital+▲	Ment	Vet	2,497	2,350	..	...	2,164
Marlboro, 500—Monmouth							
New Jersey State Hospital+▲	Ment	State	2,901	2,753	..	...	980
Metuchen, 6,557—Middlesex							
Roosevelt Hospital▲	TB	County	221	181	..	...	255
Millville, 14,806—Cumberland							
Millville Hospital	Gen	NPAssn	52	34	14	377	1,730
Montclair, 39,807—Essex							
Montclair Community Hosp.▲	Gen	NPAssn	56	41	20	557	1,861
Mountainside Hospital★+▲○	Gen	NPAssn	309	207	59	1,779	6,761
St. Vincent's Hospital▲	Gen	Church	50	46	12	421	1,651
Morris Plains, 2,018—Morris							
Children's Heart Unit of Victoria Foundation	Card	NPAssn	24	21	..	...	30
Morristown, 15,270—Morris							
All Souls Hospital★▲○	Gen	Church	123	89	36	1,133	3,484
Aurora Institute	Conv	Corp	90	41	..	...	506
Morristown Memorial Hosp.★▲	Gen	NPAssn	140	86	24	582	3,659
[illegible]	TB	County	76	53	..	...	65
[illegible] Hosp.▲	Gen	NPAssn	121	66	18	1,079	3,031
Neptune, 2,392—Monmouth							
Fitkin Memorial Hosp.★+▲○	Gen	NPAssn	154	132	39	1,551	5,711
Newark, 429,760—Essex							
American Legion Memorial *Hospital*	Gen	NPAssn	35	23	15	345	1,154
Babies' Hospital-Coit Memorial+▲	Chil	NPAssn	88	39	..	...	1,907
Columbus Hospital▲	Gen	NPAssn	75	61	35	1,161	3,059
Community Hospital▲	Gen	NPAssn	24	7	6	159	535
Hospital and Home for Crippled Children+▲	Orth	NPAssn	95	48	..	...	418
Hospital of St. Barnabas and for Women and Children★+▲○	Gen	Church	225	180	45	1,837	7,264
Lutheran Memorial Hosp.★▲○	Gen	NPAssn	121	97	21	671	3,617
Newark Beth Israel Hosp.★+▲○	Gen	NPAssn	365	293	76	2,894	11,129
Newark City Hospital★+▲○	Gen	City	700	602	40	1,374	12,014
Newark Eye and Ear Infirmary+▲	ENT	NPAssn	65	38	..	...	2,841
Presbyterian Hospital+▲○	Gen	NPAssn	275	282	65	1,940	9,110
St. James Hospital★▲○	Gen	Church	125	97	21	803	3,590
St. Michael's Hospital★+▲○	Gen	Church	350	340	70	2,661	11,509
New Brunswick, 33,180—Middlesex							
Middlesex General Hosp.▲○	Gen	NPAssn	102	85	33	1,147	3,422
St. Peter's General Hosp★▲○	Gen	Church	193	192	56	1,865	6,404
Station Hospital	Gen	Army	900	551	20	156	15,134

NEW JERSEY—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
New Lisbon, 213—Burlington							
Marcus W. Newcomb Hospital for Chest Diseases	TB	County	112	83	..	...	78
Newton, 5,533—Sussex							
Newton Memorial Hosp.▲	*Gen*	*NPAssn*	42	18	9	633	1,872
Northfield, 2,818—Atlantic							
Atlantic County Hospital for Mental Diseases	Ment	County	475	326	..	...	171
Atlantic County Hospital for Tuberculous Diseases▲	TB	County	86	39	..	...	71
Orange, 35,717—Essex							
New Jersey Orthopaedic Hospital and Dispensary+▲	Orth	NPAssn	41	36	..	...	660
Orange Memorial Hosp.★+▲○	Gen	NPAssn	400	253	75	2,111	9,181
St. Mary's Hospital★▲○	Gen	Church	131	105	35	1,005	3,721
Passaic, 61,394—Passaic							
Beth Israel Hospital▲	Gen	NPAssn	77	60	22	671	2,516
Passaic General Hospital★▲○	Gen	NPAssn	237	195	65	2,274	6,739
St. Mary's Hospital★▲○	Gen	Church	190	164	50	1,767	6,581
Paterson, 139,656—Passaic							
Hope Dell Hospital	Chr	County	425	373	..	...	126
Nathan and Miriam Barnert Memorial Hospital★▲○	Gen	NPAssn	116	100	29	1,086	3,904
Paterson General Hosp.★+▲○	Gen	NPAssn	372	235	84	2,779	9,315
St. Joseph Hospital★▲○	Gen	Church	365	308	57	2,281	9,908
Valley View Sanatorium▲	TB	County	226	205	..	...	214
Perth Amboy, 41,242—Middlesex							
Perth Amboy General Hospital★▲○	Gen	NPAssn	205	157	45	1,361	6,421
Plainfield, 37,469—Union							
Muhlenberg Hospital★▲○	Gen	NPAssn	270	214	60	2,654	8,731
Point Pleasant, 2,682—Ocean							
Point Pleasant Hospital▲	Gen	NPAssn	48	32	10	275	1,073
Princeton, 7,719—Mercer							
Isabella McCosh Infirmary of Princeton University	Inst	NPAssn	53	11	..	...	959
Princeton Hospital▲	Gen	NPAssn	86	74	18	572	2,764
Rahway, 17,498—Union							
New Jersey Reformatory Hospital	Inst	State	16	3	..	...	252
Rahway Hospital▲	Gen	NPAssn	80	69	20	856	3,716
Red Bank, 10,974—Monmouth							
Riverview Hospital	Gen	NPAssn	40	40	15	550	2,233
Ridgewood, 14,948—Bergen							
Bergen Pines, Bergen County Hospital+▲	TbIso	County	227	*189*	..	...	538
Riverside, 4,000—Burlington							
Zurbrugg Memorial Hospital▲	Gen	NPAssn	41	23	15	391	1,164
Salem, 8,618—Salem							
Salem County Memorial Hospital	Gen	NPAssn	48	41	20	701	1,936
Scotch Plains, 3,500—Union							
Bonnie Burn Sanatorium▲	TB	County	433	301	..	...	345
Secaucus, 9,754—Hudson							
Hudson County Contagious Disease Hospital▲	Iso	County	180	35	..	...	503
Hudson County General Hospital	InstGen	County	224	183	..	...	123
Hudson County Hospital for Mental Diseases▲	Ment	County	1,910	1,776	..	...	375
Skillman, 23—Somerset							
New Jersey State Village for Epileptics	Epil	State	1,443	1,449	..	...	152
Somers Point, 1,992—Atlantic							
Shore Memorial Hospital▲	Gen	NPAssn	65	40	14	410	1,569
Somerville, 8,720—Somerset							
Somerset Hospital▲○	Gen	NPAssn	150	154	40	1,457	5,625
South Amboy, 7,802—Middlesex							
South Amboy Memorial Hosp.	Gen	NPAssn	35	29	18	462	1,685
Summit, 16 165—Union							
Fair Oaks Sanatorium	N&M	Corp	48	43	..	...	212
Overlook Hospital★▲○	Gen	NPAssn	144	137	41	979	4,343
Sussex, 1,478—Sussex							
Alexander Linn Hospital	Gen	NPAssn	22	15	8	188	799
Teaneck, 25,275—Bergen							
Holy Name Hospital★▲○	Gen	Church	185	180	50	1,769	4,689
Trenton, 124,697—Mercer							
F. W. Donnelly Memorial Hos*pitals*	TbIso	City	*420*	*202*	..	...	*495*
Glenwood Sanitarium	N&M	Indiv	26	18	..	...	88
Mercer Hospital★+▲○	Gen	NPAssn	243	189	44	2,335	7,588
New Jersey State Hosp.+▲⊝	Ment	State	3,200	3,153	..	...	1,220
New Jersey State Prison Hospital▲	*Inst*	*State*	43	29	..	...	784
Orthopaedic Hospital and Dispensary+▲	Orth	NPAssn	45	32	..	...	267
St. Francis Hospital★+▲○	Gen	Church	300	224	35	1,936	10,732
Trenton General Hospital	Gen	NPAssn	60	33	13	242	1,385
William McKinley Memorial *Hospital*★▲○	*Gen*	NPAssn	119	96	19	1,047	3,808
Verona, 8,957—Essex							
Essex County Sanatorium+▲	TB	County	444	313	..	...	382
Vineland, 7,914—*Cumberland*							
Newcomb Hospital+▲	Gen	NPAssn	93	58	32	713	2,438
Weehawken (Union City P.O.), 14,363—Hudson							
North Hudson Hospital★▲	Gen	NPAssn	166	91	25	580	3,516
Westfield, 18,458—Union							
Children's Country Home▲	Orth	NPAssn	30	23	..	...	30
Woodbury, 8,306—Gloucester							
Underwood Hospital▲	Gen	NPAssn	65	54	34	875	3,509
Wyckoff, 500—Bergen							
Christian Sanatorium	N&M	NPAssn	165	156	..	...	97

Key to symbols and abbreviations is on page 1396

NEW JERSEY—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Atlantic City, 64,094—Atlantic							
Municipal Hospital	Iso	City	65	...	4	...	...
Caldwell, 4,932—Essex							
Theresa Grotta Home for Convalescents	Conv	NPAssn	40	21	..	...	268
Farmingdale, 609—Monmouth							
Tuberculosis Preventorium for Children	TB	NPAssn	250	137	..	...	419
Haddonfield, 9,742—Camden							
Bancroft School	MeDe	NPAssn	110	103	..	...	12
Jamesburg, 2,128—Middlesex							
New Jersey State Home for Boys	Inst	State	25	12	..	...	772
Jersey City, 301,173—Hudson							
Salvation Army Door-of-Hope Home and Hospital	Mat	Church	60	28	6	80	106
Little Falls, 3,000—Passaic							
North Jersey Training School	MeDe	State	55	32	..	...	1,013
Longport, 303—Atlantic							
Betty Bacharach Home for Afflicted Children	Orth	NPAssn	100	47	..	...	101
Menlo Park, 400—Middlesex							
New Jersey Home for Disabled Soldiers	Inst	State	83	78	..	...	67
Metuchen, 6,557—Middlesex							
Middlesex Nursing Home	Conv	Corp	60	58	..	...	169
Newark, 429,760—Essex							
Florence Crittenton Home	Mat	NPAssn	30	28	25	76	110
Ivy Haven	Inst	City	90	80	..	...	190
[illegible]	Conv	City	155	135	..	...	78
N[illegible]							
[illegible] Infirmary	Inst	NPAssn	22	5	..	...	203
Rutgers University Infirmary	Inst	NPAssn	11	5	..	...	217
New Lisbon, 213—Burlington							
Burlington County Mental Hospital	Ment	County	300	240	..	...	50
New Jersey State Colony	MeDe	State	800	805	..	...	113
Park Ridge, 2,519—Bergen							
Meyers Sanitarium	Conv	Indiv	73	70	..	...	73
Paterson, 139,656—Passaic							
Paterson City Hospital	ChrIso	City	110	33	..	...	234
Roseland, 1,556—Essex							
Mountain View Rest	N&M	Corp	22	20	..	...	9
Sea Isle City, 773—Cape May							
Sea Isle Hospital and Training School	MeDe	Corp	75	52	8	...	21
Trenton, 124,697—Mercer							
State Home for Girls	Inst	State	70	57	3	35	287
Upper Montclair,—Essex							
Montclair Sanitarium	Conv	Part	10	8	..	...	7
Vineland, 7,914—Cumberland							
New Jersey Memorial Home for Disabled Soldiers, Sailors, Marines and Their Wives and Widows	Inst	State	65	21	..	...	140
Training School at Vineland (Chandler Hospital)	MeDe	NPAssn	40	9	..	...	485
Vineland State School	MeDe	State	1,750	1,701	..	...	117
Westfield, 18,458—Union							
Brookside Nursing Home	Conv	Indiv	30	29	..	...	27
Woodbine, 2,111—Cape May							
State Colony for Feebleminded Males	MeDe	State	823	770	..	...	79

NEW MEXICO

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Albuquerque, 35,449—Bernalillo							
Albuquerque Indian Hospital▲	Gen	IA	60	45	10	195	1,855
Albuquerque Indian Sanat.▲	TB	IA	100	84	..	...	117
Atchison, Topeka and Santa Fe Hospital	Indus	NPAssn	67	30	..	...	1,214
Methodist Sanatorium	TB	Church	65	49	..	...	88
Nazareth Sanatorium	N&M	Church	30	16	..	...	207
St. Joseph Sanatorium and Hospital▲○	GenTb	Church	194	148	40	1,383	6,898
Southwestern Presbyterian Sanatorium▲	GenTb	Church	158	130	22	780	3,159
Veterans Admin. Hospital†▲	Gen	Vet	305	271	..	...	1,890
Artesia, 4,071—Eddy							
Artesia Municipal Hospital	Gen	Church	25	15	8	328	1,174
Black Rock (Zuni P.O.),—McKinley							
Zuni Indian Hospital	Gen	IA	43	17	8	49	793
Carlsbad, 7,116—Eddy							
Carlsbad Memorial Hosp.	Gen	NPAssn	25	24	7	176	1,399
St. Francis Xavier Hospital	Gen	Church	45	39	12	460	2,114
Clayton, 3,188—Union							
St. Joseph Hospital	Gen	Church	25	12	8	116	467
Clovis, 10,065—Curry							
Atchison, Topeka and Santa Fe Hospital	Indus	NPAssn	37	29	..	...	417
Clovis Memorial Hospital	Gen	City	50	43	20	686	3,048
Crownpoint, 90—McKinley							
Eastern Navajo Hospital	Gen	IA	65	35	10	90	1,423
Dulce, 150—Rio Arriba							
Jicarilla Apache Hospital	Gen	IA	28	10	5	30	586
Embudo,—Rio Arriba							
Embudo Presybterian Hosp.	Gen	Church	25	16	12	246	657

NEW MEXICO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Farmington, 2,161—San Juan							
San Juan Episcopal Indian Mission Hospital	Gen	Church	22	18	3	76	581
San Juan Hospital	Gen	NPAssn	20	10	8	166	557
Fort Bayard, 730—Grant							
Veterans Admin. Hospital▲	TB	Vet	285	202	..	...	1,049
Fort Stanton, 190—Lincoln							
U. S. Marine Hospital▲	TB	USPHS	237	163	..	...	194
Gallup, 7,041—McKinley							
St. Mary's Hospital▲	Gen	Church	90	45	12	336	2,056
Hobbs, 10,619—Lea							
Hobbs General Hospital	Gen	Indiv	21	14	9	400	1,381
Hot Springs, 2,940—Sierra							
Carrie Tingley Hospital for Crippled Children†▲	Orth	State	100	65	..	...	412
Virginia Ann Clinic and Hosp.	Gen	Indiv	20	7	4	48	351
Las Vegas, 5,941—San Miguel							
Las Vegas Hospital	Gen	NPAssn	32	15	9	95	897
New Mexico State Hospital	Ment	State	1,019	976	..	...	201
St. Anthony's Hospital	Gen	Church	70	50	15	310	2,753
Los Alamos, 100—Sandoval							
[illegible]	Gen	NPAssn	101	48	11	211	2,523
[illegible]							
[illegible] Apache Indian Hospital	Gen	IA	32	12	4	54	426
Raton, 7,607—Colfax							
New Mexico Miners' Hosp.▲	Gen	State	83	29	10	382	1,408
Roswell, 13,482—Chaves							
St. Mary's Hospital	Gen	Church	90	67	20	796	3,382
Station Hospital▲	Gen	Army	50	27	..	...	1,385
Santa Fe, 20,325—Sante Fe							
St. Vincent Hospital▲	Gen	Church	75	55	15	614	2,742
Santa Fe Indian Hospital	Gen	IA	56	26	6	110	942
Santa Rita, 2,000—Grant							
Santa Rita Hospital	Gen	NPAssn	41	23	10	193	1,063
Shiprock, 125—San Juan							
Northern Navajo Hospital	Gen	IA	43	37	5	97	1,257
Silver City, 5,044—Grant							
Silver City General Hospital	Gen	Corp	30	31	12	415	1,594
Socorro, 3,712—Socorro							
Lehmann Hospital	Gen	Indiv	10	3	5	56	302
State Tuberculosis Sanat.	TB	State	77	73	..	...	133
Taos, 965—Taos							
Holy Cross Hospital	Gen	Church	32	17	9	204	1,050
Valmora, 125—Mora							
Valmora Sanatorium	TB	NPAssn	75	40	..	...	166

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Albuquerque, 35,449—Bernalillo							
Sandia Ranch Sanatorium	N&M	Indiv	15	8	..	...	40
Eunice, 1,227—Lea							
Barzune Hospital	Gen	Indiv	8	4	3	55	212
Lordsburg, 3,101—Hidalgo							
Lordsburg Hospital	Gen	Corp	20	6	3	69	240
Los Lunas, 626—Valencia							
Los Lunas Mental Hospital	MeDe	State	76	68	..	...	8
Taos, 965—Taos							
Taos Indian Hospital	Gen	IA	17	9	3	25	450

NEW YORK

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Albany, 130,577—Albany							
Albany Hospital*†▲○	GenTb	NPAssn	541	578	30	1,931	11,832
Anthony N. Brady Maternity Home†▲⊙	Mat	Church	70	60	86	2,337	2,783
Child's Hospital	Chil	Church	65	37	..	...	1,240
Memorial Hospital*▲○	Gen	NPAssn	137	135	20	638	3,861
St. Peter's Hospital*▲○	Gen	Church	159	135	..	...	4,550
Albion, 4,660—Orleans							
Arnold Gregory Memorial Hospital	Gen	NPAssn	24	19	11	233	906
Amityville, 5,058—Suffolk							
Long Island Home†	N&M	Corp	206	199	..	...	493
Louden-Knickerbocker Hall	N&M	Corp	175	186	..	...	348
[illegible]							
[illegible]	Gen	NPAssn	105	98	20	[illegible]	3,391
[illegible] Hospital▲	Gen	Church	120	114	22	821	3,665
Auburn, 35,753—Cayuga							
Auburn City Hospital*▲○	Gen	NPAssn	209	194	40	1,389	6,758
Home for Convalescent and Crippled Children	Unit of Auburn City Hospital						
Mercy Hospital▲	Gen	Church	95	70	14	427	2,450
Ballston Spa, 4,443—Saratoga							
Benedict Memorial Hospital	Gen	NPAssn	22	16	11	201	802
Batavia, 17,267—Genesee							
Genesee Memorial Hospital▲	Gen	NPAssn	68	75	17	733	4,489
St. Jerome Hospital▲	Gen	Church	82	68	18	613	3,191
Veterans Admin. Hospital†▲	Gen	Vet	294	267	..	...	2,518
Bath, 4,698—Steuben							
Bath Memorial Hospital▲	Gen	NPAssn	60	40	8	536	2,121
Veterans Admin. Hospital†▲	Gen	Vet	466	380	..	...	3,410
Bay Shore, 10,000—Suffolk							
Dr. King's Hospital	Gen	Indiv	35	13	8	129	559
Southside Hospital▲	Gen	NPAssn	93	107	24	1,413	5,026
Beacon, 12,572—Dutchess							
Craig House	N&M	Corp	80	42	..	...	51
Highland Hospital	Gen	NPAssn	46	29	11	334	1,306
Matteawan State Hospital†	Ment	State	1,016	1,017	..	...	175

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bedford Hills, 2,000—Westchester							
Montefiore Hospital Country Sanatorium+▲	TB	NPAssn	230	210	..	...	250
Bellerose, 1,317—Queens							
Hillside Hospital+	N&M	NPAssn	88	80	..	...	324
Binghamton, 78,309—Broome							
Binghamton City Hosp.★+▲○	Gen	City	460	397	40	1,336	10,831
Binghamton State Hosp.+▲○	Ment	State	2,974	2,663	..	...	668
Our Lady of Lourdes Memorial Hospital▲	Gen	Church	88	83	22	1,010	2,964
Brentwood, 495—Suffolk							
Pilgrim State Hospital	See West Brentwood						
Ross Sanitarium	Conv	Indiv	50	48	..	...	104
Brockport, 3,590—Monroe							
Lakeside Memorial Hospital	Gen	NPAssn	15	14	6	215	680
Bronxville, 6,888—Westchester							
Lawrence Hospital▲	Gen	NPAssn	101	101	20	839	3,611
Brooklyn, 2,698,285—Kings							
Adelphi Hospital	Gen	NPAssn	160	129	50	1,216	5,178
Bay Ridge Hospital▲	Gen	Corp	79	63	34	1,508	3,412
Bethany Deaconess Hospital	Gen	Church	82	49	24	807	2,063
Beth-El Hospital★+▲	Gen	NPAssn	242	197	90	4,004	8,423
Beth Moses Hospital★+▲	See Maimonides Hospital						
Brooklyn Cancer Institute+▲	Cancer	City	85	78	..	...	748
Brooklyn Doctors Hospital	Gen	Corp	88	60	54	1,624	2,279
Brooklyn Eye and Ear Hospital+▲	ENT	NPAssn	143	77	..	...	8,077
Brooklyn Hebrew Home and Hospital for Aged	ChrGen	NPAssn	711	601	..	...	252
Brooklyn Hospital★+▲○	Gen	NPAssn	330	259	44	1,631	8,914
Brooklyn State Hospital+▲○	Ment	State	3,540	3,427	..	...	1,913
Brooklyn Thoracic Hospital▲	TB	NPAssn	125	74	..	...	255
Brooklyn Womens Hospital+	ObGyn	NPAssn	43	38	45	1,863	2,102
Bushwick Hospital★▲○	Gen	NPAssn	125	85	25	1,276	3,966
Caledonian Hospital▲	Gen	NPAssn	100	55	30	974	2,947
Carson C. Peck Memorial Hospital▲	Gen	NPAssn	107	72	39	1,529	3,060
Coney Island Hospital★+▲	Gen.	City	270	221	30	915	6,362
Crown Heights Hospital	Gen	Corp	125	123	31	1,151	4,394
Cumberland Hospital★+▲○	Gen	City	361	235	39	950	6,300
Evangelical Deaconess Hosp.	Gen	Church	84	59	37	1,400	2,952
Fort Hamilton Station Hosp.	Gen	Army	100	65	..	...	2,829
Greenpoint Hospital★+▲	Gen	City	263	216	32	1,572	6,074
Harbor Hospital	Gen	NPAssn	77	36	..	...	1,834
Hospital of the Holy Family▲	Gen	Church	116	94	..	...	2,250
House of St. Giles the Cripple+▲	Orth	Church	44	35	..	...	161
Israel Zion Hospital★+▲	See Maimonides Hospital						
Jewish Hospital★+▲○	Gen	NPAssn	546	409	114	5,347	15,314
Jewish Sanitarium and Hospital for Chronic Diseases+▲	Chr	NPAssn	538	516	..	...	180
Kings County Hospital★+▲○	Gen	City	2,590	2,325	120	3,363	61,158
Kingston Avenue Hospital+▲⊙	IsoTb	City	415	243	..	...	3,204
Long Island College Hospital★+▲○	Gen	NPAssn	391	302	47	2,099	9,967
Lutheran Hospital▲	Gen	Church	86	66	30	850	3,645
Madison Park Hospital	Gen	Corp	163	98	37	2,334	4,579
Maimonides Hospital, Beth Moses Division★+▲	Gen	NPAssn	185	156	30	734	4,433
Maimonides Hospital, Israel Zion Division★+▲	Gen	NPAssn	365	290	142	5,988	11,895
Methodist Hospital★+▲○	Gen	Church	456	295	84	2,654	9,685
Midwood Hospital▲	Gen	Corp	55	42	21	897	2,280
Norwegian Lutheran Deaconesses' Home and Hospital★+▲○	Gen	Church	210	185	53	1,643	7,233
Prospect Heights Hospital▲○	Gen	NPAssn	148	118	39	1,598	5,813
St. Catherine's Hospital★+▲○	Gen	Church	287	240	57	1,967	7,806
St. Charles Hospital Orthopedic Clinic+▲	Orth	Church	60	50	..	...	224
St. John's Hospital★+▲○	Gen	Church	229	129	32	944	4,600
St. Mary's Hospital★+▲○	Gen	Church	252	191	68	1,829	5,787
St. Peter's Hospital★▲	Gen	Church	175	133	30	592	2,760
Samaritan Hospital	Gen	Church	85	53	27	1,161	2,412
Shore Road Hospital	Gen	Corp	80	62	22	957	2,802
Swedish Hospital	Gen	NPAssn	93	59	20	731	2,411
U. S. Naval Hospital★+▲	Gen	Navy	700	420	36	722	6,033
[illegible]nity Hospital★+	Gen	NPAssn	226	140	57	2,238	6,492
[illegible] Hospital	Gen	Vet	400	194	..	...	1,164
[illegible]	Gen	NPAssn	52	46	27	803	2,224
[illegible]	Gen	Indiv	20	10	..	5	320
[illegible]	Mat	Indiv	52	50	52	2,123	2,337
Wyckoff Heig[illegible]	Gen	NPAssn	167	120	23	1,135	4,922
Buffalo, 575,901—Erie							
Allied Hospitals of the Sisters of Charity							
Emergency Hospital▲	Gen	Church	173	139	..	...	4,851
Louise de Marillac Hosp.▲	Unit of Sisters of Charity Hospital						
Sisters of Charity Hosp.★+▲○	Gen	Church	275	266	100	4,237	10,793
Buffalo Columbus Hospital	Gen	NPAssn	113	95	14	552	3,682
Buffalo Eye and Ear Hospital and Wettlaufer Clinic	ENT	NPAssn	14	9	..	...	728
Buffalo General Hosp.★+▲○	Gen	NPAssn	450	402	50	1,331	10,757
Buffalo State Hospital+▲○	Ment	State	2,682	2,610	..	...	653
Children's Hospital+▲○	MatCh	NPAssn	270	218	70	2,789	11,753
Deaconess Hospital★+▲○	Gen	NPAssn	282	231	51	1,852	9,261
Edward J. Meyer Memorial Hospital★+▲○	GenTb	County	858	780	32	793	10,523
Emergency Hospital▲	See Allied Hospitals of the Sisters of Charity						
Lafayette General Hospital	Gen	NPAssn	64	34	17	317	1,681
Louise de Marillac Hospital▲	See Allied Hospitals of the Sisters of Charity						
Mercy Hospital★▲○	Gen	Church	198	181	60	1,962	6,662
Millard Fillmore Hosp.★+▲○	Gen	NPAssn	337	361	107	4,133	13,201
Roswell Park Memorial Institute+▲	Cancer	State	103	97	..	...	1,811
St. Francis Hospital	Gen	Church	53	43	..	...	2,079
Sisters of Charity Hospital	See Allied Hospitals of the Sisters of Charity						
U. S. Marine Hospital▲	Gen	USPHS	80	70	..	...	1,396
Callicoon, 850—Sullivan							
Callicoon Hospital	Gen	Indiv	20	11	5	132	436
Cambridge, 1,572—Washington							
Mary McClellan Hospital+▲⊙	Gen	NPAssn	100	68	15	290	1,578
Canandaigua, 8,321—Ontario							
Brigham Hall Hospital	N&M	Corp	79	67	..	...	100
Frederick Ferris Thompson Hospital▲	Gen	NPAssn	101	89	20	599	3,092
Veterans Admin. Hospital+▲	Ment	Vet	1,742	1,601	..	...	737
Cassadaga, 514—Chautauqua							
Newton Memorial Hospital▲	TB	County	174	127	..	...	144
Castle Point, 23—Dutchess							
Veterans Admin. Hospital+▲	TB	Vet	619	565	..	...	604
Catskill, 5,429—Greene							
Memorial Hospital of Greene County▲	Gen	StateCo	70	57	15	533	2,352
Central Islip, 2,000—Suffolk							
Central Islip State Hosp.+▲○	Ment	State	8,246	7,796	..	...	1,625
Central Valley, 1,019—Orange							
Falkirk in the Ramapos	N&M	Indiv	40	29	..	...	16
Chatham, 2,254—Columbia							
Community Hospital	Gen	Indiv	35	8	5	54	286
Chenango Bridge, 100—Broome							
Broome County Tuberculosis Hospital▲	TB	County	94	80	..	...	122
Clifton Springs, 1,413—Ontario							
Clifton Springs Sanitarium and Clinic+▲	Gen	NPAssn	275	148	10	280	5,661
Cohoes, 21,955—Albany							
Cohoes Hospital	Gen	NPAssn	61	43	12	342	1,651
Cold Spring, 1,897—Putnam							
Julia L. Butterfield Memorial Hospital	Gen	NPAssn	45	16	5	117	634
Cooperstown, 2,599—Otsego							
Mary Imogene Bassett Hospital★+▲	Gen	NPAssn	100	81	10	460	2,864
Copiague, 2,000—Suffolk							
Nassau Suffolk General Hosp.	Gen	Indiv	45	32	..	...	1,596
Corning, 16,212—Steuben							
Corning Hospital▲	Gen	NPAssn	108	76	25	1,013	3,715
Cornwall, 1,978—Orange							
Cornwall Hospital▲	Gen	NPAssn	66	35	15	395	1,412
Cortland, 15,881—Cortland							
Cortland County Hospital▲	Gen	NPAssn	130	96	26	846	3,944
VerNooy Sanitarium	Gen	Indiv	18	15	7	356	682
Croton on Hudson, 3,843—Westchester							
Croton Manor Sanitarium	N&M	Indiv	94	74	..	...	264
Cuba, 1,699—Allegany							
Cuba Memorial Hospital	Gen	NPAssn	28	28	10	296	1,106
Dannemora, 4,830—Clinton							
Clinton Prison General Hosp.	Inst	State	173	111	..	...	867
Dannemora State Hospital	Ment	State	1,270	1,130	..	...	105
Dansville, 4,967—Livingston							
Dansville General Hospital	Gen	NPAssn	50	35	11	290	1,415
Delhi, 1,841—Delaware							
Delhi Hospital	Gen	NPAssn	16	9	6	133	476
Dobbs Ferry, 5,883—Westchester							
Dobbs Ferry Hospital▲	Gen	NPAssn	46	33	10	188	1,133
Dunkirk, 17,713—Chautauqua							
Brooks Memorial Hospital▲	Gen	NPAssn	113	76	27	729	3,043
Elizabethtown, 640—Essex							
Community Hospital	Gen	NPAssn	14	8	6	74	188
Ellenville, 4,000—Ulster							
Veterans Memorial Hospital	Gen	NPAssn	22	18	8	218	671
Elmira, 45,106—Chemung							
Arnot-Ogden Memorial Hospital★▲○	Gen	NPAssn	185	142	32	1,609	6,028
Chemung County Sanatorium	TB	County	41	37	..	...	33
St. Joseph's Hospital★▲○	Gen	Church	253	196	38	731	6,288
Endicott, 17,702—Broome							
Bradford Lord Memorial Hospital	Unit of Binghamton City Hospital						
Ideal Hospital★▲	Gen	City	96	88	30	909	2,891
Farmingdale, 3,524—Nassau							
Nassau County Tuberculosis Hospital+▲	TB	County	357	252	..	...	251
Far Rockaway,—Queens							
Hospital for Joint Diseases,	Unit of Hosp. for Joint Diseases, N. Y. C.						
[illegible]	Gen	Church	128	80	30	849	3,513
Genesee Country Memorial Hospital	Gen	NPAssn	16	7	6	116	263
Flushing,—Queens							
Flushing Hospital and Dispensary★▲○	Gen	NPAssn	259	217	110	2,918	9,740
Parsons Hospital	Gen	Corp	60	56	20	788	2,839
Fort Totten,—Queens							
Station Hospital	Gen	Army	75	41	30	312	1,209
Freeport, 20,410—Nassau							
Freeport Hospital	Gen	Corp	32	23	20	456	1,559
Fulton, 13,362—Oswego							
Albert Lindley Lee Memorial Hospital	Gen	City	61	47	16	631	3,682
Gabriels, 300—Franklin							
Sanatorium Gabriels▲	TB	Church	150	128	..	...	147

Key to symbols and abbreviations is on page 1396

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Geneva, 15,555—Ontario							
Geneva General Hospital▲	Gen	NPAssn	102	92	25	683	2,867
Glen Cove, 12,415—Nassau							
North Country Community Hospital▲	Gen	NPAssn	100	88	20	1,023	3,641
Glens Falls, 18,836—Warren							
Glens Falls Hospital▲	Gen	NPAssn	150	152	51	1,736	6,636
Westmount Sanatorium	TB	County	48	36	..	...	41
Gloversville, 23,329—Fulton							
Nathan Littauer Hospital▲○	Gen	NPAssn	133	113	30	1,103	4,391
Goshen, 3,073—Orange							
Goshen Hospital	Gen	NPAssn	38	27	12	229	1,051
Interpines	N&M	Indiv	50	38	..	...	103
Gouverneur, 4,478—St. Lawrence							
Stephen B. Van Duzee Hosp.▲	Gen	NPAssn	31	18	12	417	823
Governors Island,—New York							
Station Hospital▲	Gen	Army	350	221	..	...	5,085
Gowanda, 3,156—Cattaraugus							
Townsend Hospital	*Gen*	NPAssn	23	16	10	431	1,264
Granville, 3,173—Washington							
Emma Laing Stevens Hosp.	Gen	NPAssn	19	12	12	198	436
Green Haven, 50—Dutchess							
Station Hospital	Gen	Army	100	*10*	..	...	1,436
Greenport, 3,259—Suffolk							
Eastern Long Island Hosp.	Gen	Corp	57	35	13	432	1,483
Harrison, 8,500—Westchester							
St. Vincent's Retreat	N&M	Church	200	175	..	...	*100*
Helmuth, 100—Erie							
Gowanda State Homeopathic Hospital†▲○	Ment	State	3,018	2,789	..	...	760
Hempstead, 20,856—Nassau							
Meadowbrook Hospital*†▲	Gen	County	250	210	21	441	4,941
Herkimer, 9,617—Herkimer							
Herkimer Memorial Hospital	Gen	NPAssn	52	47	18	331	1,636
Holtsville, 260—Suffolk							
Suffolk Sanatorium	TB	County	110	95	..	...	71
Hornell, 15,649—Steuben							
Bethesda Hospital▲	Gen	NPAssn	45	32	10	255	1,124
St. James Mercy Hospital▲○	Gen	Church	102	81	23	482	4,859
Hudson, 11,517—Columbia							
Hudson City Hospital▲○	Gen	NPAssn	100	98	18	648	3,933
Huntington, 11,250—Suffolk							
Huntington Hospital▲	Gen	NPAssn	81	*66*	*17*	*941*	*3,469*
Ilion, 8,927—Herkimer							
Ilion Hospital	Gen	NPAssn	53	42	18	472	1,711
Irvington, 3,272—Westchester							
[illegible]	ChilCard	NPAssn	100	96	..	...	54
[illegible] y†▲	*Inst*	*NPAssn*	151	22	..	...	1,890
[illegible] emorial [illegible]	TB	State	250	174	..	...	275
[illegible] emorial Hospital▲	Gen	NPAssn	142	105	28	1,308	4,653
Jackson Heights,—Queens							
Physicians Hospital	Gen	Corp	127	120	41	2,027	6,216
Jamaica,—*Queens*							
*Jamaica Hospital**†▲	Gen	NPAssn	185	171	10	1,781	6,359
Mary Immaculate Hosp.*†▲○	Gen	*Church*	*273*	272	63	2,216	8,380
Memorial Hospital	Gen	Indiv	75	50	9	1,122	3,314
Queens General Hosp.*†▲⊙	Gen	City	705	619	52	1,815	14,625
Triboro Hospital†▲⊙	TB	City	557	448	..	...	159
Jamestown, 42,638—Chautauqua							
Jamestown General Hospital▲	Gen	City	137	107	22	608	4,161
Woman's Christian Association Hospital▲○	Gen	NPAssn	137	122	33	1,313	5,112
Johnson City, 18,039—*Broome*							
Charles S. Wilson Memorial Hospital*†▲○	Gen	NPAssn	360	287	40	1,727	9,304
Katonah, 1,800—Westchester							
Four Winds	N&M	Corp	37	25	..	...	43
Pinewood Sanitarium†	N&M	Part	83	54	..	...	150
Kew Gardens,—Queens							
Kew Gardens General Hosp.	Gen	Indiv	164	118	58	1,866	6,147
[illegible] p.†▲○	Ment	State	7,056	6,644	..	...	1,717
[illegible] (Our Lady of Victory Sanit.)▲○	Gen	Church	92	78	18	546	2,778
Kingston Hospital†▲○	Gen	NPAssn	118	89	15	665	1,710
Ulster County *Tuberculosis Hospital*▲	TB	County	57	51	..	...	80
Lackawanna, 24,058—Erie							
Moses Taylor Hospital▲	Indus	NPAssn	28	10	..	...	207
Our Lady of Victory Hosp.*▲	Gen	Church	175	156	41	1,521	5,090
Lake Kushaqua, 200—Franklin							
Stony Wold Sanatorium▲	TB	NPAssn	145	97	..	...	79
Lake Placid, 3,136—Essex							
Lake Placid General Hosp.	Gen	City	19	12	6	88	454
Liberty, 3,788—Sullivan							
Maimonides Hospital	Gen	NPAssn	38	26	6	261	1,055
Workmen's Circle Sanatorium	TB	NPAssn	75	42	..	...	77
Little Falls, 10,163—Herkimer							
Little Falls Hospital▲	Gen	NPAssn	85	64	17	813	2,932
Livingston, 466—Columbia							
Potts Memorial Institute▲	TB	NPAssn	61	51	..	...	31
[illegible]	Gen	City	142	106	30	1,062	4,525
[illegible] †▲	TB	County	200	168	..	...	171
Long Beach, 9,036—Nassau							
Long Beach Memorial Hospital▲	Gen	NPAssn	53	35	7	194	1,429

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Long Island City,—Queens							
Astoria Sanatorium	Gen	*Indiv*	26	21	10	884	1,232
Boulevard Hospital	Gen	*Corp*	125	90	38	2,220	6,232
River Crest Sanitarium†	N&M	*Corp*	132	*102*	..	...	531
St. John's Long Island City *Hospital**†▲○	Gen	Church	229	186	39	1,233	6,159
Lowville, 3,578—Lewis							
Lewis County General Hosp.	Gen	StateCo	46	25	18	410	1,584
Lyons, 3,863—Wayne							
Edward J. Barber Hospital	Gen	*Indiv*	25	*20*	*3*	153	658
Lyons Hospital	Gen	*Corp*	25	18	6	172	711
Malone, 8,743—Franklin							
Alice Hyde Memorial Hosp.▲	Gen	NPAssn	80	61	16	550	2,300
Marcy, 800—Oneida							
Marcy State Hospital†▲○	Ment	*State*	2,912	2,528	..	...	614
Margaretville, 812—Delaware							
Margaretville Hospital	Gen	NPAssn	52	29	12	156	1,474
Massena, 11,328—St. Lawrence							
Massena Memorial Hospital	Gen	City	50	45	20	576	2,540
Medina, 5,871—Orleans							
Medina Memorial Hospital▲	Gen	*NPAssn*	*36*	28	*10*	*399*	*2,716*
Middle Grove, 160—Saratoga							
Saratoga County Tuberculosis *Hospital*▲	TB	County	*60*	*40*	..	...	41
[illegible] 'lemo- [illegible] ▲	Gen	NPAssn	90	81	15	298	2,913
Middletown Sanitarium and *Hospital*	Gen	Part	50	38	8	402	1,492
Middletown State Homeo*pathic Hospital*†▲○	*Ment*	*State*	3,454	3,320	..	...	432
Mineola, 10,064—Nassau							
*Nassau Hospital**†▲	Gen	NPAssn	227	187	50	1,557	7,055
Mineville, 600—Essex							
Mineville Hospital	Indus	NPAssn	18	12	..	...	321
Mitchell Field, Nassau—							
Station Hospital▲	Gen	Army	250	116	12	327	2,728
Monticello, 3,737—Sullivan							
Hamilton Avenue Hospital	Gen	Indiv	21	17	4	146	556
Monticello Hospital	Gen	NPAssn	26	25	5	121	1,203
Montour Falls, 1,315—Schuyler							
Shepard Relief Hospital	Gen	NPAssn	31	23	12	285	1,002
[illegible] ster							
[illegible] p.▲	Gen	NPAssn	95	91	25	550	3,713
[illegible] ston							
Mount Morris Tuberculosis Hospital†▲⊙	TB	State	250	167	..	...	343
Mount Vernon, 67,362—Westchester							
Mount Vernon Hospital*†▲○	Gen	NPAssn	224	170	50	1,754	7,274
Newark, 9,646—Wayne							
Newark Hospital	Gen	*Indiv*	*26*	*28*	*8*	248	949
Newburgh, 31,883—Orange							
Estelle and Walter C. Odell Memorial Sanatorium	TB	County	50	35	..	...	40
St. Luke's Hospital*▲	*Gen*	*NPAssn*	*195*	131	32	966	5,762
Station Hospital	Gen	Army	119	11	..	...	665
New Rochelle, 58,408—Westchester							
New Rochelle Hospital*†▲○	Gen	NPAssn	309	267	60	1,606	8,887
New York City, 4,582,269—New York							
Babies Hospital†▲⊙	*Unit of Presbyterian Hospital*						
Beekman-Downtown Hosp.†▲	Gen	NPAssn	*96*	74	..	...	*1,809*
Bellevue Hospital*†▲○	Gen	City	*3,049*	*2,718*	*83*	*2,407*	*59,511*
Beth David *Hospital**▲	Gen	NPAssn	*169*	*127*	*27*	*722*	*4,005*
*Beth Israel Hospital**†▲○	Gen	NPAssn	326	256	80	2,780	8,829
Bronx Eye and Ear Infirmary†▲	ENT	*NPAssn*	54	25	..	...	*3,727*
Bronx Hospital*†▲	Gen	NPAssn	308	254	81	3,161	9,267
Bronx Maternity and Woman's Hospital	MatGyn	NPAssn	34	25	*40*	*750*	*906*
Charles B. Towns Hospital	Drug	Corp	33	30	..	...	1,189
Columbus *Hospital**▲	*Gen*	Church	*260*	184	*40*	*594*	*5,841*
Columbus *Hospital Extension*	See Mother Cabrini Memorial Hospital						
Doctors Hospital†▲	Gen	NPAssn	271	213	62	1,757	*6,456*
Endaural Hospital	ENT	Indiv	33	22	..	...	866
Flower and Fifth Avenue Hospitals*†▲○	Gen	NPAssn	337	324	82	*1,792*	*11,634*
Fordham Hospital*†▲○	Gen	City	471	456	34	1,464	*12,718*
French Hospital*†▲	Gen	NPAssn	251	203	62	1,562	*6,311*
Goldwater *Memorial* Hospital*†▲	GenChr	City	1,660	1,543	..	...	1,372
Gotham Hospital	*Gen*	Corp	*101*	*67*	*21*	*526*	3,312
Gouverneur Hospital*†▲	Gen	City	*200*	*183*	*20*	...	3,833
Harkness Pavilion	Unit of Presbyterian Hospital						
Harlem Eye and Ear Hosp.†▲	ENT	NPAssn	*10*	7	..	...	2,496
Harlem Hospital*†▲○	Gen	City	635	686	162	*3,580*	*20,768*
Home and Hospital of *the* Daughters of Jacob	InstGen	NPAssn	513	243	..	...	122
Home for Aged and Infirm Hebrews▲	InstGen	NPAssn	*66*	*64*	..	...	103
Hosp. for Joint Diseases*†▲	*Gen*	*NPAssn*	*262*	*295*	..	...	*5,580*
Hosp. for Special Surgery†▲	Orth	*NPAssn*	*235*	*178*	..	...	*3,233*
Hospital of the Rockefeller Institute for Medical Research▲	Gen	NPAssn	60	17	..	...	120
Jewish Maternity Hospital	Unit of Beth Israel Hospital						
[illegible] *†▲	Gen	NPAssn	185	150	44	1,738	5,733
[illegible] *†▲	Gen	NPAssn	180	145	..	29	4,044
[illegible] *▲	*Gen*	*NPAssn*	*203*	*179*	*29*	*1,369*	*5,435*
Leff-Central Maternity Hosp.	Mat	Indiv	*39*	*38*	*39*	*1,890*	*1,798*
*Lenox Hill Hospital**†▲○	Gen	NPAssn	552	455	68	2,254	*12,649*
Le Roy Sanitarium	Gen	Corp	51	41	20	405	1,527

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Lexington Hospital	Gen	Corp	78	55	14	289	2,917
Lincoln Hospital★+▲○	Gen	City	393	428	70	2,087	12,770
Lutheran Hospital	Gen	NPAssn	120	86	30	723	3,013
Lying-In Hospital+▲⊙	Unit of New York Hospital						
Manhattan Eye, Ear and Throat Hospital+▲	ENT	NPAssn	210	129	..	...	10,978
Manhattan General Hospital	Gen	Corp	300	298	50	2,335	7,001
Manhattan Maternity and [illegible]	Unit of New York Hospital						
[illegible]▲○	Ment	State	3,981	3,921	..	...	2,303
[illegible]		Corp	111	56	..	...	2,127
[illegible]▲		NPAssn	212	105	..	...	5,300
[illegible]▲		City	1,060	1,018	40	1,413	10,724
Midtown [illegible]▲		NPAssn	61	47	..	2	2,060
Misericordia Hospital★▲○		Church	181	130	55	1,519	5,237
Montefiore Hospital for Chronic Diseases★+▲	GenTb	NPAssn	573	512	..	...	2,839
Morrisania City Hosp.★+▲⊙	Gen	City	466	494	45	1,304	13,326
Mother Cabrini Memorial Hospital★▲	Gen	Church	175	89	30	758	3,612
Mount Eden Hospital	Gen	Indiv	40	26	20	609	2,566
Mount Sinai Hospital★+▲○	Gen	NPAssn	805	631	..	...	16,171
Neurological Institute of New York+▲⊙	Unit of Presbyterian Hospital						
New York City Cancer Institute Hospital+▲	Cancer	City	210	189	..	...	743
New York City Hospital★+▲	Gen	City	850	672	30	1,113	10,167
New York Eye and Ear Infirmary+▲	ENT	NPAssn	185	128	..	...	6,517
New York Foundling Hosp.+	Chil	Church	278	63	..	...	763
New York Hospital★+▲○	Gen	NPAssn	1,017	858	121	3,929	20,172
New York Infirmary★+▲	Gen	NPAssn	121	81	40	1,055	2,899
New York Nursery and Childs Hospital	Unit of New York Hospital						
New York Orthopaedic Dispensary and Hospital+▲	Unit of Presbyterian Hospital						
New York Polyclinic Medical School and Hospital★+▲	Gen	NPAssn	374	237	37	1,314	9,301
New York Post-Graduate Medical School and Hosp.★+▲○	Gen	NPAssn	460	338	..	...	9,130
New York Skin and Cancer Hospital	Unit of New York Post-Graduate Medical School and Hospital						
New York State Psychiatric Institute and Hospital+▲⊙	Ment	State	150	121	..	...	249
Park East Hospital	Gen	Corp	124	100	24	1,224	5,561
Parkway Hospital	Gen	NPAssn	75	39	15	536	2,004
Park West Hospital	Gen	Corp	85	58	12	548	4,230
Payne Whitney Psychiatric Clinic▲	Unit of New York Hospital						
Presbyterian Hospital★+▲○	Gen	NPAssn	1,419	1,185	144	3,238	29,670
Psychiatric Pavilion	Unit of Bellevue Hospital						
Reconstruction Hospital	Unit of New York Post-Graduate Medical School and Hospital						
Riker's Island Hospital▲	Chr	City	236	104	..	...	2,085
Roosevelt Hospital★+▲○	Gen	NPAssn	375	290	..	...	8,703
St. Ann's Maternity Hospital	Unit of New York Foundling Hospital						
St. Barnabas Hospital for Chronic Diseases▲	Chr	NPAssn	470	450	..	...	394
St. Clare's Hospital★+▲	Gen	Church	441	277	70	1,751	9,089
St. Elizabeth's Hospital▲	Gen	Church	155	126	33	947	4,743
St. Francis Hospital★▲	Gen	Church	355	275	54	2,000	7,860
St. Joseph's Hospital for Chest Di[illegible]▲	TB	Church	295	283	..	...	686
St. [illegible]▲	Gen	NPAssn	520	411	..	...	9,086
St. [illegible]▲	Gen	Church	544	576	100	2,268	13,116
Set[illegible]	TB	City	266	266	..	...	310
Set[illegible] for Women and Children)▲	TB	City	247	247	..	...	446
Sloane Hosp. for Women+▲⊙	Unit of Presbyterian Hospital						
Square Sanitarium	Gen	Corp	150	127	60	2,513	7,087
Sydenham Hospital★+▲	Gen	NPAssn	209	174	42	1,186	5,614
Union Hospital	Gen	NPAssn	111	73	22	616	2,835
U. S. Marine Hospital+▲	Gen	USPHS	453	312	..	...	4,166
University Heights Sanitarium	Gen	Corp	69	39	..	490	2,439
Veterans Admin. Hospital+▲	Gen	Vet	1,665	1,493	..	...	10,168
[illegible]	N&M	Indiv	91	98	..	...	586
[illegible]▲	Iso	City	433	179	..	...	5,743
[illegible]	Gen	Church	49	30	24	531	1,329
Woman's Hospital	GynOb	NPAssn	215	152	100	2,862	5,334
Niagara Falls, 78,029—Niagara							
Mount St. Mary's Hosp.▲○	Gen	Church	185	152	44	1,515	6,505
Niagara Falls Memorial Hos[illegible]▲	Gen	NPAssn	262	172	48	1,519	7,266
N[illegible]							
[illegible]	[illegible]	Vet	2,767	2,666	..	...	678
N[illegible]							
De Gra[illegible]	[illegible]	City	87	56	35	811	2,900
[illegible]ospital	Gen	NPAssn	81	54	15	553	2,027
Nyack Hospital▲	Gen	Corp	91	73	20	666	2,850
Ogdensburg, 16,346—St. Lawrence							
A. Barton Hepburn Hosp.▲○	Gen	Church	160	143	30	599	4,678
St. Lawrence State Hosp.+▲○	Ment	State	2,244	2,049	..	...	373
Olean, [illegible]							
Mou[illegible]	Gen	Part	33	20	6	161	895
Olea[illegible]▲	Gen	NPAssn	85	76	24	699	2,923
Roc[illegible]▲	TB	County	40	38	..	...	22
St. [illegible]▲	Gen	Church	100	73	24	505	2,499
Oneid[illegible]							
Main [illegible]	Gen	Indiv	16	8	4	53	422
Oneida City Hospital▲	Gen	City	80	69	19	839	2,859

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Oneonta, 11,731—Otsego							
Aurelia Osborn Fox Memorial Hospital▲	Gen	NPAssn	68	61	17	521	2,348
Homer Folks Tuberculosis Hospital+▲⊙	TB	State	250	180	..	...	264
Orangeburg, 750—Rockland							
Rockland State Hospital+▲○	Ment	State	6,822	6,120	..	...	1,675
Ossining, 15,996—Westchester							
Ossining Hospital▲	Gen	NPAssn	65	58	12	362	2,213
Sing Sing Prison Hospital▲	Inst	State	84	35	..	...	907
Stony Lodge Sanitarium+	N&M	Indiv	32	22	..	...	96
Oswego, 22,062—Oswego							
Oswego Hospital	Gen	NPAssn	70	54	13	838	2,706
Otisville, 889—Orange							
Municipal Sanatorium+▲	TB	City	420	373	..	...	510
Peekskill, 17,311—Westchester							
Peekskill Hospital	Gen	NPAssn	79	50	25	513	2,270
Penn Yan, 5,308—Yates							
Soldiers and Sailors Memorial Hospital	Gen	NPAssn	50	32	10	286	1,448
Perrysburg, 375—Cattaraugus							
J. N. Adam Memorial Hosp.▲	TB	City	412	341	..	...	319
Philmont, 1,679—Columbia							
Columbia County Tuberculosis Sanatorium	TB	County	72	30	..	...	52
Plattsburg, 16,351—Clinton							
Champlain Valley Hospital▲○	Gen	NPAssn	106	106	15	567	3,981
Physicians Hospital▲	Gen	NPAssn	125	84	36	564	3,519
Pomona, 59—Rockland							
Summit Park Sanatorium▲	TB	County	91	65	..	...	70
Port Chester, 23,073—Westchester							
Brooklea Farm	N&M	Indiv	18	18	..	...	20
Mary Harkness Convalescent Home	Unit of Presbyterian Hosp., New York City						
St. Luke's Convalescent Hosp.	See Greenwich, Conn.						
United Hospital★▲	Gen	NPAssn	182	136	32	1,390	5,839
Port Jefferson, 3,500—Suffolk							
John T. Mather Memorial Hospital▲	Gen	NPAssn	70	64	24	728	3,065
St. Charles Hospital for Crippled Children+▲	Orth	Church	200	176	..	...	202
Wharton Memorial Institute	Unit of St. Charles Hospital for Crippled Children						
Port Jervis, 9,749—Orange							
St. Francis Hospital▲	Gen	Church	58	38	11	246	1,513
Potsdam, 4,821—St. Lawrence							
Potsdam Hospital▲	Gen	NPAssn	75	78	22	452	2,486
Poughkeepsie, 40,478—Dutchess							
Hudson River State Hosp.+▲○	Ment	State	4,843	4,741	..	...	835
St. Francis Hospital★▲○	Gen	Church	107	100	25	431	3,071
Samuel and Nettie Bowne Hospital	TB	NPAssn	50	42	..	...	118
Samuel W. Bowne Memorial Hospital▲	TB	City	135	127	..	...	98
Vassar Brothers Hospital★▲○	Gen	NPAssn	207	180	43	1,293	6,343
Queens Village,—Queens							
Creedmoor State Hospital+▲○	Ment	State	5,193	5,074	..	...	1,298
Ray Brook, 550—Essex							
Ray Brook State Tuberculosis Hospital+▲	TB	State	375	301	..	...	343
Rhinebeck, 1 697—Dutchess							
Northern Dutchess Health Service Center▲	Gen	NPAssn	35	41	8	214	1,090
Richland, [illegible]60—Oswego							
Oswego County Tuberculosis Hospital▲	TB	County	95	56	..	...	54
R[illegible]							
[illegible]▲	Gen	NPAssn	226	199	36	1,267	8,632
[illegible]▲	Gen	NPAssn	206	169	60	1,901	6,635
[illegible]▲	TB	County	350	327	..	...	332
Monroe County Hosp[illegible]▲	Gen	County	500	433	20	...	2,124
Park Avenue Hospital▲○	Gen	NPAssn	92	75	20	586	3,360
Rochester General Hosp.★+▲○	Gen	NPAssn	324	300	63	2,841	12,283
Rochester Municipal Hosp.★+▲	See Strong Memorial-Rochester Municipal Hospitals						
Roc[illegible]▲	Ment	State	3,264	3,138	..	...	746
St. [illegible]▲	Gen	Church	325	314	65	2,559	12,472
Stro[illegible] Mu[illegible]▲	Gen	NPAssnCy	643	550	72	2,163	17,093
Rockaway Beach,—Queens							
Rockaway Beach Hospital▲	Gen	NPAssn	100	72	15	458	3,114
[illegible]	TB	USPHS	300	269	..	...	434
Mercy Hospital▲	Gen	Church	130	122	60	2,624	5,621
South Nassau Communities [illegible]▲	Gen	NPAssn	115	104	40	1,623	4,724
Ro[illegible]							
O[illegible]	Gen	County	180	178	5	85	1,560
R[illegible] Memorial Hospital▲	Gen	City	83	89	28	1,260	5,005
Rome State School	MeDe	State	4,027	4,027	..	...	290
Roslyn, 972—Nassau							
St. Francis Sanatorium for Car[illegible]+	Card	Church	163	150	..	...	144
Roslyn [illegible]							
Roslyn [illegible]	Gen	Corp	52	27	16	386	1,359
St. Albans,—Queens							
U. S. Naval Hospital★+▲	Gen	Navy	1,550	1,453	..	...	10,837
Salamanca, 9,011—Cattaraugus							
City Hospital	Gen	City	51	40	14	459	2,794

Key to symbols and abbreviations is on page 1396

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Salisbury Center, 331—Herkimer							
Pine Crest Sanatorium▲	TB	County	65	57	..	...	45
Saranac Lake, 7,138—Franklin							
General Hospital▲	Gen	NPAssn	50	35	8	259	1,719
Northwoods Sanatorium	TB	NPAssn	28	25	..	...	26
Prescott House	TB	NPAssn	20	20	..	...	21
Will [illegible]▲	TB	NPAssn	80	65	..	...	48
Sarato[illegible]							
Sarat[illegible]▲	Gen	NPAssn	90	75	17	427	2,173
Veterans Admin. Hospital	Gen	Vet	50	28	..	...	293
Schenectady, 87,549—Schenectady							
Eastern New York Orthopedic Hosp.-School "Sunny View"	Orth	NPAssn	35	35	..	...	52
Ellis Hospital★+▲○	Gen	NPAssn	400	313	85	1,047	12,132
Schenectady County Tuberculosis Hospital (Glenridge *Sanatorium)*+▲	TB	County	131	112	..	...	112
Seneca Falls, 6,452—Seneca							
Seneca Falls Hospital	Gen	City	31	32	12	303	1,111
Sidney, 3,012—Delaware							
The Hospital	Gen	City	29	33	13	313	1,319
Sodus, 1,513—Wayne							
J. F. Myers Hospital	Gen	Indiv	25	17	7	191	497
Sonyea, 500—Livingston							
Craig Colony○	Epil	State	2,311	2,242	..	...	205
Southampton, 3,818—Suffolk							
Southampton Hospital▲○	Gen	NPAssn	100	69	20	611	3,275
Stamford, 1,088—Delaware							
Bathgate Hospital	Gen	NPAssn	18	8	6	96	401
Stapleton (Staten Island P.O.),—Richmond							
U. S. Marine Hospital★+▲	Gen	USPHS	1,027	731	23	289	12,743
Staten Island, 174,441—Richmond							
Richmond Borough Hospital	Iso	City	49	12	..	...	295
Richmond Memorial Hosp.+▲	Gen	NPAssn	100	69	18	469	2,186
St. Vincent's Hospital★+▲	Gen	Church	211	202	35	1,527	6,517
Seaside Hospital of St. John's Guild	Unit of Hospital for Special Surgery, New York City						
Sea View Hospital+▲⊙	TB	City	1,996	1,411	12	1	1,602
Staten Island Hospital★▲	Gen	NPAssn	217	155	62	1,917	5,985
Station Hospital	Gen	Army	416	191	..	...	2,686
Veterans Admin. Hospital+▲	Gen	Vet	1,000	...	..	Estab. 1947	
Suffern, 3,768—Rockland							
Good Samaritan Hospital▲	Gen	Church	92	72	32	1,003	3,844
Sunmount, 50—Franklin							
Veterans Admin. Hospital▲	TB	Vet	573	479	..	...	869
Syracuse, 205,967—Onondaga							
[illegible]	Iso	City	75	30	..	...	975
[illegible]	Gen	NPAssn	220	218	30	2,281	7,592
[illegible]	Gen	NPAssn	127	114	43	1,503	4,612
Hospital of the Good Shepherd★+▲	Gen	NPAssn	196	158	..	...	4,458
Onondaga General Hospital	Gen	NPAssn	75	41	10	106	1,223
Onondaga Sanatorium▲	TB	County	229	206	..	...	216
Peoples Hospital	Gen	NPAssn	28	18	5	42	544
St. Joseph Hospital▲○	Gen	Church	207	171	43	1,013	6,052
St. Mary's Maternity Hospital and Children's Home	Mat	Church	39	20	29	632	774
Syracuse Memorial Hosp.★+▲⊙	Gen	NPAssn	276	274	60	2,417	11,217
Syracuse Psychopathic Hospital+▲	Ment	State	60	57	..	...	681
Twin Elms	N&M	Part	18	15	..	...	149
Tarrytown, 6,874—Westchester							
Tarrytown Hospital▲	Gen	NPAssn	57	33	13	369	1,665
Thiells, 700—Rockland							
Letchworth Village	MeDe	State	3,792	4,145	6	14	496
Ticonderoga, 3,402—Essex							
Moses-Ludington Hospital▲	Gen	NPAssn	47	36	6	282	1,281
Troy, 70,304—Rensselaer							
Leonard Hospital▲	Gen	NPAssn	135	112	28	1,025	3,842
Marshall Sanitarium	N&M	NPAssn	60	58	..	...	214
Price Memorial Hospital	Unit of Samaritan Hospital						
St. Joseph's Maternity Hosp.	Mat	Church	32	16	24	480	585
Samaritan Hospital★+▲○	Gen	NPAssn	177	153	35	1,338	4,367
Troy Hospital★▲	Gen	Church	241	179	28	745	5,725
Trudeau, 600—Essex							
Trudeau Sanatorium+▲⊙	TB	NPAssn	200	182	..	...	179
Tupper Lake, 5,451—Franklin							
Mercy General Hospital	Gen	Church	35	30	11	183	836
Tuxedo Park, 2,500—Orange							
Tuxedo Memorial Hospital▲	Gen	NPAssn	33	18	7	124	674
Utica, 100,518—Oneida							
Broadacres Sanatorium Oneida County Sanatorium▲	TB	County	182	110	..	...	144
Children's Hospital Home▲	Orth	NPAssn	40	36	..	...	135
Faxton Hospital▲○	Gen	NPAssn	128	97	27	937	4,357
Masonic Soldiers and Sailors Memorial Hospital	Gen	NPAssn	170	123	..	...	341
Oneida County Hospital	Gen	County	128	41	14	110	2,904
St. Elizabeth Hospital▲○	Gen	Church	178	179	37	1,100	7,398
St. Luke's Home and Hosp.▲	Gen	Church	123	89	20	924	3,892
Utica Memorial Hospital▲○	Gen	NPAssn	81	76	25	567	3,491
Utica State Hospital+▲○	Ment	State	1,823	1,760	..	...	521
Valhalla, 2,200—Westchester							
[illegible]	Gen	County	800	498	15	208	4,470
[illegible]mity [illegible]	Gen	StateCo	122	98	20	599	2,893
Warwick, 2,534—Orange							
St. Anthony's Hospital▲	Gen	Church	50	22	12	145	806
Waterloo, 4,010—Seneca							
Waterloo Memorial Hospital	Gen	NPAssn	26	23	8	185	846

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Watertown, 33,385—Jefferson							
House of the Good Samaritan▲○	Gen	NPAssn	160	133	32	1,017	4,722
Jefferson County Sanat.+▲	TB	County	78	61	..	...	361
Mercy Hospital▲○	Gen	Church	137	114	23	689	4,820
Waverly, 5,450—Tioga							
Tioga County General Hosp.▲	Gen	NPAssn	70	64	15	447	2,244
Wayland, 1,795—Steuben							
[illegible]	Gen	Indiv	18	12	4	157	706
[illegible]	Gen	City	55	44	10	527	2,003
[illegible]▲	Ment	State	9,663	9,661	..	...	1,620
Westfield Memorial Hospital	Gen	NPAssn	24	17	10	285	839
West Haverstraw, 2,533—Rockland							
Rehabilitation Hospital+▲	Orth	State	250	204	..	...	249
West Point,—Orange							
Stati[illegible]	Gen	Army	253	104	14	104	4,073
White [illegible]							
Burk[illegible]	onv	NPAssn	244	193	..	...	3,451
New [illegible] Division+▲⊙	N&M	NPAssn	301	263	..	...	281
St. Agnes Hospital★▲	Gen	Church	138	100	39	762	3,594
White Plains Hospital★+▲○	Gen	NPAssn	259	141	30	854	6,126
Willard, 600—Seneca							
[illegible]l+▲○	Ment	State	3,059	2,930	..	...	452
[illegible] Hosp.+▲○	Ment	State	4,686	4,397	..	...	533
St. Anthony's Hospital▲	TB	Church	380	363	..	...	570
Wynantskill, 200—Rensselaer							
Pawling Sanatorium	TB	County	116	83	..	...	76
Yaphank, 350—Suffolk							
Suffolk Home and Infirmary	Chr	County	263	197	..	...	166
Yonkers, 142,589—Westchester							
Gray Oaks Hospital	TB	City	45	36	..	...	43
House of Rest at Sprain Ridge	TB	NPAssn	76	64	..	...	107
St. John's Riverside Hosp.★▲○	Gen	NPAssn	185	160	32	1,103	5,869
St. Joseph's Hospital★▲	Gen	Church	168	137	25	674	4,111
Yonkers General Hospital★▲	Gen	NPAssn	143	118	34	955	5,587
Yonkers *Professional Hosp.*	Gen	Corp	164	94	36	722	3,753

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Albany, 130,577—Albany							
Albany's Hospital for Incurables	Incur	NPAssn	100	90	..	...	44
St. Margaret's House and Hospital	Inst	NPAssn	55	42	..	...	46
Albion, 4,660—Orleans							
Albion State Training School	MeDe	State	460	259	..	...	87
Orleans County Hospital	InstGen	County	32	14	..	...	50
Alden, 934—Erie							
Erie County Penitentiary Hospital	Inst	County	27	8	..	...	83
Alexandria Bay, 1,748—Jefferson							
Noble Foundation Hospital	Gen	City	13	11	3	122	474
Bainbridge, 1,450—Chenango							
Bainbridge Hospital	Gen	Indiv	14	5	6	42	166
Bedford Hills, 2,000—Westchester							
Westfield State Farm	Inst	State	48	47	..	...	1,129
Binghamton, 78,309—Broome							
Binghamton Training School	MeDe	Indiv	53	51	..	...	7
Brooklyn, 2,698,285—Kings							
Esplanade Private Home for Chronics and Convalescents	ConvChr	Part	46	45	..	...	102
Menorah Home and Hospital for Aged and Infirm	Chr	NPAssn	150	48	..	...	50
Buffalo, 575,901—Erie							
Ingleside Home and Hosp.	Mat	NPAssn	10	...	20	172	228
Eastview, 1,000—Westchester							
Solomon and Betty Loeb Memorial Home for Convalescents	Conv	NPAssn	108	80	..	...	1,335
Elmira, 45,106—Chemung							
Elmira Reformatory Hospital	Inst	State	97	15	..	...	1,033
Far Rockaway,—Queens							
Wave Crest Convalescent Home	OrthChil	NPAssn	50	30	..	...	146
Hawthorne, 2,000—Westchester							
Rosary Hill Home	Cancer	Church	100	83	..	...	271
Industry, 350—Monroe							
Hospital of State Agriculture and Industrial School	Inst	State	50	17	..	...	1,628
Iroquois, 40—Erie							
Thomas Indian School Hosp.	Inst	State	40	9	..	...	504
Ithaca, 19,730—Tompkins							
Reconstruction Home	Orth	NPAssn	100	66	..	...	97
Johnson City, 18,039—Broome							
Springer Private Hospital	Mat	Indiv	23	16	14	128	170
Keene Valley, 511—Essex							
Keene Valley Neighborhood House and Hospital	Gen	NPAssn	11	6	5	79	178
Lake Ronkonkoma, 1,000—Suffolk							
Gary de Vabre Academy	MeDe	Indiv	18	15	..	...	17
Millbrook, 1,340—Dutchess							
Cardinal Hayes Memorial *Convalescent Home*	*Chil*	*Church*	75	65	..	...	491
Mount McGregor, 300—Saratoga							
New York State Veterans' Camp	Conv	State	450	237	..	...	2,031

Key to symbols and abbreviations is on page 1396

NEW YORK—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Napanoch, 750—Ulster							
Institution for Male Defective Delinquents	MeDe	State	28	11	..	...	592
Newark, 9,646—Wayne							
Newark State School	MeDe	State	2,722	2,590	..	...	261
New York City, 4,582,269—New York							
Beth Abraham Home for Incurables	Incur	NPAssn	318	315	..	...	67
Hebrew Convalescent Home	Conv	NPAssn	80	70	..	...	609
Home and Hospital of the Daughters of Israel	Inst	NPAssn	129	120	..	...	281
Home for Dependents	Inst	City	1,853	1,690	..	...	911
House of Calvary	Cancer	Church	140	109	..	...	407
House of the Holy Comforter	Chr	Church	91	67	..	...	23
Jacob Siegel Memorial Hosp.	Unit of Home and Hospital of the Daughters of Israel						
National Hospital for Speech Disorders	Speech	NPAssn	..	229	..	...	3,313
St. Andrew's Convalescent Hospital	Conv	Church	21	14	..	...	167
St. Mary's Hospital for Children	Conv	Church	60	54	..	...	489
St. Rose's Free Home for Incurable Cancer	Cancer	Church	91	81	..	...	235
Niagara Falls, 78,029—Niagara							
Niagara Falls Municipal Hosp.	Iso	City	36	12	..	...	115
Oceanside (Rockville Centre P.O.), 500—Nassau							
Oceanside Gardens Sanitarium	N&M	Corp	10	10	..	...	75
Ogdensburg, 16,316—St. Lawrence							
St. John's Hospital	Conv	Church	35	29	..	...	59
Onondaga, 325—Onondaga							
Onondaga County Hospital	Inst	County	230	217	..	...	463
Oxford, 1,713—Chenango							
New York State Woman's Relief Corps Home	Inst	State	71	68	..	...	167
Pelham, 1,918—Westchester							
Pelham Home for Children	Card	NPAssn	25	16	..	...	28
Pleasantville, 4,454—Westchester							
Pleasantville Cottage School	Inst	NPAssn	24	5	..	...	311
Poughkeepsie, 40,478—Dutchess							
Baldwin House (Vassar College Infirmary)	Inst	NPAssn	35	10	..	...	1,242
Poughkeepsie City Home Infirmary	Inst	City	51	42	..	...	75
Queens Village,—Queens							
Queens Village Sanatorium	Mat	Indiv	8	4	7	258	258
Rochester, 324,975—Monroe							
Convalescent Hospital for Children	Conv	NPAssn	52	34	..	...	82
Field Sanitarium	Conv	Indiv	27	10	..	...	18
Knorr Sanitarium	Conv	Indiv	28	25	..	...	28
Rye, 9,865—Westchester							
Halcyon Rest Sanitarium	N&M	Indiv	52	48	..	...	260
Saranac Lake, 7,138—Franklin							
Franklin Manor	TB	Indiv	14	10	..	...	20
Owens Private Sanatorium	TB	Indiv	18	16	..	...	25
Schenectady, 87,549—Schenectady							
Bellevue Maternity Home	Mat	Indiv	50	44	54	1,432	1,433
Schenectady City Hospital⊙	Iso	City	35	18	..	...	719
Schenectady County Home and Hospital	Inst	County	67	58	..	...	214
Springville, 2,849—Erie							
Bertrand Chaffee Hospital	Gen	NPAssn	25	..	8	...	...
Staten Island, 174,441—Richmond							
New York City Farm Colony	Inst	City	1,302	1,046	..	...	316
Sailors' Snug Harbor Hosp.	Gen	NPAssn	165	92	..	...	264
State School,—Orange							
Hospital of New York State Training School for Boys	Inst	State	25	6	..	...	621
Syracuse, 205,967—Onondaga							
Syracuse State School	MeDe	State	1,183	973	..	...	125
Tupper Lake, 5,451—Franklin							
American Legion Mountain Camp	Conv	NPAssn	54	28	..	...	116
Valhalla, 2,200—Westchester							
Blythedale Hospital and Home for Crippled Children	Orth	NPAssn	70	55	..	...	68
Wallkill, 800—Ulster							
Wallkill State Prison Hosp.	Inst	State	19	3	..	...	280
Wassaic, 350—Dutchess							
Wassaic State School▲	MeDe	State	4,387	4,442	7	8	369
Williamsville, 3,614—Erie							
Josephine Goodyear Convalescent Home	Chil	NPAssn	60	50	..	...	108
[illegible]							
[illegible] for [illegible]	MeDe	State	798	617	..	...	90
[illegible]	Iso	City	87	4	..	...	85

NORTH CAROLINA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Albemarle, 4,060—Stanly							
Stanly General Hospital	Gen	NPAssn	45	33	10	183	1,832
Yadkin Hospital	Gen	NPAssn	45	35	24	743	2,581
Asheboro, 6,981—Randolph							
Barnes-Griffin Clinic Hosp.	Gen	Indiv	26	18	12	323	1,034
Randolph Hospital▲	Gen	NPAssn	86	55	20	814	3,941

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Asheville, 51,310—Buncombe							
Appalachian Hall	N&M	Corp	175	104	..	...	1,248
Asheville Colored Hospital	Gen	NPAssn	37	18	8	179	639
Asheville Mission Hospital▲○	Gen	NPAssn	120	93	15	752	3,961
Aston Park Hospital	Gen	NPAssn	45	40	..	...	1,831
Biltmore Hospital▲	Gen	NPAssn	55	50	16	476	1,908
Highland Hospital	N&M	NPAssn	105	83	..	...	213
Norburn Hospital	Gen	NPAssn	128	60	18	265	2,387
St. Joseph's Hospital▲	Gen	Church	117	85	38	1,317	4,270
Zephyr Hill Sanatorium	TB	Indiv	20	20	..	...	18
Banner Elk, 311—Avery							
Grace Hospital▲○	Gen	Church	60	40	15	318	2,260
Black Mountain, 1,042—Buncombe							
Fellowship Sanatorium of the Royal League	TB	NPAssn	18	9	..	...	10
Western North Carolina Sanatorium▲	TB	State	300	275	..	...	326
Brevard, 3,061—Transylvania							
Transylvania Community Hospital	Gen	NPAssn	25	14	6	288	871
Burlington, 21,830—Alamance							
Alamance County Sanatorium	TB	County	30	24	..	...	27
Alamance General Hospital	Gen	NPAssn	49	39	6	35	1,935
Camp Lejeune,—Craven							
U. S. Naval Hospital▲	Gen	Navy	340	219	40	426	3,420
Charlotte, 100,899—Mecklenburg							
Charlotte Eye, Ear and [illegible] Hospital▲	ENT	Part	22	19	..	...	2,675
[illegible] ★+▲○	Gen	NPAssn	371	314	32	1,076	10,101
[illegible] al○	Gen	Church	90	88	20	1,100	3,741
Mercy [illegible]▲	Gen	Church	105	106	50	1,790	6,218
Presbyterian Hospital+▲○	Gen	Church	251	226	33	1,450	7,290
Western Medical Center	Ven	State	200	127	..	...	4,657
Cherokee, 500—Swain							
Eastern Cherokee Indian Hospital	Gen	IA	28	16	7	135	739
Cherry Point,—Craven							
U. S. Marine Corps Air Station Dispensary	Gen	Navy	326	43	14	243	2,409
Columbia, 1,000—Tyrrell							
Columbia Hospital	Gen	Indiv	23	8	7	162	864
Concord, 15,572—Cabarrus							
Cabarrus County Hospital▲○	Gen	County	165	143	60	1,556	8,326
Crossnore, 266—Avery							
Garrett Memorial Hospital	Gen	NPAssn	20	10	6	108	520
Durham, 60,195—Durham							
Duke Hospital★+▲○	Gen	NPAssn	519	429	55	1,543	13,571
Durham County Tuberculosis Sanatorium	TB	County	56	50	..	...	33
Eastern Medical Center	Ven	State	204	144	..	...	4,631
Lincoln Hospital★▲○	Gen	NPAssn	99	81	23	448	2,848
McPherson Hospital▲	ENT	Indiv	30	17	..	...	1,807
Watts Hospital★+▲○	Gen	NPAssn	200	193	25	1,602	9,889
Elizabeth City, 11,564—Pasquotank							
Albemarle Hospital	Gen	CyCo	80	44	14	165	1,369
Elkin, 2,734—Surry							
Hugh Chatham Memorial Hospital▲	Gen	Church	60	51	12	578	2,520
Fairmont, 1,993—Robeson							
Weinstein Clinic Hospital	Gen	Indiv	25	9	7	44	224
Fayetteville, 17,428—Cumberland							
Cumberland County Tuberculosis Sanatorium	TB	County	32	28	..	...	61
Highsmith Hospital+▲○	Gen	NPAssn	120	122	5	674	5,849
R. L. Pittman Hospital	Gen	NPAssn	75	63	30	690	3,417
Veterans Admin. Hospital	Gen	Vet	321	266	..	...	3,779
Fletcher, 500—Henderson							
Mountain Sanitarium and Hospital▲○	Gen	Church	60	51	10	159	1,395
Fort Bragg,—Cumberland							
Station Hospital▲	Gen	Army	2,393	665	16	650	12,746
Franklin, 1,249—Macon							
Angel Clinic Hospital	Gen	Indiv	30	22	2	56	966
Angel Hospital	Gen	NPAssn	56	22	8	109	1,371
Gastonia, 21,313—Gaston							
Garrison General Hospital▲	Gen	NPAssn	50	44	18	998	2,426
Gaston County Negro Hosp.	Gen	County	21	10	4	147	419
Gaston Memorial Hospital○	Gen	NPAssn	65	44	16	712	2,913
North Carolina Orthopedic [illegible]▲	Orth	State	160	153	..	...	428
[illegible]							
[illegible]▲	Gen	NPAssn	126	84	24	922	4,753
State Hospital	Ment	State	2,600	2,614	..	...	630
Greensboro, 59,319—Guilford							
Piedmont Memorial Hosp.▲	Gen	NPAssn	61	49	17	319	2,578
L. Richardson Memorial Hospital▲○	Gen	NPAssn	60	60	8	629	2,723
St. Leo's Hospital▲○	Gen	Church	88	76	24	1,105	3,976
Sternberger Hospital for Women and Children+▲⊙	Gen	NPAssn	49	33	13	353	2,279
Wesley Long Hospital▲	Gen	NPAssn	100	90	20	762	4,302
[illegible]							
[illegible]	Gen	NPAssn	63	40	11	436	2,915
[illegible]							
Hamlet Hospital○	Gen	NPAssn	90	No data supplied			
Henderson, 7,647—Vance							
Jubilee Hospital	Gen	Church	37	29	5	160	1,297
Maria Parham Hospital▲	Gen	NPAssn	61	52	17	513	2,604
Hendersonville, 5,381—Henderson							
Patton Memorial Hospital	Gen	NPAssn	47	39	18	613	2,960
Hickory, 13,487—Catawba							
Hickory Memorial Hospital▲	Gen	NPAssn	57	18	12	190	1,437
Richard Baker Hospital▲	Gen	Indiv	50	42	24	836	2,809

Key to symbols and abbreviations is on page 1396

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
High Point, 38,495—Guilford							
High Point Memorial Hosp.▲○	Gen	NPAssn	122	107	30	1,710	7,961
Huntersville, 763—Mecklenburg							
Mecklenburg Sanatorium▲ ...	TB	County	160	113	..	...	197
Jacksonville, 873—Onslow							
Onslow County Hospital.....	Gen	County	50	28	17	481	2,125
Jamestown, 900—Guilford							
Guilford County Sanatorium▲	TB	County	126	94	..	...	143
Jefferson, 304—Ashe							
Ashe County Memorial Hosp.	Gen	NPAssn	31	20	12	472	1,466
Kinston, 15,388—Lenoir							
Memorial General Hospital▲○	Gen	NPAssn	73	62	12	747	3,210
Parrott Memorial Hospital...	Gen	NPAssn	59	45	15	574	3,167
Laurinburg, 5,685—Scotland							
Scotland County Memorial Hospital	Gen	NPAssn	75	40	12	313	2,152
Leaksville, 1,886—Rockingham							
Leaksville General Hosp.▲....	Gen	NPAssn	45	35	5	423	2,328
Lenoir, 7,598—Caldwell							
Blackwelder Hospital▲	Gen	NPAssn	30	24	10	581	1,826
Dula Hospital	Gen	Indiv	25	18	5	103	872
Lenoir Hospital▲	Gen	Corp	35	30	8	315	1,400
Lexington, 10,550—Davidson							
Lexington Memorial Hospital	Gen	NPAssn	80	38	30	777	3,015
Lincolnton, 4,525—Lincoln							
Gordon Crowell Memorial [illegible]▲	Gen	Corp	58	30	14	410	1,724
[illegible]	Gen	NPAssn	35	18	11	310	1,765
L[illegible]							
[illegible]▲ [illegible] Hos[illegible]	Gen	NPAssn	175	126	38	1,250	7,368
Marion, [illegible]							
Marion General Hosp[illegible]	Gen	NPAssn	42	41	18	659	2,593
McCain,—Hoke							
North Carolina Sanatorium for the Treatment of Tuberculosis+▲○	TB	State	600	573	..	...	769
Monroe, 6,475—Union							
Ellen Fitzgerald Hospital▲...	Gen	NPAssn	60	45	14	816	3,390
Mooresville, 6,682—Iredell							
Lowrance Hospital▲○	Gen	NPAssn	78	51	15	675	3,600
Morehead City, 3,695—Carteret							
Morehead City Hospital......	Gen	City	56	33	18	522	1,862
Morganton, 7,670—Burke							
Broadoaks Sanatorium	N&M	Part	75	48	..	...	65
Grace Hospital▲○	Gen	NPAssn	103	75	17	712	4,800
State Hospital	Ment	State	2,750	2,601	..	...	457
Mount Airy, 6,286—Surry							
Martin Memorial Hospital▲○..	Gen	NPAssn	75	72	15	631	3,361
Murphy, 1,873—Cherokee							
Petrie Hospital	Gen	NPAssn	25	22	12	249	895
Nashville, 1,171—Nash							
Nash County Tuberculosis Sanatorium	TB	County	33	20	..	...	52
New Bern, 11,815—Craven							
Good Shephard Hospital.....	Gen	Church	58	20	8	122	703
St. Luke's Hospital...........	Gen	Church	64	31	20	549	1,901
Newton, 5,407—Catawba							
Catawba Hospital	Gen	NPAssn	100	60	12	521	2,183
North Wilkesboro, 4,478—Wilkes							
Wilkes Hospital▲	Gen	NPAssn	58	37	16	646	2,415
Oteen, 1,200—Buncombe							
Veterans Admin. Hospital+▲..	TB	Vet	1,996	1,394	..	...	4,262
Oxford, 3991—Granville							
Granvi[illegible]	Gen	NPAssn	35	27	10	237	1,644
Susie [illegible] Memorial Hosp[illegible]	Gen	NPAssn	19	13	1	106	679
Pinebluff, 330—Moore							
Pine Bluff Sanitarium........	N&M	Corp	40	36	..	...	245
Pinehurst, 1,600—Moore							
Medical Center Hospital......	Gen	Part	12	...	4	Estab. 1947	
Moore County Hospital▲⊙....	Gen	NPAssn	80	66	20	747	3,147
Raleigh, 46,897—Wake							
Central Prison Hospital......	Inst	State	134	57	..	...	1,232
Mary Elizabeth Hospital○....	Gen	Corp	48	46	10	496	2,071
Rex Hospital★+▲○	Gen	NPAssn	294	258	40	1,665	10,966
Royster Medical Center▲.....	Unit of State Hospital						
St. Agnes Hospital★▲○.......	Gen	Church	114	78	20	397	2,531
State Hospital▲○	Ment	State	2,523	2,374	..	...	883
Wake County Tuberculosis Sanatorium	TB	CyCo	58	50	..	...	40
Reidsville, 10,387—Rockingham							
Annie Penn Memorial Hosp..	Gen	NPAssn	74	60	12	584	3,790
Roanoke Rapids, 8,545—Halifax							
Roanoke Rapids Hospital○..	Gen	NPAssn	102	114	22	877	6,206
Rocky Mount, 25,568—Nash							
Atlantic Coast Line Hosp.▲..	Indus	NPAssn	50	35	..	...	932
Park View Hospital+▲○.......	Gen	NPAssn	110	80	20	548	3,697
[illegible]▲	Gen	NPAssn	77	65	11	562	2,967
[illegible]	Gen	Part	19	15	10	251	1,057
Roseboro, 939—Sampson							
Brewer-Starling Clinic Hosp..	Gen	Part	9	6	5	309	486
Roxboro, 4,599—Person							
Community Hospital	Gen	NPAssn	25	23	6	364	1,089
Rutherfordton, 2,326—Rutherford							
Rutherford Hospital+▲○	Gen	NPAssn	53	44	11	532	2,817
Salisbury, 19,037—Rowan							
Rowan Memorial Hospital▲○..	Gen	NPAssn	120	119	40	1,262	5,856
Sanford, 4,960—Lee							
Lee County Hospital▲........	Gen	County	50	47	12	860	4,143
Shelby, 14,037—Cleveland							
Shelby Hospital▲○	Gen	County	91	95	26	926	5,572

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Siler City, 2,197—Chatham							
Chatham Hospital	Gen	NPAssn	18	10	6	228	720
Smithfield, 3,678—Johnston							
Johnston County Hospital...	Gen	NPAssn	35	23	10	465	1,945
Southport, 1,760—Brunswick							
J. Arthur Dosher Memorial Hospital	Gen	CyCo	50	28	7	163	1,292
Statesville, 11,440—Iredell							
Davis Hospital▲○	Gen	NPAssn	130	109	22	663	4,471
H. F. Long Hospital▲○......	Gen	NPAssn	66	57	14	547	2,947
[illegible]	... Unit of Veterans Admin. Hosp., Oteen, N.C.						
C. J. Harris [illegible]	Gen	NPAssn	25	22	10	355	965
Tar[illegible]							
Bass Memorial [illegible]	Gen	Indiv	8	4	5	31	125
Edgecombe General Hospital▲	Gen	NPAssn	46	44	20	289	2,109
Thomasville, 11,041—Davidson							
City Memorial Hospital......	Gen	NPAssn	52	33	18	455	1,879
Tryon, 2,013—Polk							
St. Luke's Hospital..........	Gen	NPAssn	28	18	6	217	1,059
[illegible]	Gen	NPAssn	49	35	12	314	2,551
[illegible]	Gen	NPAssn	40	30	10	243	1,260
Fowle Memorial Hospital......	Gen	Indiv	16	12	6	162	564
[illegible]▲	Gen	NPAssn	75	62	12	855	4,127
[illegible]	Gen	County	72	47	15	1,001	2,735
[illegible]	Gen	NPAssn	62	54	17	654	3,106
Brown [illegible]	Gen	Indiv	35	18	7	102	846
Wilmington, 33,407—New Hanover							
Babies Hospital+⊙	Chil	NPAssn	40	23	10	...	1,414
Bulluck Hospital Clinic.......	Gen	NPAssn	25	19	..	...	936
Community Hospital○	Gen	CyCo	96	56	22	545	1,982
James Walker Memorial Hospital★+▲○	Gen	NPAssn	300	202	50	1,739	8,827
Wilson, 19,234—Wilson							
Carolina General Hospital▲○	Gen	NPAssn	54	43	15	594	2,273
Eastern North Carolina Sanatorium	TB	State	190	181	..	...	139
Mercy Hospital	Gen	NPAssn	36	21	8	149	561
Wilson County Tuberculosis Sanatorium	TB	County	40	29	..	...	43
Woodard-Herring Hospital▲○	Gen	NPAssn	59	55	10	362	2,721
Winston-Salem, 79,815—Forsyth							
City Memorial Hosp.★+▲○....	Gen	City	183	160	40	1,721	6,611
Forsyth County Hospital.....	Gen	County	36	18	8	88	453
Forsyth County Sanatorium▲	TB	County	132	92	..	...	82
Kate Bitting Reynolds Memorial Hospital★▲○	Gen	City	205	140	19	925	5,369
North Carolina Baptist Hospital★+▲○	Gen	Church	260	220	50	1,168	7,321

Related Institutions

Asheville, 51,310—Buncombe							
Asheville Orthopedic Home...	Orth	NPAssn	28	30	..	...	184
Violet Hill Sanatorium.......	TB	Indiv	37	34	..	...	20
Candler, 60—Buncombe							
Pisgah Sanitarium and Hosp.	Gen	Church	30	20	..	...	202
Charlotte, 100,899—Mecklenburg							
Florence Crittenton Home...	Mat	NPAssn	50	31	18	91	143
Davidson, 1,550—Mecklenburg							
Davidson College Infirmary..	Inst	NPAssn	25	4	..	...	177
Henderson, 7,647—Vances							
Scott Parker Sanatorium.....	TB	County	14	11	..	...	12
Kinston, 15,388—Lenoir							
Caswell Training School......	MeDe	State	820	850	..	...	41
Ra[illegible] 46,897—Wake							
[illegible]	Inst	State	90	6	..	...	869
[illegible]	Gen	Indiv	10	5	3	62	224
T[illegible]							
[illegible]losis Sa[illegible]	TB	County	27	23	..	...	34
Winston-Salem, 79,815—Forsyth							
Casstevens Clinic Hospital...	Gen	Indiv	17	7	5	175	483

NORTH DAKOTA

Hospitals and Sanatoriums							
Belcourt, 200—Rolette							
Turtle Mountain Hospital....	Gen	IA	42	27	10	162	1,090
Bismarck, 15,496—Burleigh							
Bismarck Evangelical Hospital+▲○	Gen	Church	154	138	25	538	4,549
St. Alexius Hospital▲○........	Gen	Church	160	184	31	1,020	7,617
Bottineau, 1,739—Bottineau							
[illegible]	Gen	Church	80	54	15	152	1,883
C[illegible]							
[illegible]	Gen	Church	25	17	5	124	690
C[illegible]							
[illegible]	Gen	Church	30	9	8	150	611
D[illegible]							
General Hosp[illegible]▲	Gen	NPAssn	46	19	8	135	654
Mercy Hospital▲○	Gen	Church	75	47	25	477	2,331
Dickinson, 5,839—Stark							
St. Joseph's Hospital▲........	Gen	Church	89	63	26	802	3,519

Key to symbols and abbreviations is on page 1386

NORTH DAKOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Drayton, 688—Pembina							
Drayton Hospital	Gen	Indiv	13	10	5	73	373
Elbowoods, 175—McLean							
Fort Berthold Indian Hosp.	Gen	IA	18	10	6	57	513
Fargo, 32,580—Cass							
St. John's Hospital★▲○	Gen	Church	180	156	35	1,469	6,175
St. Luke's Hospital★+▲○	Gen	Church	127	127	20	870	6,068
Veterans Admin. Center▲	Gen	Vet	202	180	..	...	2,234
Fort Totten, 100—Benson							
Fort Totten Indian Hospital	Gen	IA	31	14	4	47	701
Fort Yates, 1,000—Sioux							
Standing Rock Indian Hosp.	Gen	IA	47	25	5	45	618
Grafton, 4,070—Walsh							
Grafton Deaconess Hospital	Gen	Church	60	58	12	605	2,614
Grand Forks, 20,228—Grand Forks							
Grand Forks Deaconess Hospital★▲○	Gen	NPAssn	140	117	25	785	4,629
St. Michael's Hospital▲○	Gen	Church	77	67	20	642	3,085
Harvey, 1,851—Wells							
St. Aloisius Hospital	Gen	Church	50	27	12	349	1,171
Jamestown, 8,790—Stutsman							
Jamestown Hospital▲	Gen	NPAssn	74	54	12	295	2,180
State Hosp. for the Insane▲	Ment	State	2,098	2,029	..	...	424
Trinity Hospital▲○	Gen	Church	100	79	18	482	2,922
Kenmare, 1,528—Ward							
Kenmare Deaconess Hospital	Gen	Church	33	21	10	190	1,021
Langdon, 1,546—Cavalier							
Mercy Hospital	Gen	Church	45	30	15	312	1,335
Mandan, 6,685—Morton							
Mandan Deaconess Hospital	Gen	Church	26	18	10	275	1,166
Mayville, 1,351—Traill							
Union Hospital	Gen	NPAssn	18	12	7	150	612
Minot, 16,577—Ward							
St. Joseph's Hospital▲○	Gen	Church	135	123	19	514	4,737
Trinity Hospital★+▲○	Gen	Church	188	171	32	963	6,252
New Rockford, 2,017—Eddy							
[illegible]	Gen	Church	41	25	9	184	1,106
[illegible]							
[illegible]	Gen	Church	25	16	6	129	584
Oakes, 1,665—Dickey							
Mercy Hospital	Gen	Church	15	10	7	183	476
Rolette, 460—Rolette							
Community Hospital	Gen	NPAssn	20	12	7	76	508
Rolla, 1,008—Rolette							
Rolla Community Hospital	Gen	City	26	18	7	143	1,304
Rugby, 2,215—Pierce							
Good Samaritan Hospital▲○	Gen	Church	70	63	15	370	2,981
San Haven,—Rolette							
North Dakota State Tubercu- [illegible]	TB	State	350	234	..	...	203
[illegible]							
[illegible]	Gen	City	15	9	5	82	568
[illegible]							
[illegible]	Gen	Church	100	74	15	571	3,303
[illegible]							
[illegible]	Gen	Church	23	22	6	134	519
[illegible]							
Good Samaritan Hospital▲	Gen	NPAssn	40	40	12	329	999
Mercy Hospital▲	Gen	Church	75	54	20	400	3,434

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Elgin, 583—Grant							
Elgin Hospital	Gen	Indiv	20	15	7	188	913
Fargo, 32,580—Cass							
Cass County Hospital	Gen	County	40	18	3	13	247
City Detention Hospital	Iso	City	8	4	6	...	66
Florence Crittenton Home	Mat	NPAssn	50	24	6	71	90
Grafton, 4,070—Walsh							
Grafton State School	MeDe	State	1,040	958	..	...	51

OHIO

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Akron, 244,791—Summit							
Children's Hospital+▲⊙	Chil	NPAssn	140	132	..	...	5,816
City Hospital★+▲○	Gen	NPAssn	417	397	72	5,099	15,712
Edwin Shaw Sanatorium▲	TB	County	122	117	..	...	186
Peoples Hospital★+▲○	Gen	NPAssn	210	194	50	2,667	11,970
St. Thomas Hospital★+▲○	Gen	Church	205	175	30	2,295	8,871
Alliance, 22,405—Stark							
Alliance City Hospital○	Gen	City	98	92	22	1,120	3,629
Amherst, 2,896—Lorain							
Pleasant View Sanatorium	TB	County	81	72	..	...	81
Ashland, 12,453—Ashland							
Samaritan Hospital○	Gen	NPAssn	48	37	15	637	2,458
Ashtabula, 21,405—Ashtabula							
Ashtabula General Hospital	Gen	NPAssn	72	67	23	969	3,143
Athens, 7,696—Athens							
Athens State Hospital	Ment	State	1,816	1,784	..	...	419
Sheltering Arms Hospital	Gen	Indiv	52	36	9	576	1,690
[illegible]							
[illegible]	Gen	NPAssn	78	52	30	1,209	3,174
[illegible]							
[illegible]	Gen	NPAssn	18	12	6	279	690
Bedford, 7,390—Cuyahoga							
Bedford Municipal Hospital	Gen	City	37	34	13	482	1,677
Bellaire, 13,799—Belmont							
City Hospital▲	Gen	NPAssn	45	32	5	468	1,951
Bellevue, 6,127—Huron							
Bellevue Hospital	Gen	NPAssn	41	23	11	243	886
Berea, 6,025—Cuyahoga							
Community Hospital▲	Gen	NPAssn	107	69	34	727	2,911

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Brecksville, 1,600—Cuyahoga							
Veterans Admin. Hospital+▲	TB	Vet	200	150	..	...	376
Bryan, 5,404—Williams							
Cameron Hospitals	Gen	NPAssn	16	11	5	251	745
Bucyrus, 9,727—Crawford							
Bucyrus City Hospital	Gen	City	51	50	14	681	1,875
Cambridge, 15,044—Guernsey							
Cambridge State Hospital	Ment	State	2,300	1,821	..	...	92
St. Francis Hospital	Gen	NPAssn	30	33	7	209	1,798
Swan Hospital	Gen	NPAssn	35	25	7	246	885
Canton, 108,401—Stark							
Aultman Hospital★+▲○	Gen	NPAssn	293	219	72	2,902	11,303
Little Flower Hospital	Unit of Mercy Hospital						
Mercy Hospital★+▲○	Gen	Church	227	201	45	2,262	8,345
Molly Stark Sanatorium	TB	County	125	120	..	...	135
Celina, 4,841—Mercer							
Gibbons Hospital	Gen	NPAssn	40	30	16	709	1,762
Otis Hospital	Gen	NPAssn	25	21	5	232	815
Chagrin Falls, 2,505—Cuyahoga							
Windsor Hospital▲	N&M	Corp	90	80	..	...	550
Chillicothe, 20,129—Ross							
Chillicothe Hospital▲	Gen	NPAssn	55	49	16	593	1,660
Federal Reformatory Hosp.▲	Inst	USPHS	70	22	..	...	1,131
Mount Logan Sanatorium	TB	Counties	60	51	..	...	83
Veterans Admin. Hospital▲	Ment	Vet	2,262	2,171	..	...	1,228
Cincinnati, 455,610—Hamilton							
Bethesda Hospital★+▲○	Gen	Church	218	209	60	3,040	8,626
Children's Hospital+▲⊙	Chil	Church	202	154	..	...	6,311
Christ Hospital★+▲○	Gen	Church	376	331	63	2,713	10,704
Christian R. Holmes Hosp▲	Gen	City	52	48	..	...	1,401
Cincinnati General Hosp.★+▲○	Gen	City	850	568	65	2,595	14,757
Cincinnati Sanitarium▲	N&M	Corp	100	97	..	...	415
Deaconess Hospital★+▲○	Gen	Church	168	139	30	1,035	4,968
Dunham Hospital+▲	TB	County	501	404	..	...	444
Good Samaritan Hosp.★+▲○	Gen	Church	538	457	90	3,049	15,632
Hamilton County Home and Chronic Disease Hospital	Chr	County	265	259	..	...	510
Jewish Hospital★+▲○	Gen	NPAssn	260	246	40	2,531	9,233
Longview State Hospital+▲	Ment	State	3,092	2,945	..	...	709
Ohio Hospital for Women and Children	Unit of Bethesda Hospital						
Our Lady of Mercy Hospital	Gen	Church	54	48	18	845	2,157
St. Mary's Hospital★+▲	Gen	Church	200	134	30	892	5,265
Circleville, 7,982—Pickaway							
Berger Municipal Hospital	Gen	City	18	14	12	338	1,239
Cleveland, 878,336—Cuyahoga							
Babies and Childrens Hosp.	Unit of University Hospitals						
Booth Memorial Home and Hospital▲	Mat	Church	27	23	28	1,041	1,104
City Hospital★+▲○	Gen	City	1,079	864	56	1,630	14,470
City Psychopathic Hospital	Unit of City Hospital						
Cleveland Clinic Hospital+▲	Gen	NPAssn	279	262	..	...	8,354
Cleveland State Hospital+	Ment	State	2,832	2,673	..	...	1,022
Cleveland State Receiving Hospital+	Ment	State	312	304	..	...	842
Evangelical Deaconess Hospital★▲	Gen	Church	132	117	32	1,590	6,097
Fairview Park Hosp.★+▲○	Gen	Church	150	139	51	2,739	7,574
Glenville Hospital★▲	Gen	NPAssn	114	91	30	1,217	4,533
Grace Hospital+▲	Gen	NPAssn	64	50	12	485	2,464
Huron Road Hospital	See East Cleveland						
John H. Lowman Memorial Pavilion	Unit of City Hospital						
Lakeside Hospital	Unit of University Hospitals						
Leonard C. Hanna House	*Unit of University Hospitals*						
Lutheran Hospital★+▲○	Gen	Church	127	119	33	1,541	5,278
Maternity Hospital	Unit of University Hospitals						
Mount Sinai Hospital★+▲○	Gen	NPAssn	217	193	45	2,117	9,726
Polyclinic Hospital▲	Gen	NPAssn	120	91	24	1,136	5,232
St. Alexis Hospital★+▲○	Gen	Church	234	217	21	1,582	10,270
St. Ann's Maternity Hosp.+▲⊙	Mat	Church	43	39	43	2,474	2,581
St. John's Hospital★+▲○	Gen	Church	234	207	51	2,283	8,973
St. Luke's Hospital★+▲○	Gen	Church	337	277	65	2,675	12,713
St. Vincent Charity Hospital★+▲○	Gen	Church	290	265	..	...	8,338
U. S. Marine Hospital★+▲	Gen	USPHS	292	227	..	...	3,230
University Hospitals★+▲○	Gen	NPAssn	724	586	93	3,984	20,121
Veterans Admin. Hospital+▲	Gen	Vet	1,000	769	..	...	7,520
Woman's Hospital+▲	Gen	NPAssn	93	89	30	817	4,147
Cleveland Heights, 54,992—Cuyahoga							
Doctors' Hospital	Gen	NPAssn	110	35	20	...	1,506
Columbus, 306,087—Franklin							
Children's Hospital+▲⊙	Chil	NPAssn	180	130	..	...	3,852
Columbus State Hospital+▲	Ment	State	2,517	2,354	..	...	656
Franklin County Tuberculosis Hospital+▲⊙	TB	County	335	200	..	...	284
Grant Hospital★+▲○	Gen	NPAssn	290	247	37	2,373	10,020
McMillen Sanitarium	N&M	Corp	40	29	..	...	237
Mercy Hospital▲	Gen	NPAssn	65	40	15	261	1,962
Mount Carmel Hospital★+▲○	Gen	Church	265	243	50	2,912	10,172
Ohio State University Hospital★+▲○	Gen	State	279	233	35	1,788	8,360
St. Ann's Maternity Hosp.+▲	Mat	Church	30	26	30	1,481	1,651
St. Anthony Hospital	Gen	Church	207	181	..	...	2,503
St. Francis Hospital★+▲○	Gen	State	161	121	..	...	3,979
Station Hospital	Gen	Army	75	40	..	...	1,096
White Cross Hospital★+○	Gen	Church	296	269	62	3,270	10,769
Conneaut, 9,355—Ashtabula							
Brown Memorial Hospital	Gen	NPAssn	39	30	11	476	1,849
Coshocton, 11,509—Coshocton							
Coshocton Memorial Hospital	Gen	NPAssn	62	43	22	782	2,441
Crestline, 4,337—Crawford							
Crestline Emergency Hospital	Gen	NPAssn	20	9	6	119	569

Key to symbols and abbreviations is on page 1396

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Cuyahoga Falls, 20,546—Summit							
Summit County Receiving Hospital	Ment	State	65	42	..	...	284
Dayton, 210,718—Montgomery							
Dayt [illegible] Hospital▲......	Ment	State	1,755	1,613	..	...	458
Good [illegible] ★▲○	Gen	Church	316	264	65	4,317	12,280
Miar [illegible] ★★▲	Gen	NPAssn	425	355	55	3,553	13,236
St. [illegible]	Unit of St. Elizabeth Hospital						
St. [illegible] ★▲	Gen	Church	335	304	40	2,776	11,129
Stillwater [illegible] ▲ .	TB	Counties	101	101	..	...	121
Veterans Admin. Center+▲....	Gen	Vet	1,001	913	..	...	5,437
Defiance, 9,744—Defiance							
Defiance Hospital	Gen	NPAssn	34	28	11	662	1,841
Delaware, 8,944—Delaware							
Jane M. Case Hospital.......	Gen	NPAssn	55	35	10	427	1,734
Dennison, 4,413—Tuscarawas							
Twin City Hospital...........	Gen	NPAssn	36	32	14	648	1,632
Dover, 9,691—Tuscarawas							
Union Hospital	Gen	NPAssn	66	61	15	981	2,733
East Cleveland, 39,495—Cuyahoga							
Huron Road Hospital★+▲○...	Gen	NPAssn	355	237	78	2,861	10,655
East Liverpool, 23,555—Columbiana							
East Liverpool City Hosp.▲○	Gen	City	125	97	21	1,357	4,117
Elyria, 25,120—Lorain							
Elyria Memorial Hospital and Gates Hospital for Crippled Children▲○	Gen	NPAssn	143	100	33	1,055	4,191
Findlay, 20,228—Hancock							
Findlay Hospital▲	Gen	NPAssn	76	59	12	1,133	3,734
Fremont, 14,710—Sandusky							
Community Hospital	Gen	NPAssn	17	13	4	80	460
Memorial Hospital▲	Gen	NPAssn	62	56	17	918	3,225
Galion, 8,685—Crawford							
Galion City Hospital.........	Gen	City	33	26	10	404	1,441
Gallipolis, 7,832—Gallia							
Gallipolis State Institute.....	Epil	State	1,932	1,983	..	...	277
Holzer Hospital▲○	Gen	Part	74	61	11	733	3,669
Green Springs, 930—Sandusky and Seneca							
Oak Ridge Sanatorium........	TB	Indiv	127	85	..	...	101
Greenville, 7,745—Darke							
Wayne Hospital▲	Gen	NPAssn	55	52	18	764	2,196
Hamilton, 50,592—Butler							
Fort Hamilton Hospital+▲...	Gen	NPAssn	86	70	24	700	2,908
Mercy Hospital★+▲○	Gen	Church	280	236	45	1,777	8,234
Hillsboro, 4,713—Highland							
Hillsboro Hospital	Gen	NPAssn	26	16	6	212	720
[illegible] ess							
[illegible]	Gen	NPAssn	25	6	5	93	407
Lawrence County General Hospital	Gen	County	74	58	14	915	3,130
Kenton, 7,593—Hardin							
McKitrick Hospital	Gen	NPAssn	40	17	12	196	548
San Antonio Hospital.........	Gen	Church	66	44	16	438	1,581
Lakewood, 69,160—Cuyahoga							
Lakewood Hospital★+▲	Gen	City	129	117	28	1,181	5,411
Lancaster, 21,940—Fairfield							
Lancaster Municipal Hosp.▲○	Gen	City	74	87	22	1,118	4,187
Lima, 44,711—Allen							
District Tuberculosis Hosp...	TB	Counties	118	97	..	...	158
Lima Memorial Hosp.★▲○....	Gen	NPAssn	161	146	28	1,441	6,149
Lima State Hospital..........	Ment	State	1,200	1,148	..	...	442
St. Rita's Hospital★▲○........	Gen	Church	251	177	40	1,691	6,548
Lodi, 1,304—Medina							
Lodi Hospital	Gen	NPAssn	40	39	10	457	1,319
Logan, 6,177—Hocking							
Hocking Valley Hospital.....	Gen	NPAssn	37	21	10	459	1,354
Lorain, 44,125—Lorain							
St. Joseph's Hospital▲........	Gen	Church	130	90	32	1,746	5,899
Macedonia, 734—Summit							
Hawthornden State Hospital	Ment	State	1,134	1,029	..	...	213
Mansfield, 37,154—Richland							
Mansfield General Hosp.+▲○..	Gen	NPAssn	173	187	37	1,778	7,032
Richland County Tuberculosis Sanatorium	TB	County	28	26	..	...	25
Marietta, 14,543—Washington							
Marietta Memorial Hospital..	Gen	NPAssn	65	52	14	846	2,792
Marion, 30,817—Marion							
Marion City Hospital.........	Gen	City	105	91	21	1,471	3,980
Sawyer Sanatorium▲	Nerv	Indiv	50	29	..	...	156
Martins Ferry, 14,729—Belmont							
Martins Ferry Hospital▲○....	Gen	NPAssn	120	120	30	1,140	5,027
Massillon, 26,644—Stark							
Massillon City Hospital▲○...	Gen	NPAssn	174	152	34	1,307	6,373
Massillon State Hosp.+▲⊙....	Ment	State	3,390	2,948	..	...	741
McConnelsville, 1,895—Morgan							
Rocky Glen Sanatorium.......	TB	Corp	135	114	..	...	178
Medina, 4,359—Medina							
Medina Community Hospital	Gen	NPAssn	35	34	12	267	1,281
Middletown, 31,220—Butler							
Middletown Hospital▲○	Gen	NPAssn	159	116	40	1,456	5,229
Millersburg, 2,239—Holmes							
Holmes County Joel E. Pomerene Memorial Hospital	Gen	County	30	13	8	285	1,677
Mount Vernon, 10,122—Knox							
Avalon Sanatorium	TB	NPAssn	70	46	..	...	82
Mercy Hospital	Gen	Church	66	63	12	667	4,900
Mount Vernon Hospital-Sanitarium	Gen	NPAssn	54	37	9	224	1,564
Mount Vernon State Hosp.▲..	TB	State	175	174	..	...	19
Munroe Falls, 511—Summit							
Summit County Home Hosp.	InstGen	County	150	122	..	....	132
Napoleon, 4,825—Henry							
S. M. Heller Memorial Hosp..	Gen	City	21	15	7	305	895
Newark, 31,487—Licking							
Licking County Tuberculosis Sanatorium	TB	County	51	44	..	...	76
Newark Hospital▲○	Gen	NPAssn	110	93	23	1,336	4,680
New London, 1,656—Huron							
New London Hospital........	Gen	NPAssn	9	6	3	131	421
New Philadelphia, 12,328—Tuscarawas							
Tuscarawas Valley Sanatorium	TB	County	35	29	..	...	57
Norwalk, 8,211—Huron							
Norwalk Memorial Hospital..	Gen	NPAssn	30	31	15	427	1,290
Oberlin, 4,305—Lorain							
Allen Hospital, Oberlin College▲	Gen	NPAssn	45	28	11	337	1,463
Oxford, 1,756—Butler							
Miami University Student Hospital	*Inst*	*State*	50	4	..	...	1,403
Painesville, 12,235—Lake							
Lake County Memorial Hosp.	Gen	County	123	97	3	1,187	3,617
Perrysburg, 3,457—Wood							
Rheinfrank Hospital	Goiter	Indiv	11	3	..	...	161
Piqua, 16,049—Miami							
Memorial Hospital▲	Gen	NPAssn	77	68	14	932	3,051
Port Clinton, 4,505—Ottawa							
H. B. Magruder Memorial Hospital	Gen	NPAssn	43	37	17	409	1,553
Portsmouth, 40,466—Scioto							
Mercy Hospital○	Gen	Church	87	71	16	928	4,629
Portsmouth General Hosp.○..	Gen	City	93	88	13	747	4,354
Ravenna, 8,538—Portage							
Robinson Memorial Portage County Hospital	Gen	County	110	76	30	912	3,715
St. Clairsville, 2,797—Belmont							
Belmont Sanatorium	TB	County	56	45	..	..	50
Salem, 12,301—Columbiana							
Central Clinic and Hospital..	Gen	NPAssn	32	31	8	419	1,480
Salem City Hospital▲○.......	Gen	NPAssn	56	66	14	673	2,502
Sandusky, 24,874—Erie							
Good Samaritan Hospital▲...	Gen	NPAssn	53	46	12	451	2,075
Providence Hospital▲○	Gen	Church	115	86	25	581	2,533
Shelby, 6,643—Richland							
Shelby Hospital	Gen	NPAssn	54	31	16	422	1,503
Sidney, 9,790—Shelby							
Wilson Memorial Hospital▲..	Gen	NPAssn	58	47	12	577	2,309
South Euclid, 6,146—Cuyahoga							
Rainbow Hospital for Crippled and Convalescent Children▲	Unit of University Hospitals, Cleveland						
Springfield, 70,662—Clark							
Clark County Tuberculosis Sanatorium	TB	County	120	78	..	...	130
Springfield City Hospital★○..	Gen	City	273	219	56	2,786	7,103
Steubenville, 37,651—Jefferson							
Gill Memorial Hospital........	Gen	Church	65	62	24	951	3,305
Ohio Valley Hospital▲○.......	Gen	NPAssn	200	186	40	1,695	7,973
Tiffin, 16,102—Seneca							
Mercy Hospital	Gen	Church	52	55	20	936	2,072
Tiffin State Hospital.........	Ment	State	559	461	..	...	163
Toledo, 282,349—Lucas							
East Side Hospital............	Gen	NPAssn	35	16	5	91	610
Flower Hospital★▲○	Gen	Church	135	134	37	1,053	5,141
Maumee Valley Hospital★+▲○	Gen	County	292	158	33	384	3,728
Mercy Hospital★+▲○	Gen	Church	275	284	65	2,055	11,051
Riverside Hospital★▲○	Gen	NPAssn	154	147	44	1,450	6,926
Robinwood Hospital▲○	Gen	Church	90	67	15	498	2,836
St. Vincent's Hospital★+▲○...	Gen	Church	310	292	50	1,683	10,539
Toledo Hospital★+▲○	Gen	NPAssn	270	237	50	2,507	9,432
Toledo State Hospital▲⊙.....	Ment	State	2,839	2,729	..	...	1,164
William W. Roche Memorial Hospital⊙	TB	County	165	122	..	...	249
Troy, 9,697—Miami							
Stouder Memorial Hospital▲..	Gen	NPAssn	50	51	14	808	2,654
Urbana, 8,335—Champaign							
Champaign County Hospital..	Gen	County	42	15	12	509	1,232
Van Wert, 9,227—Van Wert							
[illegible]	Gen	NPAssn	57	43	12	520	2,195
[illegible]	Gen	City	37	37	16	631	1,306
[illegible]	Gen	Church	113	92	27	928	4,737
[illegible] Hospital	TB	County	48	42	..	...	64
Trumbull Memorial Hosp.▲○..	Gen	NPAssn	188	152	40	1,843	6,655
Warrensville (Cleveland P.O.), 1,175—Cuyahoga							
Sunny Acres, Cuyahoga County Tuberculosis Hospital+▲⊙ ..	TB	County	390	322	..	...	381
Wauseon, 3,016—Fulton							
De Ette Harrison Detwiler Memorial Hospital▲	Gen	NPAssn	51	35	11	622	2,011
Willard, 4,261—Huron							
Willard Municipal Hospital...	Gen	City	36	31	10	284	1,183
Wilmington, 5,971—Clinton							
Dr. Kelly Hale Surgical Hosp.	Gen	Indiv	16	9	7	173	498
Wooster, 11,543—Wayne							
Beeson Hospital	Gen	NPAssn	30	31	5	381	1,777
Community Hospital	Gen	NPAssn	26	18	7	353	1,038
Worthington, 1,569—Franklin							
Harding Sanitarium+▲	N&M	Corp	76	70	..	...	458
Xenia, 10,633—Greene							
McClellan Hospital▲	Gen	Corp	20	14	4	128	541
Youngstown, 167,720—Mahoning							
Mahoning Tuberculosis Sanatorium+	TB	County	170	163	..	...	188
St. Elizabeth's Hospital★+▲○	Gen	Church	300	299	50	2,559	14,916

Key to symbols and abbreviations is on page 1396

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Youngstown Hospital*+▲○	Gen	NPAssn	536	518	96	4,173	18,963
Youngstown Receiving Hosp.⊙	Ment	State	81	75	..	...	611
Zanesville, 37,500—Muskingum							
Bethesda Hospital▲○	Gen	NPAssn	135	91	25	1,074	3,811
Good Samaritan Hospital▲○	Gen	Church	145	124	27	1,381	4,818

Related Institutions.

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Akron, 244,791—Summit							
Goodyear *Hospital*	*Indus*	*NPAssn*	*18*	*8*	..	...	*219*
Apple Creek, 510—Wayne							
Apple Creek State School	MeDe	State	791	761	..	...	63
Bluffton, 2,077—Allen							
Bluffton Community Hosp.	Gen	NPAssn	24	21	10	326	1,015
Cincinnati, 455,610—Hamilton							
Catherine Booth Home and Hospital	Mat	Church	12	13	13	357	500
Children's Convalescent Home of the Cincinnati Orphan Asylum▲	Conv	NPAssn	100	61	..	...	171
Children's Home (Hanna Hospital)	Inst	NPAssn	24	4	..	...	1,175
Home for Incurables	Incur	NPAssn	66	66	..	...	6
Madeline Marie Nursing Home	Conv	Indiv	77	68	..	...	65
St. Francis Hospital	ChrCancer	Church	300	264	..	...	2,381
St. George Convalescent Hosp.	Conv	Church	40	28	..	...	455
St. Joseph Maternity Hospital and Infant Home	Mat	Church	10	5	10	242	242
Cleveland, 878,336—Cuyahoga							
Children's Fresh Air Camp and Hospital	Conv	NPAssn	60	58	..	...	150
Ingleside Home	N&M	NPAssn	130	110	..	...	622
Columbus, 306,087—Franklin							
Columbus State School	MeDe	State	2,180	2,109	..	...	201
Florence Crittenton Home	Mat	NPAssn	42	16	24	170	185
Franklin County Home Hosp.	Inst	NPAssn	125	123	..	...	187
Ohio Penitentiary Hospital	Inst	State	160	127	..	...	3,138
Resthaven	Conv	Indiv	32	30	..	...	135
Dayton, 210,718—Montgomery							
Barney Convalescent Home for Crippled Children▲	Orth	NPAssn	30	26	..	...	144
Delaware, 8,944—Delaware							
Girls' Industrial School Hosp.	Inst	State	32	12	..	...	...
Euclid, 17,866—Cuyahoga							
Rose-Mary, The Johanna Grasselli Home for Crippled Children	Orth	Church	24	24	..	...	30
Glendale, 2,359—Hamilton							
Maple Knoll Hospital and Home for the Friendless	Mat	NPAssn	36	30	18	566	645
Granville, 1,502—Licking							
Whisler Hall Memorial Hosp.	Inst	NPAssn	40	3	..	...	465
Greenfield, 4,228—Highland							
Greenfield Municipal Hospital	Gen	City	22	14	9	243	844
Hamilton, 50,592—Butler							
Butler County Tuberculosis *Sanatorium*	TB	Church	21	20	..	...	38
Lancaster, 21,940—Fairfield							
Boys' Industrial School Hosp.	Inst	State	100	11	..	...	465
[illegible]	MeDe	State	2,927	2,780	..	...	409
[illegible] cent Hospital	Conv	NPAssn	30	25	..	...	43
State Soldiers Home, 900—Erie							
Ohio Soldiers' and Sailors' Home Hospital	Inst	State	200	90	..	...	299
Toledo, 282,349—Lucas							
Lucas County Hosp. Annex	Chr	County	90	90	..	...	53
Toledo Society for Crippled Children Convalescent Home▲	Orth	NPAssn	80	38	..	...	126
Warren, 42,837—Trumbull							
Elm Manor	Alcoh	Indiv	8	1	..	...	89
Warrensville (Cleveland P.O.), 1,175—Cuyahoga							
Cleveland Municipal Chronic Hospital	Chr	City	168	166	..	...	310
Wickliffe, 3,155—Lake							
Ridgecliff Sanitarium	N&M	Corp	50	47	..	...	123
Wickhaven Sanitarium	N&M	NPAssn	15	10	..	...	52
Wooster, 11,543—Wayne							
Hygeia Hall	Inst	NPAssn	25	2	..	...	361
Xenia, 10,633—Greene							
Ohio Soldiers' and Sailors' Orphans' Home Hospital	Inst	State	60	8	..	...	826

OKLAHOMA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Ada, 15,143—Pontotoc							
Valley View Hospital▲	Gen	NPAssn	80	63	18	747	4,386
Altus, 8,593—Jackson							
Altus Hospital	Gen	*Indiv*	*21*	*12*	*8*	*150*	*821*
Alva, 5,055—Woods							
Alva General Hospital	Gen	City	39	26	10	328	1,643
Anadarko, 5,579—Caddo							
Anadarko Hospital	Gen	Part	26	17	6	256	1,088
Ardmore, 16,886—Carter							
Ardmore Sanit. and Hospital	Gen	NPAssn	64	11	10	81	481
Hardy Sanitarium▲	Gen	Indiv	64	38	18	519	1,871
Atoka, 2,548—Atoka							
Cotton Clinic Hospital	Gen	Corp	15	10	6	147	934
Bartlesville, 16,267—Washington							
Washington County Memorial Hospital	Gen	County	72	53	19	805	3,875

OKLAHOMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Beaver, 1,166—Beaver							
Beaver Hospital	Gen	Part	20	18	5	176	909
Blackwell, 8,537—Kay							
Blackwell General Hospital	Gen	Church	35	29	10	335	1,272
Carnegie, 1,740—Caddo							
Carnegie Hospital	Gen	Corp	14	8	5	163	627
Cherokee, 2,553—Alfalfa							
Masonic Hospital	Gen	NPAssn	48	25	8	162	1,720
Chickasha, 14,111—Grady							
Chickasha Hosp. and Clinic	Gen	Part	51	29	10	193	1,734
Cottage *Hospital*	Gen	Indiv	10	10	3	40	392
General Hospital	Gen	Indiv	20	12	12	459	1,185
Claremore, 4,134—Rogers							
Claremore General *Hospital*	Gen	Indiv	15	7	7	234	733
Claremore Indian Hospital▲	Gen	IA	50	34	18	232	1,002
Clinton, 6,736—Custer							
Clinton Indian *Hospital*	Gen	IA	32	7	5	39	439
Western Oklahoma State Hospital▲○	Gen	State	125	68	18	412	2,330
Western Oklahoma Tuberculosis Sanatorium▲	TB	State	200	170	..	...	784
Concho, 200—Canadian							
Cheyenne *and Arapaho* Hospital▲	Gen	IA	34	15	8	97	515
Cordell, 2,776—Washita							
Florence Hospital	Gen	Indiv	23	6	6	143	485
Cushing, 7,703—Payne							
Masonic Hospital▲	Gen	NPAssn	30	27	6	310	1,411
Duncan, 9,207—Stephens							
Lindley Hospital	Gen	Indiv	25	5	4	272	1,399
Patterson Hospital	Gen	Part	30	25	9	288	1,513
Weedn Hospital	Gen	Indiv	60	13	12	122	1,903
Durant, 10,027—Bryan							
Durant Hospital	Gen	Part	27	19	11	339	1,660
Evergreen Sanitarium	Gen	Indiv	21	7	6	99	414
Haynie Hospital and Clinic	Gen	Indiv	11	5	4	77	2,051
Elk City, 5,021—Beckham							
Community Hospital	Gen	NPAssn	100	27	9	253	2,011
Tisdal Hospital	Gen	Indiv	24	16	8	191	1,112
El Reno, 10,078—Canadian							
Catto Hospital	Gen	Indiv	12	5	2	25	193
El Reno Sanitarium	Gen	Part	32	20	8	425	1,138
Federal Reformatory Hosp.▲	Inst	USPHS	44	15	..	...	799
Enid, 28,081—Garfield							
Enid General Hospital▲○	Gen	NPAssn	90	84	12	340	2,700
St. Mary's Hospital and Annex▲○	Gen	Church	150	115	25	1,167	6,244
Fort Sill,—Comanche							
Station Hospital▲	Gen	Army	238	90	16	373	4,597
Fort Supply, 414—Woodward							
Western Oklahoma Hospital	Ment	State	1,000	1,397	..	...	238
Frederick, 5,109—Tillman							
Frederick Clinic Hospital	Gen	Part	18	8	5	103	529
Spurgeon and Arington Hosp.	Gen	Indiv	15	8	9	227	716
Grandfield, 1,116—Tillman							
Grandfield Hospital	Gen	Indiv	12	4	3	46	264
Granite, 1,058—Greer							
Lewis Hospital	Gen	Indiv	17	5	5	74	363
Guthrie, 10,018—Logan							
Benedictine Heights Hospital	Gen	Church	35	25	12	338	1,095
Henryetta, 6,905—Okmulgee							
Henryetta Hospital	Gen	Indiv	25	14	6	119	724
John Taylor Hospital	Gen	Indiv	15	10	3	130	850
Hobart, 5,177—Kiowa							
General Hospital	Gen	Part	41	16	10	371	1,572
Holdenville, 6,632—Hughes							
St. Francis Hospital	Gen	Church	27	17	12	290	1,205
Hollis, 2,732—Harmon							
Husband Memorial Hospital	Gen	Part	16	...	7	Estab. 1947	
Hominy, 3,267—Osage							
Hominy City Hospital	Gen	City	14	9	7	165	504
Hugo, 5,909—Choctaw							
Johnson Hospital	Gen	Indiv	9	3	7	143	335
Lawton, 18,055—Comanche							
Angus Hospital	Gen	Part	19	10	12	378	816
Kiowa Indian Hospital▲	Gen	IA	150	87	16	288	2,867
Southwestern Clinic Hospital	Gen	Part	41	33	18	489	2,135
McAlester, 12,401—Pittsburg							
Albert Pike Hospital	Gen	NPAssn	47	38	10	283	2,230
St. Mary's Hospital▲	Gen	Church	60	38	15	546	2,365
U. S. Naval Dispensary	Gen	Navy	19	3	..	...	298
Miami, 8,345—Ottawa							
Miami Baptist Hospital	Gen	Church	75	28	18	671	2,015
Muskogee, 32,332—Muskogee							
Muskogee General Hospital○	Gen	City	108	73	26	790	3,294
Oklahoma Baptist Hosp.▲○	Gen	Church	100	80	16	471	2,910
Veterans Admin. Hospital▲	Gen	Vet	386	350	..	...	3,212
Norman, 11,429—Cleveland							
Central Oklahoma State Hospital+▲	Ment	State	2,350	3,161	..	...	1,371
Ellison Infirmary▲	Inst	State	50	13	..	...	1,893
Norman Municipal Hospital	Gen	City	58	37	18	605	2,200
Okeene, 1,079—Blaine							
Okeene Municipal Hospital	Gen	City	10	8	5	80	525
Okemah, 3,811—Okfuskee							
Clinic Hospital	Gen	Indiv	10	6	3	185	599
Oklahoma City, 204,424—Oklahoma							
Bone and Joint Hospital—McBride Clinic+▲	Orth	Corp	54	46	..	...	1,425
Capital Hill General Hospital	Gen	Corp	50	35	18	747	2,295
Coyne Campbell Sanitarium	N&M	Corp	70	49	..	...	1,341
Mercy Hospital▲○	Gen	Church	150	137	25	878	6,343

OKLAHOMA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Oklahoma Medical Center....	Ven	State	160	111	12	15	4,657
Polyclinic Hospital	Gen	Indiv	95	59	16	653	2,651
St. Anthony Hospital★+▲○...	Gen	Church	375	327	75	3,142	12,801
Station Hospital	Gen	Army	25	11	..	...	771
University Hospitals★+▲○	GenOr	State	506	316	30	960	5,011
Veterans Admin. Hospital+▲	Gen	Vet	220	180	..	...	2,812
Wesley Hospital★+▲○	Gen	Part	200	132	33	1,126	6,721
Okmulgee, 16,051—Okmulgee							
Ming-Vernon Hospital	Gen	Part	13	10	..	...	605
Okmulgee City Hospital......	Gen	City	50	27	13	339	1,569
Pauls Valley, 5,104—Garvin							
Lindsey-Johnson Hospital ...	Gen	Part	18	11	6	171	401
Pauls Valley State Hospital..	Ep'l	State	321	315	..	...	78
Pawhuska, 5,443—Osage							
Osage County Hospital......	Gen	County	48	18	4	55	361
Pawhuska Municipal Hospital	Gen	City	32	15	8	194	1,386
Pawnee, 2,742—Pawnee							
Pawnee-Ponca Indian Hosp.▲	Gen	IA	42	16	8	95	540
Picher, 5,848—Ottawa							
Picher Hospital	Gen	Part	17	9	2	2	410
Ponca City, 16,794—Kay							
Ponca City Hospital▲○.......	Gen	Church	75	59	17	792	3,134
Prague, 1,422—Lincoln							
Rollins Hospital	Gen	Indiv	10	5	5	116	402
Pryor, 2,501—Mayes							
Whitaker Hospital	Gen	Part	18	12	5	199	1,460
Sapulpa, 12,249—Creek							
Sapulpa City Hospital.......	Gen	City	21	9	6	280	1,032
Sayre, 3,037—Beckham							
Sayre Hospital	Gen	Indiv	14	11	6	256	1,170
Seminole, 11,547—Seminole							
Harber Hospital	Gen	Corp	27	30	7	249	1,359
Sentinel, 1,088—Washita							
McMurry and Stowers Hosp..	Gen	Part	25	12	6	92	693
Shattuck, 1,275—Ellis							
Shattuck Hospital	Gen	Part	42	23	8	269	1,560
Shawnee, 22,053—Pottawatomie							
A. C. H. Hospital▲..........	Gen	Part	25	28	6	353	1,300
Shawnee Indian Sanatorium▲	TB	IA	90	76	..	...	122
Shawnee Municipal Hospital▲	Gen	City	75	41	30	469	2,469
Stillwater, 10,097—Payne							
Agricultural and Mechanical College Infirmary	Inst	State	110	16	14	...	1,777
Stillwater Municipal Hosp.▲..	Gen	City	40	44	20	848	2,817
Sulphur, 7,970—Murray							
Oklahoma State Veterans Hospital▲	GenTb	State	136	108	..	...	741
Taft, 772—Muskogee							
Taft State Hospital.........	Ment	State	800	779	..	...	276
Tahlequah, 3,027—Cherokee							
Tahlequah City Hospital.....	Gen	City	33	10	9	266	1,061
Wm. W. Hastings Hospital▲	Gen	IA	72	31	13	610	1,325
Talihina, 1,057—Le Flore							
Eastern Oklahoma State Tuberculosis Sanatorium	TB	State	300	220	..	...	439
Talihina Indian Hospital▲....	GenTb	IA	237	148	20	216	1,463
Tulsa, 142,157—Tulsa							
Hillcrest Memorial Hosp.★+▲○	Gen	NPAssn	358	198	35	2,015	12,637
Moton Memorial Hospital....	Gen	NPAssn	44	15	10	328	965
St. John's Hospital★+▲○......	Gen	Church	271	250	60	2,356	13,192
Vinita, 5,685—Craig							
Eastern Oklahoma Hospital..	Ment	State	2,650	2,570	..	...	492
Vinita Hospital	Gen	Corp	18	12	7	331	942
Waurika, 2,458—Jefferson							
Waurika Hospital	Gen	Corp	24	11	4	102	612
Woodward, 5,406—Woodward							
Memorial Hospital	Gen	Corp	31	21	5	282	1,745

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Enid, 28,081—Garfield							
Northern Oklahoma Hospital	MeDe	State	1,272	1,268	..	...	56
Oklahoma City, 204,424—Oklahoma							
Campbell Tuberculosis Sanat.	TB	Indiv	30	18	..	...	138
Deaconess Hospital	Mat	Church	22	9	25	263	407
Tahlequah, 3,027—Cherokee							
Sequoyah Vocational School Hospital	Inst	IA	19	4	..	...	329
Tulsa, 142,157—Tulsa							
Salvation Army Home and Hospital	Mat	Church	25	2	15	41	55
Tulsa Home for Convalescent Children	Orth	NPAssn	30	25	...	...	26
Watonga, 2,828—Blaine							
Watonga Hospital	Gen	Indiv	16	13	4	180	902
Wynnewood, 2,318—Garvin							
Wynnewood Hospital Clinic..	Gen	Part	10	7	6	215	694

OREGON

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Albany, 5,654—Linn							
Albany General Hospital.....	Gen	NPAssn	53	27	16	360	2 199
Ashland, 4,744—Jackson							
Community Hospital	Gen	NPAssn	28	18	8	259	960
Astoria, 10,389—Clatsop							
Columbia Hospital▲	Gen	Church	91	61	15	361	3,078
St. Mary's Hospital▲○........	Gen	Church	85	71	15	284	2,557
Baker, 9,342—Baker							
St. Elizabeth Hospital▲○......	Gen	Church	99	50	20	405	1,675

OREGON—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bend, 10,021—Deschutes							
St. Charles Hospital.........	Gen	Church	60	52	10	476	2,711
Burns, 2,566—Harney							
Valley View Hospital.........	Gen	Part	18	13	6	129	554
Chemawa, 700—Marion							
Chemawa Indian Hospital....	Gen	IA	49	7	3	...	471
Coos Bay, 5,259—Coos							
McAuley Hospital	Gen	Church	50	34	10	386	1,997
Corvallis, 8,392—*Benton*							
Corvallis General Hospital▲..	Gen	NPAssn	60	42	28	745	2,282
Oregon State College Student Health Service	Inst	State	30	8	..	...	617
Dallas, 3,579—Polk							
Dallas Hospital	Gen	Corp	30	20	10	218	947
Eugene, 20,838—Lane							
Eugene Hospital and Clinic▲	Gen	Part	47	37	..	...	1,966
Sacred Heart General Hosp.▲○	Gen	Church	159	163	53	2,631	8,779
Grants Pass, 6,028—*Josephine*							
Josephine General Hospital...	Gen	County	75	70	15	543	2,626
Hillsboro, 3,747—Washington							
Jones Hospital	Gen	Indiv	60	56	18	353	2,897
Hood River, 3,280—*Hood River*							
Hood River Hospital.........	Gen	NPAssn	40	24	9	363	1,766
Klamath Falls, 16,497—Klamath							
Hillside Hospital▲	Gen	Corp	57	41	..	...	2,649
Klamath Valley Hospital.....	Gen	Corp	85	59	38	1,038	2,490
La Grande, 7,747—Union							
St. *Joseph* Hospital▲.........	Gen	Church	60	43	13	330	1,886
Lakeview, 2,466—Lake							
Lakeview Hospital	Gen	Corp	18	8	6	142	683
Lebanon, 2,729—Linn							
Lebanon General Hospital...	Gen	Part	30	15	7	362	1,373
McMinnville, 3,706—Yamhill							
General Hospital	Gen	Corp	50	22	20	275	1,127
McMinnville Hospital	Gen	Corp	46	43	13	325	2,318
Medford, 11,281—Jackson							
Community Hospital▲	Gen	NPAssn	48	34	12	455	1,936
Sacred Heart Hospital▲.......	Gen	Church	75	60	10	484	2,719
Milwaukie, 1,871—Clackamas							
Matson Memorial Hospital for Diseases of the Chest.......	TB	NPAssn	45	35	..	...	182
Myrtle Point, 1,296—Coos							
Mast Hospital	Gen	Indiv	40	13	8	169	1,183
Newberg, 2,960—Yamhill							
Willamette Hospital	Gen	NPAssn	22	12	8	183	675
North Bend, 4,262—Coos							
Keizer Brothers Hospital.....	Gen	Corp	50	41	10	413	1,837
Ontario, 3,551—Malheur							
Holy Rosary Hospital▲.......	Gen	Church	50	46	12	401	2,035
Oregon City, 6,124—Clackamas							
Hutchinson General Hospital	Gen	Part	38	22	8	237	890
Oregon City Hospital▲.......	Gen	Corp	64	50	16	604	2,044
Pendleton, 8,847—Umatilla							
Eastern Oregon State Hosp.▲	Ment	State	1,410	1,354	..	...	413
St. Anthony's Hospital▲○....	Gen	Church	115	88	20	400	3,993
Portland, 305,394—Multnomah							
Doernbecher Memorial Hospital for Children⊙	Unit of University of Oregon Medical School Hospitals and Clinics						
Emanuel Hospital★+▲○	Gen	Church	330	329	95	4,445	13,910
Good Samaritan Hosp.★+▲○..	Gen	Church	430	360	75	2,167	13,414
Holladay Park Hospital▲....	Gen	NPAssn	75	56	13	280	2,044
Juvenile Hospital for Girls...	Ven	NPAssn	48	47	2	1	106
Morningside Hospital	Ment	Fed	426	316	..	...	43
Multnomah Hospital	Unit of University of Oregon Medical School Hospitals and Clinics						
Permanente Hospital	Unit of Northern Permanente Hospital, Vancouver, Wash.						
Physicians and Surgeons Hospital▲	Gen	NPAssn	125	108	..	...	5,116
Portland Sanitarium and Hospital★+▲○	Gen	Church	148	146	42	2,037	8,072
Providence Hospital★+▲○	Gen	Church	237	189	..	...	7,310
St. Vincent's Hospital★+▲○...	Gen	Church	356	315	68	2,833	8,000
Salvation Army White Shield Home	Mat	Church	7	6	9	139	143
Shriners Hospital for Crippled Children+▲⊙	Orth	NPAssn	60	58	..	...	332
Theo. B. Wilcox Memorial Hospital	Unit of Good Samaritan Hospital						
University of Oregon Medical School Hospitals and Clinics★+▲○	GenTb	CoState	418	376	30	591	6,437
University State Tuberculosis Hospital⊙	Unit of University of Oregon Medical School Hospitals and Clinics						
Veterans Admin. Hospital+▲..	Gen	Vet	515	461	..	...	7,383
Prairie City, 647—Grant							
Blue Mountain General Hosp.	Gen	City	28	14	6	154	745
Prineville, 2,358—Crook							
Prineville General Hospital...	Gen	Indiv	25	13	6	180	1,003
Roseburg, 4,924—Douglas							
Mercy Hospital	Gen	Church	50	23	12	652	2,720
Veterans Admin. Hospital▲...	Ment	Vet	670	599	..	...	577
St. Helens, 4,304—Columbia							
St. Helens Hospital..........	Gen	Part	10	4	8	199	250
Salem, *30,908—Marion*							
Oregon State Hospital+▲⊙....	Ment	State	2,700	2,684	..	...	1,536
Oregon State Tuberculosis Hospital▲	TB	State	280	172	..	...	181
Salem Deaconess Hospital▲..	Gen	Church	104	90	24	1,019	3,857
Salem General Hospital▲.....	Gen	NPAssn	80	79	18	1,130	5,052

Key to symbols and abbreviations is on page 1396

OREGON—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Seaside, 2,502—Clatsop							
Seaside Hospital	Gen	City	32	22	9	111	1,120
Silverton, 2,925—Marion							
Silverton General Hospital...	Gen	NPAssn	20	21	9	328	1,215
Sweet Home, 1,090—Linn							
Langmack Hospital	Gen	Corp	31	25	12	277	1,275
The Dalles, 6,266—Wasco							
Eastern Oregon State Tuberculosis Hospital	TB	State	135	132	..	...	121
[illegible] Columbia Hospital	Gen	Indiv	22	15	6	85	733
[illegible] ▲	Gen	NPAssn	75	53	20	450	2,410
[illegible]	Gen	County	50	30	10	340	2,210
[illegible]	Gen	Corp	25	18	5	199	900
[illegible] losis Pavilion	TB	County	38	21	..	...	80
Warm Springs, 150—Jefferson							
Warm Springs Hospital......	Gen	IA	21	10	6	34	358

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Enterprise, 1,700—Wallowa							
Wallowa County Hospital...	Gen	County	21	...	5	Estab. 1947	
Portland, 305,394—Multnomah							
City Isolation Hospital......	Iso	City	115	17	..	5	1,094
Raleigh Hills Sanitarium.....	Alcoh	Corp	18	14	..	...	1,191
Salem, 30,908—Marion							
Oregon Fairview Home.......	MeDe	State	1,150	1,008	..	...	145
Oregon State Penitentiary Hospital	Inst	State	42	15	..	...	500
Oregon State School for the Deaf	Inst	State	20	1	..	...	537

PENNSYLVANIA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Abington, 3,200—Montgomery							
Abington Memorial Hosp.*+▲○	Gen	NPAssn	303	219	57	1,756	7,997
Allentown, 96,904—Lehigh							
Allentown Hospital*+▲○	Gen	NPAssn	304	353	33	2,332	11,355
Allentown State Hospital+▲⊙	Ment	State	1,909	1,958	..	...	467
Sacred Heart Hospital*+▲○..	GenTb	Church	291	272	44	1,629	7,340
Allenwood, 400—Union							
Devitt's Camp	TB	NPAssn	104	100	..	...	280
Altoona, 80,214—Blair							
Altoona Hospital*▲○	Gen	NPAssn	184	170	40	1,728	6,125
Mercy Hospital*▲○	Gen	NPAssn	165	152	54	1,310	5,555
Ambler, 3,953—Montgomery							
Dufur Hospital	N&M	NPAssn	106	84	..	...	424
Ashland, 7,045—Schuylkill							
Ashland State Hospital▲○....	Gen	State	173	139	20	780	3,502
Aspinwall, 4,716—Allegheny							
Veterans Admin. Hospital+▲..	Gen	Vet	941	869	..	...	6,405
Beaver Falls, 17,098—Beaver							
Providence Hospital▲○	Gen	NPAssn	98	91	36	960	3,315
Bedford, 3,268—Bedford							
Timmins' Hospital	Gen	Indiv	17	12	4	161	657
Bellefonte, 5,304—Centre							
Centre County Hospital.....	Gen	NPAssn	67	65	22	903	2,122
Bellevue (Pittsburgh P. O.), 10,488—Allegheny							
[illegible] ▲	Gen	NPAssn	121	93	25	703	3,507
[illegible]	Gen	NPAssn	63	35	12	516	1,811
[illegible]	Gen	Part	20	...	10	Estab. 1947	
[illegible] ▲	Gen	NPAssn	334	235	46	2,004	8,564
[illegible]	Gen	NPAssn	121	70	25	664	2,472
Blossburg State Hospital▲...	Gen	State	90	80	9	224	1,902
Braddock, 18,326—Allegheny							
Braddock General Hosp.*▲○..	Gen	NPAssn	133	156	42	1,057	4,683
Bradford, 17,691—McKean							
[illegible] ▲	Gen	NPAssn	121	111	30	833	4,302
[illegible] ▲	Gen	NPAssn	39	36	10	487	2,079
[illegible] ▲	Gen	NPAssn	89	74	10	824	2,740
[illegible] ▲	Gen	NPAssn	285	231	48	1,778	7,667
Butler, 24,477—Butler							
Butler County Memorial Hospital▲○	Gen	NPAssn	166	150	36	1,482	5,510
Veterans Admin. Hospital....	Gen	Vet	1,000	580	..	...	4,894
Canonsburg, 12,599—Washington							
Canonsburg General Hosp▲○..	Gen	NPAssn	84	76	32	902	2,791
Carbondale, 19,371—Lackawanna							
Carbondale General Hospital▲	Gen	NPAssn	69	50	18	392	1,934
St. Joseph's Hospital▲○......	Gen	Church	88	72	10	441	2,439
Carlisle, 13,984—Cumberland							
Carlisle Hospital▲	Gen	NPAssn	97	97	27	920	4,463
[illegible]	Gen	Army	140	48	10	79	1,735
[illegible]	Gen	NPAssn	94	88	12	815	3,298
[illegible] ▲	Gen	NPAssn	128	127	32	1,485	6,983
Chester, 59,285—Delaware							
Chester Hospital*▲○	Gen	NPAssn	265	224	45	1,778	7,323
J. Lewis Crozier Homeopathic Hospital	GenIncur	NPAssn	96	77	31	884	3,587

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
[illegible] kawanna							
[illegible] osp...	Ment	State	1,331	1,139	..	...	611
[illegible]							
Clearfield Hospital▲○	Gen	NPAssn	107	80	18	679	3,330
[illegible] ▲	Gen	State	120	111	18	693	4,021
Clement Atkinson Memorial							
[illegible]	Gen	NPAssn	17	8	3	73	242
[illegible] ▲	Gen	NPAssn	100	70	25	800	3,156
[illegible] ▲	Ment	Vet	2,119	2,018	..	...	677
[illegible]	Gen	NPAssn	48	28	14	519	1,357
[illegible]	Gen	Indiv	14	6	8	119	308
Connellsville, 13,608—Fayette							
Connellsville State Hospital▲	Gen	State	109	74	33	964	3,380
Corry, 6,935—Erie							
Corry Hospital	Gen	NPAssn	40	36	8	387	1,857
Coudersport, 3,197—Potter							
Potter County Memorial							
[illegible]	Gen	NPAssn	43	34	8	174	1,034
[illegible]	TB	State	840	573	..	...	379
Danville, 7,122—Montour							
Danville State Hospital+▲○..	Ment	State	2,296	2,407	..	...	405
George F. Geisinger Memorial Hospital*+▲○	Gen	NPAssn	194	162	36	1,086	7,596
Darby, 10,334—Delaware							
Fitzgerald-Mercy Hosp.*+▲○..	Gen	Church	200	166	64	2,309	6,650
Dixmont, 188—Allegheny							
Dixmont State Hospital......	Ment	State	1,031	980	..	...	37
Drexel Hill,—Delaware							
Delaware County Hospital▲..	Gen	NPAssn	89	71	16	539	2,735
Dubois, 12,080—Clearfield							
Dubois Hospital	Gen	Church	61	48	14	497	2,462
Maple Avenue Hospital.......	Gen	NPAssn	94	73	15	446	3,447
Eagleville, 500—Montgomery							
Eagleville Sanatorium for Consumptives+▲	TB	NPAssn	188	182	..	...	183
Easton, 33,589—Northampton							
Betts Hospital	Gen	NPAssn	54	45	24	634	1,962
Easton Hospital*▲○	Gen	NPAssn	186	142	24	1,205	5,819
East Stroudsburg, 6,404—Monroe							
General Hospital of Monroe County▲	Gen	NPAssn	61	51	18	565	2,028
Elizabethtown, 4,315—Lancaster							
Philadelphia Free Masons' Memorial Hosp. Masonic Homes..	Inst	NPAssn	165	156	..	...	547
State Hospital for Crippled Children+▲	Orth	State	225	86	..	...	91
Ellwood City, 12,329—Lawrence							
Ellwood City Hospital▲......	Gen	NPAssn	89	54	31	753	2,351
Elwyn, 200—Delaware							
Elwyn Training School.......	MeDe	NPAssn	1,130	1,090	..	...	97
Erie, 116,955—Erie							
Erie County Tuberculosis Hospital	TB	County	65	62	..	...	101
Hamot Hospital*+▲○	Gen	NPAssn	289	262	43	1,837	9,316
St. Vincent's Hospital*+▲○...	Gen	NPAssn	281	308	71	3,028	9,970
Zem Zem Hospital for Crippled Children	Orth	NPAssn	50	35	..	...	45
Everett, 24,425—Bedford							
Everett Hospital	Gen	County	36	17	8	148	712
Franklin, 9,948—Venango							
Franklin Hospital	Gen	NPAssn	74	58	18	589	2,698
Gettysburg, 5,916—Adams							
Annie M. Warner Hospital▲..	Gen	NPAssn	58	60	15	688	2,313
Gladwyne, 1,236—Montgomery							
Gladwyne Colony	N&M	Indiv	90	89	..	...	128
Greensburg, 16,743—Westmoreland							
Westmoreland Hospital*▲○ ..	Gen	NPAssn	190	168	40	2,012	7,167
Greenville, 8,149—Mercer							
Greenville Hospital	Gen	NPAssn	64	41	20	556	2,686
Grove City, 6,296—Mercer							
Grove City Hospital.........	Gen	NPAssn	31	20	10	313	831
Hamburg, 3,717—Berks							
Pennsylvania State Sanatorium for Tuberculosis▲.....	TB	State	776	588	..	...	448
Hanover, 13,076—York							
Hanover General Hospital▲..	Gen	NPAssn	80	71	18	1,216	3,122
Harrisburg, 83,893—Dauphin							
[illegible] ▲	Gen	NPAssn	312	306	56	2,325	9,916
[illegible] ▲	Gen	NPAssn	203	172	46	1,781	6,632
Harrisburg State Hospital+▲	Ment	State	2,019	2,444	..	...	484
Keystone Hospital	Gen	Indiv	30	No data supplied			
[illegible] ▲	Gen	State	180	172	30	998	6,694
[illegible]	Ment	State	356	364	..	...	97
Homestead, 19,041—Allegheny							
Homestead Hospital▲○	Gen	NPAssn	122	100	28	739	3,653
Honesdale, 5,687—Wayne							
Wayne County Memorial Hosp.	Gen	NPAssn	36	30	9	264	1,099
Huntingdon, 7,170—Huntingdon							
J. C. Blair Memorial Hosp.▲	Gen	NPAssn	70	76	18	738	2,969
Indiana, 10,050—Indiana							
Indiana Hospital▲○	Gen	NPAssn	166	168	34	1,180	6,442
Jersey Shore, 5,432—Lycoming							
Jersey Shore Hospital.......	Gen	NPAssn	32	23	10	335	1,141

Key to symbols and abbreviations is on page 1396

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Johnstown, 66,668—Cambria							
Conemaugh Valley Memorial Hospital★+▲○	Gen	NPAssn	346	335	69	1,811	11,519
Lee Homeopathic Hospital▲	Gen	NPAssn	75	56	20	610	2,073
Mercy Hospital▲○	Gen	Church	116	106	28	962	3,727
Kane, 6,133—McKean							
Community Hospital▲	Gen	NPAssn	59	41	12	211	1,481
Kane Summit Hospital	Gen	NPAssn	23	20	6	217	816
Kingston, 20,679—Luzerne							
Nesbitt Memorial Hosp.★▲○	Gen	NPAssn	200	150	40	1,179	6,289
Kittanning, 7,550—Armstrong							
Armstrong County Hospital	Gen	NPAssn	69	62	21	986	2,697
Lancaster, 61,345—Lancaster							
Lancaster General Hosp.★▲○	Gen	NPAssn	241	228	60	2,392	8,165
Rossmere Sanatorium	TB	CyCo	56	51	..	...	77
St. Joseph's Hospital★+▲○	Gen	Church	232	189	40	1,159	6,793
Lansdale, 9,316—Montgomery							
Elm Terrace Hospital	Gen	NPAssn	39	25	11	327	2,131
Latrobe, 11,111—Westmoreland							
Latrobe Hospital▲○	Gen	NPAssn	132	141	43	1,286	4,478
Laurelton, 327—Union							
Laurelton State Village	MeDe	State	91	59	..	...	36
Lebanon, 27,206—Lebanon							
Good Samaritan Hospital▲○	Gen	NPAssn	121	84	30	1,227	3,930
Lebanon Sanatorium	Gen	NPAssn	40	33	16	581	1,330
Veterans Admin. Hospital	Gen	Vet	183	...	..	Estab. 1947	
Leetsdale, 2,332—Allegheny							
D. T. Watson Home for Crippled Children▲	Orth	NPAssn	100	91	..	...	231
[illegible]							
[illegible]	Gen	Church	47	46	22	717	1,573
[illegible]▲	Inst	USPHS	61	19	..	...	767
[illegible]							
Lewistown Hospital▲○	Gen	NPAssn	114	108	21	997	3,574
Limeport, 250—Lehigh							
Sacred Heart Sanatorium	Unit of Sacred Heart Hospital, Allentown						
Lock Haven, 10,810—Clinton							
Lock Haven Hospital▲○	Gen	NPAssn	83	67	24	718	2,829
Teah Private Hospital	Gen	Indiv	30	8	6	182	1,058
Mayview, 420—Allegheny							
Mayview State Hospital⊙	Ment	State	3,079	3,004	..	...	727
Pittsburgh City Home and Hospitals▲	Unit of Allegheny County Institution District Hospital, Woodville						
McKeesport, 55,355—Allegheny							
McKeesport Hospital★▲○	Gen	NPAssn	275	238	30	3,109	3,457
McKees Rocks, 17,021—Allegheny							
Ohio Valley General Hosp.▲○	Gen	NPAssn	59	46	24	584	2,298
Meadville, 18,919—Crawford							
Meadville City Hospital▲○	Gen	NPAssn	122	101	28	819	4,974
Spencer Hospital▲○	Gen	NPAssn	116	77	22	654	3,774
Mercer, 2,272—Mercer							
Mercer Cottage Hospital	Gen	Corp	60	27	5	143	1,113
Mercer Sanitarium	N&M	Part	42	37	..	...	121
Meyersdale, 3,250—Somerset							
Hazel McGilvery Hospital	Gen	NPAssn	15	10	8	233	791
Monaca, 7,061—Beaver							
Beaver County Sanatorium▲	TB	County	62	57	..	...	61
Monessen, 20,257—Westmoreland							
Gemmill Hospital	ENT	Part	17	8	..	...	760
Monongahela, 8,825—Washington							
Memorial Hospital▲	Gen	NPAssn	74	70	25	848	2,796
Mount Pleasant, 5,821—Westmoreland							
Henry Clay Frick Memorial Hospital▲○	Gen	NPAssn	71	54	27	920	2,730
Muncy, 2,606—Lycoming							
Muncy Valley Hospital	Gen	NPAssn	20	18	12	184	591
[illegible]							
[illegible]▲	Gen	State	100	108	15	695	4,015
[illegible]							
[illegible] Hospital▲	Gen	NPAssn	80	70	18	719	2,849
New Castle, 47,638—Lawrence							
Jameson Memorial Hosp.▲○	Gen	NPAssn	154	149	36	1,468	6,006
New Castle Hospital▲○	Gen	Church	113	100	22	702	4,256
New Cumberland, 4,525—Cumberland							
Station Hospital	Gen	Army	100	50	3	23	1,586
New Kensington, 24,055—Westmoreland							
Citizens General Hospital▲○	Gen	NPAssn	147	133	38	1,715	5,355
New Wilmington, 1,018—Lawrence							
Overlook Sanitarium	N&M	Part	35	26	..	...	211
Norristown, 38,181—Montgomery							
Montgomery Hospital★▲○	Gen	NPAssn	185	155	45	1,272	4,918
Norristown State Hosp.+▲⊙	Ment	State	4,400	4,275	..	...	721
Sacred Heart Hospital▲	Gen	Church	66	55	20	693	2,291
Oakbourne (West Chester P. O.), 100—Chester							
Oakbourne Colony Hospital	Epil	NPAssn	140	94	..	...	33
Oil City, 20,379—Venango							
Oil City Hospital▲○	Gen	NPAssn	135	105	20	923	5,062
Palmerton, 7,475—Carbon							
[illegible]▲	Gen	NPAssn	65	55	11	453	2,386
[illegible]							
[illegible]	Gen	NPAssn	65	48	14	500	1,951
Philadelphia, 1,931,334—Philadelphia							
All Saints Hospital for Treatment of Tuberculosis	TB	Church	101	66	..	...	131
American Hospital for Diseases of the Stomach	Gen	NPAssn	34	25	6	98	913
American Oncologic Hosp.+▲	SkCa	NPAssn	55	33	..	...	722
Anderson Hospital	Gen	NPAssn	96	76	24	853	5,048
Babies' Hospital+	Chil	NPAssn	14	8	1	...	286
Chestnut Hill Hospital★▲○	Gen	NPAssn	106	82	36	880	3,392
Children's Heart Hospital▲	Card	NPAssn	60	59	..	...	137
Children's Hospital+▲⊙	Chil	NPAssn	140	110	..	...	3,354
Children's Hospital of the Mary J. Drexel Home+▲	Chil	Church	45	23	..	...	1,013
Columbus Hospital	Gen	Church	52	41	18	400	2,125
Community Hospital	Gen	NPAssn	40	21	12	124	745
Crothers Dulles Hospital	Unit of Hospital of Univ. of Pennsylvania						
Doctors Hospital★	Gen	NPAssn	165	106	40	1,046	4,143
Eastern State Penitentiary Hospital	Inst	State	60	14	..	...	791
Episcopal Hospital★+▲○	Gen	Church	488	354	64	2,817	10,146
Fairmount Farm	N&M	Corp	70	62	..	...	579
Frankford Hospital★+▲○	Gen	NPAssn	144	113	48	1,462	4,248
Frederick Douglass Memorial [illegible]	Gen	NPAssn	84	59	24	548	2,164
[illegible]	N&M	NPAssn	170	152	..	...	335
[illegible]	Unit of Temple University Hospital						
[illegible] and Hospital★+▲○	Gen	NPAssn	345	238	65	2,125	7,462
Graduate Hospital of the University of Pennsylvania★+▲	Gen	NPAssn	461	254	..	...	7,416
Hahnemann Hospital★+▲○	Gen	NPAssn	601	408	91	2,756	11,910
Hall-Mercer Hospital	Associated with Institute of the Pennsylvania Hospital, Philadelphia						
[illegible] of [illegible]▲	Gen	NPAssn	697	580	65	1,784	17,749
[illegible] Woman's Medical College of Pennsylvania★+▲○	Gen	NPAssn	167	149	39	1,467	4,585
Institute of the Pennsylvania Hospital+▲	N&M	NPAssn	78	49	..	...	263
Jeanes Hospital+▲	Cancer	NPAssn	80	42	..	...	1,258
Je[illegible] Medical College [illegible]▲	GenTb	NPAssn	679	661	53	2,123	19,439
Je[illegible]▲	Gen	NPAssn	370	339	61	1,880	9,203
Joseph Pr[illegible]▲	Gen	NPAssn	62	41	11	111	618
[illegible]▲	Gen	NPAssn	262	201	36	1,092	6,162
[illegible]	Unit of Pennsylvania Hospital						
[illegible]▲	Gen	NPAssn	113	89	20	912	3,235
[illegible]▲	Gen	NPAssn	104	92	16	517	2,764
[illegible]▲	Gen	Church	225	151	40	892	5,235
[illegible]▲	Gen	Church	200	179	50	1,650	6,366
[illegible]▲	Gen	NPAssn	262	185	55	1,310	6,209
[illegible]▲	Gen	Church	150	127	45	1,906	5,673
Northeastern Hospital★▲○	Gen	NPAssn	82	72	20	741	3,256
Northern Liberties Hosp.▲	Gen	NPAssn	58	46	11	290	2,103
Northwestern General Hosp.	Unit of Temple University Hospital						
Pennsylvania Hospital★+▲○	Gen	NPAssn	437	329	105	3,006	10,204
Pennsylvania Hospital Department for Mental and Nervous Diseases+▲○	N&M	NPAssn	230	175	..	...	399
Philadelphia General Hospital★+▲○	Gen	City	2,500	2,031	60	2,130	22,053
Philadelphia Hospital for Contagious Diseases+▲⊙	IsoTb	City	1,070	182	2	1	2,613
Philadelphia Psychiatric Hospital+▲	N&M	NPAssn	61	56	..	...	428
Philadelphia State Hosp.+▲⊙	Ment	State	6,355	5,992	..	...	614
Physicians and Surgeons Hospital	Gen	NPAssn	50	12	12	234	1,266
Presbyterian Hospital★+▲○	Gen	Church	367	278	42	921	7,116
Preston Maternity Hospital▲	Mat	NPAssn	50	13	35	355	454
Rush Hospital for Consumption and Allied Diseases▲	TB	NPAssn	168	122	..	...	39[illegible]
St. Agnes Hospital★▲○	Gen	Church	316	148	80	1,960	6,26[illegible]
St. Christopher's Hospital for Children+▲⊙	Chil	NPAssn	90	56	..	...	2,538
St. Joseph's Hospital★▲○	Gen	Church	200	132	35	1,051	4,807
St. Luke's and Children's Medical Center★+▲○	Gen	NPAssn	281	228	86	1,496	9,094
St. Mary's Hospital★▲○	Gen	Church	230	190	50	1,749	6,357
St. Vincent's Hospital for Women and Children▲	Gen	Church	116	80	24	926	1,406
Shriners Hospital for Crippled Children+▲	Orth	NPAssn	120	49	..	...	184
Skin and Cancer Hospital+	SkCa	NPAssn	31	16	..	...	218
Stetson Hospital▲	Gen	NPAssn	64	41	15	470	1,807
[illegible] University Hosp.★+▲○	Gen	NPAssn	558	440	44	2,404	13,664
[illegible]▲	Gen	Navy	1,272	1,050	27	803	21,897
[illegible]	Urol	Part	15	7	..	...	380
Wills Hosp[illegible]▲	Eye	NPAssn	200	146	..	...	3,932
Wolffe Clinic and Hosp.	MedCard	Part	30	16	..	...	500
Woman's Hospital★+▲○	Gen	NPAssn	137	104	48	2,057	4,424
Women's Homeopathic [illegible]★+▲○	Gen	NPAssn	178	123	40	701	4,105
[illegible]	Gen	Indiv	25	18	12	254	738
[illegible] p.▲○	Gen	State	132	115	18	629	3,928
Phoenixville, 12,2[illegible]—[illegible]ter							
Phoenixville Hospital▲	Gen	NPAssn	75	73	23	630	2,641
Valley Forge General Hosp.	Gen	Army	2,609	2,625	..	3	7,237
Pittsburgh, 671,659—Allegheny							
Allegheny General Hosp.★+▲○	Gen	NPAssn	554	453	54	2,873	11,560
Belvedere General Hospital	Gen	NPAssn	28	13	10	133	679
Children's Hospital+▲⊙	Chil	NPAssn	208	166	..	...	5,197
City Tuberculosis Hospital+▲	TB	City	424	303	..	...	442
Elizabeth Steel Magee Hospital+▲⊙	Gen	NPAssn	309	227	121	4,576	9,102
Eye, Ear, Nose and Throat Hospital+▲⊙	ENT	NPAssn	106	85	6	...	5,776
Fairview Sanatorium	N&M	Corp	12	12	..	...	37
Haddon Hospital	Gen	NPAssn	21	9	15	320	337
Mercy Hospital★+▲○	Gen	Church	669	623	66	2,366	14,695

Key to symbols and abbreviations is on page 1396

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Montefiore Hospital★+▲○	Gen	NPAssn	246	203	34	1,034	7,204
Municipal Hospital▲⊙	Iso	City	224	58	..	...	2,500
Passavant Hospital▲	Gen	NPAssn	93	58	20	337	1,937
Pittsburgh Hospital★+▲○	Gen	NPAssn	190	191	85	1,435	5,639
Presbyterian Hospital★+▲○ ..	Gen	NPAssn	235	196	..	...	6,026
Roselia Foundling and Maternity Hospital▲	MatChil	NPAssn	139	133	28	511	900
St. Francis Hospital★+▲○.....	Gen	NPAssn	690	669	50	2,320	14,850
St. John's General Hosp.★▲○..	Gen	NPAssn	197	183	53	2,313	7,009
St. Joseph's Hospital and Dispensary★▲○	Gen	Church	170	150	80	1,320	6,211
St. Margaret Memorial Hospital★+▲○	Gen	Church	129	85	21	627	3,036
Shadyside Hospital★▲○	Gen	NPAssn	300	261	40	1,613	7,932
South Side Hospital★▲○.......	Gen	NPAssn	207	156	32	1,255	6,011
Tuberculosis League Hospital+▲⊙	TB	NPAssn	150	149	..	...	167
U. S. Marine Hospital▲.......	Gen	USPHS	73	52	..	...	1,063
Western Pennsylvania Hospital★+▲○	Gen	NPAssn	537	423	63	2,047	12,138
Western State Penitentiary Hospital	Inst	State	37	24	..	...	658
Western State Psychiatric Institute and Clinic+▲⊙.....	Ment	State	164	127	..	...	193
Woman's Hospital▲	Gen	NPAssn	115	95	..	...	2,093
Pittston, 17,828—Luzerne							
Pittston Hospital▲○	Gen	NPAssn	122	105	28	936	5,327
Polk, 3,690—Venango							
Polk State School............	McDe	State	3,257	3,124	..	...	150
Port Allegany, 2,356—McKean							
Port Allegany Community Hospital	Gen	NPAssn	17	8	8	165	545
Pottstown, 20,194—Montgomery							
Hill School Infirmary.........	Inst	NPAssn	40	6	..	...	457
Memorial Hospital▲	Gen	NPAssn	67	51	18	597	1,917
Pottstown Hospital+▲○	Gen	NPAssn	100	73	24	856	3,016
Pottsville, 24,530—Schuylkill							
A. C. Milliken Hospital▲......	Gen	NPAssn	72	71	27	822	3,712
Lemos B. Warne Hospital and Clinic▲	Gen	NPAssn	75	87	18	340	1,860
Pottsville Hospital★▲○	Gen	NPAssn	155	120	17	913	3,818
Punxsutawney, 9,452—Jefferson							
Adrian Hospital▲	Gen	NPAssn	78	74	14	757	2,658
Quakertown, 5.150—Bucks							
Quakertown Community Hospital▲	Gen	NPAssn	65	50	17	466	2,091
Ransom, 150—Lackawanna							
Ransom Mental Hospital.....	Ment	County	397	Destroyed by fire			
Reading, 110,568—Berks							
Berks County Tuberculosis Sanatorium▲	TB	County	143	95	..	...	93
Community General Hosp.★▲	Gen	NPAssn	123	100	27	846	8,603
Reading Hospital★+▲○	Gen	NPAssn	300	272	57	2,513	9,125
St. Joseph's Hospital★+▲○....	Gen	Church	185	187	35	1,243	6,094
Renovo, 3,784—Clinton							
Renovo Hospital	Gen	NPAssn	24	18	6	210	1,013
Retreat, 2,000—Luzerne							
Retreat State Hospital▲......	Ment	State	1,175	1,120	..	...	163
Ridgway, 6,253—Elk							
Elk County General Hospital.	Gen	NPAssn	70	44	15	315	1,607
Ridley Park, 3,887—Delaware							
Taylor Hospital	Gen	NPAssn	70	64	18	673	2,725
Roaring Spring, 2,724—Blair							
Nason Hospital	Gen	NPAssn	60	49	15	415	1,777
Rochester, 7,441—Beaver							
Rochester General Hospital▲..	Gen	NPAssn	138	124	28	1,056	4,143
St. Marys, 7,653—Elk							
Andrew Kaul Memorial Hosp.	Gen	Church	65	51	18	610	2,327
Sayre, 7,569—Bradford							
Robert Packer Hospital★+▲○	Gen	NPAssn	304	262	21	818	10,560
Scranton, 140,404—Lackawanna							
Hahnemann Hospital▲○	Gen	NPAssn	109	113	16	1,467	4,082
Lackawanna County Tuberculosis Hospital▲	TB	County	165	125	..	...	101
Mercy Hospital▲○	Gen	Church	92	81	20	1,001	2,776
Moses Taylor Hospital★▲○...	Gen	NPAssn	120	92	..	...	2,295
St. Joseph's Children's and Maternity Hospital▲⊙	MatChil	Church	204	185	4	69	278
St. Mary's Hospital▲○........	Gen	Church	85	72	15	403	1,760
Scranton State Hospital★▲○..	Gen	State	290	224	20	1,001	5,839
West Side Hospital▲○.........	Gen	NPAssn	65	57	10	407	1,648
Sellersville, 2,115—Bucks							
Grand View Hospital▲○.......	Gen	NPAssn	74	76	25	797	2,560
Sewickley, 6,614—Allegheny							
Sewickley Valley Hospital★▲○	Gen	NPAssn	151	137	34	1,835	5,307
Shamokin, 18,810—Northumberland							
Shamokin State Hospital▲....	Gen	State	89	81	26	872	3,768
Sharon, 25,622—Mercer							
Christian H. Buhl Hosp.+▲○..	Gen	NPAssn	233	182	44	1,838	7,582
Shenandoah, 19,790—Schuylkill							
Locust Mountain State Hosp.▲	Gen	State	79	62	14	772	3,115
Somerset, 5,430—Somerset							
Somerset Community Hosp...	Gen	NPAssn	72	62	18	578	2,403
South Mountain, 200—Franklin							
Pennsylvania State Sanatorium No. 1 (Mont Alto)▲.........	TB	State	1,700	844	..	...	552
Spangler, 3,201—Cambria							
Miners' Hospital of Northern Cambria▲○	Gen	Corp	79	60	14	820	3,003
Spring City, 3,022—Chester							
Pennhurst State School.......	McDe	State	2,500	2,300	..	...	254

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
State College, 6,226—Centre							
Pennsylvania State College Health Service Hospital.....	Inst	State	30	7	..	...	842
Sunbury, 15,462—Northumberland							
Sunbury Community Hospital	Gen	NPAssn	74	66	14	713	2,314
Susquehanna, 2,740—Susquehanna							
Simon H. Barnes Memorial Hospital	Gen	NPAssn	18	13	5	69	525
Tarentum, 9,846—Allegheny							
Allegheny Valley Hospital▲○..	Gen	NPAssn	188	183	40	1,853	6,638
Taylor, 9,002—Lackawanna							
Taylor Hospital	Gen	NPAssn	49	43	13	379	2,012
Titusville, 8,126—Crawford							
Titusville Hospital▲	Gen	NPAssn	65	43	22	496	2,477
Torrance, 500—Westmoreland							
Torrance State Hospital▲⊙...	Ment	State	2,600	2,309	..	...	592
Union City, 3,813—Erie							
Henry L. Stern Memorial Hospital	Gen	City	29	10	10	275	2,103
Uniontown, 21,819—Fayette							
Uniontown Hospital★+▲○	Gen	NPAssn	215	214	35	1,803	7,114
Warren, 11,891—Warren							
Warren General Hospital.....	Gen	NPAssn	92	76	22	729	3,677
Warren State Hospital+▲⊙...	Ment	State	2,640	2,507	..	...	670
Washington, 26,166—Washington							
Hillsview Sanitarium▲	Gen	Corp	49	46	..	...	321
Washington Hospital★+▲○ ...	Gen	NPAssn	158	150	46	1,513	5,383
Wawa, 300—Delaware							
Wawa Chest Hospital........	TB	NPAssn	16	16	..	...	67
Waymart, 1,095—Wayne							
Farview State Hospital.......	Ment	State	1,150	1,148	..	...	120
Waynesboro, 10,231—Franklin							
Waynesboro Hospital	Gen	NPAssn	78	66	20	722	2,037
Waynesburg, 4,891—Greene							
Greene County Memorial Hospital▲	Gen	NPAssn	115	110	24	995	4,021
Wellsboro, 3,665—Tioga							
Soldiers and Sailors Memorial Hospital	Gen	NPAssn	35	31	17	431	1,687
Wernersville, 1,160—Berks							
Wernersville State Hosp.▲....	Ment	State	1,600	1,850	..	...	403
West Chester, 13,289—Chester							
Chester County Hospital★+▲○	Gen	NPAssn	151	143	26	700	4,207
Darlington Sanitarium	N&M	NPAssn	68	43	..	...	315
Marshall Square Sanitarium..	N&M	Indiv	110	105	..	...	192
Memorial Hospital of Chester County▲	Gen	NPAssn	64	52	14	351	1,756
White Haven, 1,528—Luzerne							
White Haven Sanatorium+▲..	Unit of Jefferson Medical College Hospital, Philadelphia						
Wilkes-Barre, 86,236—Luzerne							
Mercy Hospital★+▲○	Gen	Church	205	190	25	1,188	5,752
Wilkes-Barre General Hospi*tal★+▲○*	*Gen*	*NPAssn*	*367*	*263*	*50*	*1,875*	*9,677*
Wyoming Valley Homeopathic Hospital▲○	Gen	NPAssn	84	61	25	774	2,481
Wilkinsburg, 29,853—Allegheny							
Columbia Hospital★+▲○	Gen	Church	171	156	61	1,631	5,655
Williamsport, 44,355—Lycoming							
Rothfuss Clinic and Hospital	Gen	Indiv	25	10	10	221	620
Williamsport Hospital★+▲○ ..	Gen	NPAssn	260	237	44	1,958	8,648
Windber, 9,057—Somerset							
Windber Hospital★▲○	Gen	NPAssn	107	83	10	450	3,367
Woodville, 4,000—Allegheny							
Allegheny County Institution District Hospital	GenInst	County	1,767	1,588	..	...	1,136
Woodville State Hospital+...	Ment	State	2,541	2,454	..	...	391
York, 56,712—York							
York Hospital★+▲○	Gen	NPAssn	196	173	52	2,497	7,525

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bellefonte, 5,304—Centre							
Western State Penitentiary Hospital	Inst	State	18	6	..	...	535
Broomall, 1,200—Delaware							
Convalescent Hospital	Conv	NPAssn	29	24	..	...	300
Rest Haven for Convalescents	Conv	Part	69	67	..	...	165
Bryn Mawr, 10,206—Montgomery							
Bryn Mawr College Infirmary	Inst	NPAssn	20	6	..	...	525
Cambridge Springs, 1,807—Crawford							
San Rosario Sanitarium......	Conv	Church	34	15	..	...	506
Camp Hill, 3,630—Cumberland							
Pennsylvania Industrial School	Inst	State	32	25	..	...	614
Chambersburg, 14,852—Franklin							
Chambersburg Maternity Home	Mat	Part	10	8	12	403	409
Darby, 10,334—Delaware							
St. Francis' Country House..	Conv	Church	60	57	..	...	240
Doylestown, 4,976—Bucks							
Dr. Buckman's Hospital......	Conv	Indiv	25	12	..	...	34
Ebensburg, 3,719—Cambria							
Cambria County Hospital....	Inst	County	195	150	..	...	263
Embreeville, 500—Chester							
Embreeville State Hospital...	Ment	State	299	254	..	...	34
Erie, 116,955—Erie							
Lakeview Hospital	Iso	City	80	15	6	...	114
Harmarville, 900—Allegheny							
Harmarville Convalescent Home	Conv	NPAssn	45	30	20	...	225
Harrisburg, 83,893—Dauphin							
Dauphin County Hospital....	Inst	County	165	165	..	...	178

Key to symbols and abbreviations is on page 1396

PENNSYLVANIA—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Hazleton, 38,009—Luzerne							
St. Joseph Hospital	Mat	Church	25	19	27	718	725
Johnstown, 66,668—Cambria							
Municipal Hospital	Iso	City	44	2	..	...	77
Lancaster, 61,345—Lancaster							
Lancaster County Institution *District*	*Inst*	*County*	241	205	..	...	178
Lewisburg, 3,571—Union							
Ziegler Memorial Infirmary	Inst	NPAssn	22	4	..	...	214
Malvern, 1,680—Chester							
Point Comfort Rest Home	Conv	Indiv	44	34	..	...	26
Mercer, 2,272—Mercer							
Mercer County Home and Hospital	Inst	County	78	75	..	...	83
Middletown, 7,046—Dauphin							
Odd Fellows' Home	Inst	NPAssn	42	42	..	...	37
Morganza, 900—Washington							
Pennsylvania Training School Hospital	Inst	State	*40*	*9*	..	...	785
North East, 3,704—Erie							
St. Barnabas' House by the Lake	Conv	Church	35	35	..	...	23
Oakbourne (West Chester P.O.), 100—Chester							
James C. Smith Memorial Home	Conv	*Church*	*21*	*4*	..	...	*101*
Olyphant, 9,252—Lackawanna							
Blakely Home and Hospital	Ment	County	254	80	..	...	37
Philadelphia, 1,931,334—Philadelphia							
Belle Vista Sanatorium	N&M	Indiv	78	75	..	...	75
Belmont Hospital-Salvation Army Hospital	Mat	Church	10	6	10	200	344
Florence Crittenton Home	Mat	NPAssn	6	2	12	83	111
Philadelphia County Prison Hospital (Holmesburg)	Inst	County	50	20	..	...	411
Philadelphia County Prison Hospital (Reed Street)	Inst	County	34	6	..	...	639
Philadelphia Home for Incurables	Incur	NPAssn	262	230	..	...	30
Pine Hall Convalescent Home	Conv	Indiv	23	19	..	...	27
Sharon Hall	Conv	Corp	56	50	..	...	124
Pittsburgh, 671,659—Allegheny							
Hasley Nursing Home	N&M	Indiv	17	10	..	...	30
Salvation Army Women's Home and Hospital	Mat	Church	8	5	6	87	108
Rochester, 7,441—Beaver							
Passavant Memorial Homes for the Care of Epileptics	Epil	Church	125	105	..	...	3
Scranton, 140,404—Lackawanna							
Municipal Hospital	*Iso*	*City*	*50*	*4*	*9*	...	94
Selinsgrove, 2,877—Snyder							
Selinsgrove State Colony for Epileptics	Epil	State	950	907	..	...	102
Somerset, 5,430—Somerset							
Somerset State Hospital	Ment	State	500	450	..	...	40
Towanda, 4,154—Bradford							
Mills Hospital	Gen	Indiv	21	20	8	226	374
Willow Grove, 12,000—Montgomery							
Willow Crest for Convalescents	Conv	NPAssn	77	66	..	...	1,137

RHODE ISLAND

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Central Falls, 25,248—Providence							
Notre Dame Hospital	Gen	NPAssn	48	16	20	25	678
East Greenwich, *3,842—Kent*							
Crawford Allen Memorial Hospi	Unit of *Rhode* Island Hospital, Providence						
East [illegible]							
Emma [illegible] Home	NervChil	NPAssn	54	48	..	...	75
Hillsgrove, 1,000—Kent							
St. Joseph's Hospital	TB	Church	65	40	..	...	12
Howard, 5,000—Providence							
State Hospital for Mental Diseases+▲⊙	Ment	State	3,150	2,970	4	22	773
State Infirmary▲	Gen	State	988	761	20	...	587
Newport, 30,532—Newport							
Newport Hospital▲○	Gen	NPAssn	176	133	46	1,151	4,910
U. S. Naval Hospital★+▲	Gen	Navy	800	613	14	407	7,885
Pawtucket, 75,797—Providence							
Memorial Hospital★▲○	Gen	NPAssn	172	156	30	2,070	7,051
Providence, 253,504—Providence							
Butler Hospital+▲⊙	*N&M*	*NPAssn*	174	133	..	...	*209*
Charles V. Chapin Hospital+▲⊙	TbIsoN&M	City	265	154	..	...	3,232
Jane Brown Memorial Hosp.	Unit of Rhode Island Hospital						
Miriam Hospital▲	Gen	NPAssn	65	37	15	309	1,826
Providence Lying-In Hosp.+▲⊙	Mat	NPAssn	175	160	175	7,662	8,550
Rhode Island Hospital★+▲○	*Gen*	*NPAssn*	*569*	*466*	..	...	*13,702*
Roger Williams General Hospital★▲○	Gen	NPAssn	162	141	34	1,411	5,502
St. Joseph's Hospital★▲○	Gen	Church	310	236	50	1,890	7,779
Quonset Point,—Washington							
U. S. Naval Air Station Dispensary	Gen	Navy	*200*	*54*	..	...	*1,801*
Wakefield, 4,000—Washington							
South County Hospital▲	Gen	NPAssn	46	30	11	464	1,498
Wallum Lake, 100—Providence							
State Sanatorium+▲	TB	State	611	346	..	...	278

RHODE ISLAND—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Westerly, 11,199—Washington							
[illegible]	Gen	NPAssn	61	44	20	618	2,063
[illegible]	Gen	NPAssn	147	94	37	1,794	4,763

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Hoxsie, 135—Kent							
Lakeside Home and Mary Murray Preventorium	TB	NPAssn	50	45	..	...	137
La Fayette, 600—Washington							
[illegible]	MeDe	State	875	863	..	...	81
St. [illegible] able Women	Incur	Church	70	69	..	...	50

SOUTH CAROLINA

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Abbeville, 4,930—Abbeville							
Abbeville County Memorial Hospital	Gen	CyCo	31	11	11	215	556
Aiken, 6,168—Aiken							
Aiken County Hospital▲	Gen	County	70	47	10	446	2,530
Anderson, 19,424—Anderson							
Anderson County Memorial Hospital▲○	Gen	NPAssn	255	128	32	1,490	6,025
St. Mary's Hospital	Gen	NPAssn	40	15	8	31	509
Beaufort, 3,185—Beaufort							
Beaufort County Hospital	Gen	County	40	21	12	171	1,413
Bennettsville, 4,895—Marlboro							
Marlboro County General Hospital▲	Gen	NPAssn	80	59	20	504	3,412
Camden, 5,747—Kershaw							
Camden Hospital▲○	Gen	*NPAssn*	*76*	*49*	*13*	*509*	*2,091*
Charleston, 71,275—Charleston							
Baker Memorial Sanatorium▲	Gen	NPAssn	60	50	15	419	2,563
Pinehaven Sanatorium	TB	County	73	65	..	...	172
Roper Hospital★+▲○	Gen	NPAssn	350	296	40	1,372	10,924
St. Francis Xavier Infirmary▲○	Gen	Church	111	68	26	1,332	4,003
U. S. Naval Hospital★▲	*Gen*	*Navy*	*450*	*395*	*18*	*361*	*6,881*
Chester, 6,392—Chester							
Chester County Hospital	Gen	County	52	30	15	354	1,610
Clinton, 5,704—Laurens							
Hays Hospital	Gen	Indiv	20	10	6	205	853
Columbia, 62,396—Richland							
[illegible]	Gen	County	437	331	60	1,502	11,650
[illegible]	Gen	NPAssn	70	36	14	100	940
Moore Clinic Hospital	Orth	Corp	18	13	..	...	264
Providence Hospital▲	Gen	Church	96	80	20	952	3,593
Ridgewood Tuberculosis Sanatorium	TB	NPAssn	56	37	..	...	56
South Carolina Baptist Hospital▲○	Gen	Church	100	98	9	576	4,390
South Carolina State Hosp.○	Ment	State	4,928	4,842	..	...	1,632
Veterans Admin. Hospital+▲	Gen	Vet	700	509	..	...	5,040
Waverley Sanitarium	N&M	Corp	25	23	..	...	111
Conway, 5,066—Horry							
Conway Hospital▲	Gen	NPAssn	65	49	19	891	4,444
Dillon, 3,867—Dillon							
St Eugene Hospital	Gen	Church	41	30	15	454	1,785
Fl[illegible]							
[illegible] sis	TB	Counties	80	68	..	...	99
[illegible]	Gen	NPAssn	200	163	30	758	7,461
[illegible]	Ven	State	250	150	40	...	5,900
Fort Jackson,—Richland							
Station Hospital▲	Gen	Army	500	152	16	294	6,555
Gaffney, 7,636—*Cherokee*							
Cherokee County Hospital	Gen	County	56	40	8	498	2,619
Greenville, 34,734—Greenville							
Greenville County Tuberculosis Sanatorium	TB	County	75	66	..	...	54
Greenville General Hosp.★+▲○	Gen	NPAssn	331	277	31	2,256	11,300
Dr. Jervey's Private Hospital	ENT	*Indiv*	15	3	..	...	433
[illegible]	Gen	Church	115	90	20	954	4,459
[illegible]	Orth	NPAssn	60	52	..	...	231
Station [illegible]	Gen	Army	100	39	..	...	1,465
Working Benevolent Hospital	Gen	NPAssn	22	7	4	63	233
Greenwood, 13,020—*Greenwood*							
Brewer Hospital	Gen	NPAssn	32	19	4	...	763
Greenwood Hospital▲	Gen	NPAssn	85	55	18	712	3,035
Hartsville, 5,399—Darlington							
Byerly Hospital	Gen	NPAssn	74	48	18	537	3,201
Hemingway, 536—Williamsburg							
Johnson Memorial Hospital	*Gen*	Indiv	56	26	10	212	1,625
Kingstree, 3,162—Williamsburg							
Kelley Memorial Hospital	Gen	Corp	55	23	13	257	1,583
Lake City, 2,522—Florence							
Whitehead Infirmary	Gen	Indiv	13	12	5	207	605
Lancaster, 4,430—Lancaster							
Marion Sims Memorial Hosp.▲	*Gen*	*NPAssn*	50	44	16	804	2,791
Laurens, 6,894—Laurens							
Laurens County Hospital	Gen	County	62	26	17	252	1,209
Moncks Corner, 1,165—Berkeley							
Berkeley County Hospital	Gen	NPAssn	46	17	12	217	843

Key to symbols and abbreviations is on page 1396

SOUTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Mullins, 4,392—Marion							
Martin Private Hospital......	Gen	Indiv	45	10	8	137	1,031
Mullins Hospital○	Gen	NPAssn	65	40	19	681	2,998
Newberry, 7,510—Newberry							
Newberry County Hospital...	Gen	County	30	26	12	365	1,031
Orangeburg, 10,521—Orangeburg							
Tri-County Hospital†▲○	Gen	City	172	127	24	752	5,334
Urological Institute	Unit of Tri-County Hospital						
Parris Island, 250—Beaufort							
U. S. Naval Hospital▲........	Gen	Navy	150	70	4	141	1,680
Ridgeland, 1,021—Jasper							
Ridgeland Hospital	Gen	NPAssn	38	12	10	184	1,297
Rock Hill, 15,009—York							
Dunlap Hospital	Gen	Indiv	14	2	..	...	302
St. Philip's Mercy Hospital...	Gen	Church	65	67	18	604	3,049
York County Hospital▲○.....	Gen	County	79	77	14	626	3,838
Seneca, 2,155—Oconee							
Oconee County Hospital......	Gen	NPAssn	45	28	10	708	2,844
Spartanburg, 32,249—Spartanburg							
Mary Black Memorial Hosp.▲○	Gen	NPAssn	60	48	9	178	2,800
Spartanburg General Hosp.▲○	GenTB	County	296	268	57	2,341	10,477
State Park, 100—Richland							
Palmetto Sanatorium	Unit of South Carolina Sanatorium						
South Carolina Sanatorium▲	TB	State	550	425	..	...	545
Summerville, 3,023—Dorchester							
Dorchester County Hospital..	Gen	County	52	22	16	213	1,301
Sumter, 15,874—Sumter							
Tuomey Hospital▲○	Gen	NPAssn	150	120	32	1,130	6,146
Travellers Rest, 1,200—Greenville							
Coleman Hospital	Gen	Indiv	23	10	5	152	719
Union, 8,478—Union							
Wallace Thomson Hospital..	Gen	City	29	22	11	409	1,802
Walterboro, 3,373—Colleton							
Colleton County Hospital....	Gen	County	72	45	20	252	2,176
Woodruff, 3,508—Spartanburg							
Workman Memorial Hospital	Gen	Indiv	14	10	5	137	615

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Clinton, 5,704—Laurens							
State Training School.........	MeDe	State	996	971	1	2	56
Newberry, 7,510—Newberry							
People's Hospital	Gen	NPAssn	15	6	3	22	284

SOUTH DAKOTA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Aberdeen, 17,015—Brown							
St. Luke's Hospital▲○........	Gen	Church	235	198	50	1,186	7,621
Belle Fourche, 2,496—Butte							
John Burns Memorial Hosp...	Gen	NPAssn	25	8	8	99	415
Britton, 1,500—Marshall							
Britton General Hospital.....	Gen	Church	24	17	9	251	1,103
Brookings, 5,346—Brookings							
Brookings Municipal Hospital	Gen	City	30	32	12	346	1,638
Burke, 602—Gregory							
Burke Hospital	Gen	NPAssn	17	13	8	149	856
Cheyenne Agency, 121—Dewey							
Cheyenne River Indian Hosp..	Gen	IA	40	10	6	71	370
Deadwood, 4,100—Lawrence							
St. Joseph's Hospital▲........	Gen	Church	64	68	12	357	2,794
Dell Rapids, 1,706—Minnehaha							
Dell Rapids Hospital..........	Gen	Part	20	12	6	83	436
Eureka, 1,457—McPherson							
Eureka Community Hospital	Gen	NPAssn	26	22	8	211	1,415
Flandreau, 2,212—Moody							
Flandreau Municipal Hospital	Gen	City	18	12	4	112	505
Fort Meade,—Meade							
Veterans Admin. Hospital....	Ment	Vet	720	647	..	...	178
Fort Thompson, 80—Buffalo							
Crow Creek Indian Hospital..	Gen	IA	20	14	5	19	301
Gregory, 1,246—Gregory							
Mother of Grace Hospital....	Gen	Church	17	12	7	134	745
Hot Springs, 4,083—Fall River							
Lutheran Hospital	Gen	Church	50	44	11	154	1,240
Our Lady of Lourdes Hospital and Sanitarium	Gen	Church	53	29	11	131	1,353
Veterans Admin. Hospital▲...	Gen	Vet	270	255	..	...	2,266
Hoven, 369—Potter							
Holy Infant Hospital.........	Gen	Church	27	17	6	102	762
Huron, 10,843—Beadle							
St. John's Hospital▲○........	Gen	Church	150	...	35	Estab. 1947	
Sprague Hospital	Gen	NPAssn	60	53	16	378	2,026
Igloo, 3,800—Fall River							
Station Hospital	Gen	Army	39	4	6	69	390
Lead, 7,520—Lawrence							
Homestake Hospital▲	Gen	NPAssn	25	12	5	9	510
Madison, 5,018—Lake							
Madison Community Hosp.▲.	Gen	NPAssn	60	37	12	306	1,713
Milbank, 2,745—Grant							
St. Bernard's Providence Hospital	Gen	Church	31	19	8	224	867
Mitchell, 10,633—Davison							
Methodist State Hospital▲○..	Gen	Church	100	112	15	447	4,168
St. Joseph's Hospital▲○......	Gen	Church	118	116	20	554	3,980
Mobridge, 3,008—Walworth							
Lowe Hospital	Gen	Indiv	20	12	6	156	701
Mobridge Hospital	Gen	NPAssn	35	23	7	208	1,125
Parkston, 1,305—Hutchinson							
St. Benedict Hospital........	Gen	Church	35	19	12	267	979

SOUTH DAKOTA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Pierre, 4,322—Hughes							
St. Mary's Hospital▲○........	Gen	Church	115	91	20	456	3,970
Pine Ridge, 618—Shannon							
Pine Ridge Indian Hospital...	Gen	IA	53	47	13	116	1,721
Rapid City, 13,844—Pennington							
Black Hills General Hosp.▲...	Gen	NPAssn	57	48	14	198	1,850
St. John's McNamara Hosp.▲○	Gen	Church	100	97	25	650	3,936
Sioux Sanatorium▲	TB	IA	130	119	..	...	399
Redfield, 2,428—Spink							
Baldwin Community Hospital	Gen	City	15	11		151	631
Rosebud, 258—Todd							
Rosebud Indian Hospital.....	Gen	IA	40	26	7	108	1,037
Sanator, 10—Custer							
South Dakota State Sanatorium for Tuberculosis▲	TB	State	192	140	..	...	109
Sioux Falls, 40,831—Minnehaha							
McKennan Hospital★▲○	Gen	Church	164	140	50	1,143	6,861
Sioux Valley Hospital★▲○.....	Gen	NPAssn	100	100	30	1,121	6,789
Sisseton, 2,513—Roberts							
Sisseton Indian Hospital.....	Gen	IA	32	19	8	57	710
Tekakwitha Hospital	Gen	Church	40	20	11	68	798
Volga, 632—Brookings							
Volga Hospital	Gen	NPAssn	18	9	8	153	466
Watertown, 10,617—Codington							
Bartron Hospital▲○	Gen	NPAssn	75	58	14	419	2,966
Lutheran Hospital▲	Gen	Church	67	55	13	477	2,753
Webster, 2,173—Day							
Peabody Memorial Hospital▲	Gen	NPAssn	50	28	12	228	1,632
Wessington Springs, 1,352—Jerould							
Memorial Hospital	Gen	County	23	...	5	Estab. 1947	
Yankton, 6,798—Yankton							
Sacred Heart Hospital★▲○....	Gen	Church	170	141	24	642	5,160
Yankton State Hospital......	Ment	State	1,888	1,635	..	...	472

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Garretson, 666—Minnehaha							
DeVall Hospital	Gen	Indiv	10	1	2	16	50
Hot Springs, 4,083—Fall River							
State Soldiers' Home Hosp...	Inst	State	35	18	..	...	219
Redfield, 2,428—Spink							
State School and Home for Feebleminded	MeDe	State	720	730	..	...	93
Viborg, 659—Turner							
Viborg Hospital	Gen	Indiv	11	7	5	80	311
Wagner, 1,319—Charles Mix							
Duggan Hospital	Gen	Indiv	12	10	4	127	480
Yankton Indian Hospital.....	Gen	IA	25	14	5	61	536

TENNESSEE

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Athens, 6,930—McMinn							
Epperson Clinic-Hospital	Gen	Indiv	60	26	8	390	1,862
Force Hospital	Gen	Part	26	22	12	442	1,306
Bristol, 14,004—Sullivan							
Hooks-English Infirmary	ENT	Part	10	2	..	...	533
Brownsville, 4,012—Haywood							
Haywood County Memorial Hospital	Gen	NPAssn	35	20	12	300	1,441
Chattanooga, 128,163—Hamilton							
Baroness Erlanger Hospital★†▲○	Gen	CyCo	400	343	85	3,069	13,326
Barton Clinic-Hospital	Gen	Indiv	18	...	..	Estab. 1947	
Doyle Currey Clinic-Hospital..	Gen	Indiv	25	...	10	Estab. 1947	
Earl R. Campbell Clinic-Hosp.	Gen	Corp	22	20	7	215	2,208
East Tennessee Medical Center	Ven	State	200	103	..	...	4,859
Newell Hospital▲	Gen	Part	53	41	5	68	1,890
Physicians and Surgeons Hosp.	Gen	Indiv	23	14	12	511	1,052
Pine Breeze Sanatorium†▲....	TB	NPAssn	177	160	..	...	199
T. C. Thompson Children's Hospital†▲⊙	Chil	CyCo	60	48	25	...	1,867
West Ellis Hospital...........	Unit of Baroness Erlanger Hospital						
Woman's Clinic-Hospital	Gen	Indiv	58	30	28	719	1,248
Clarksville, 11,831—Montgomery							
Clarksville Hospital	Gen	NPAssn	44	34	16	576	2,194
Cleveland, 11,351—Bradley							
Physicians and Surgeons Hosp.	Gen	Indiv	24	11	4	126	848
Speck Hospital	Gen	NPAssn	25	15	15	575	1,204
Columbia, 10,579—Maury							
Kings Daughters Hospital....	Gen	NPAssn	50	32	8	355	2,836
Dayton, 1,870—Rhea							
Broyles Hospital	Gen	Indiv	12	4	4	108	261
Thomison Hospital	Gen	Indiv	10	6	4	52	225
Dyersburg, 10,034—Dyer							
Baird-Brewer General Hosp.▲	Gen	Corp	44	25	12	349	2,006
Elizabethton, 8,516—Carter							
St. Elizabeth General Hosp...	Gen	Corp	40	29	12	652	1,706
Erwin, 3,350—Unicoi							
Erwin Community Hospital..	Gen	NPAssn	15	8	9	248	824
Franklin, 4,120—Williamson							
Dan German Hospital.........	Gen	Part	18	18	8	345	1,395
Greeneville, 6,784—Greene							
Campbell's Hospital	Gen	Indiv	6	4	3	34	230
Greeneville Sanatorium and Hospital▲	Gen	Corp	50	32	16	296	1,548
Laughlin Clinic-Hospital	Gen	Indiv	30	25	10	347	1,153
Learline Reaves Sanatorium..	TB	State	32	27	..	...	160
Takoma Hospital and Sanitarium▲	Gen	NPAssn	52	50	12	317	2,149

Key to symbols and abbreviations is on page 1396

TENNESSEE—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Harriman, 5,620—Roane							
Harriman Hospital	Gen	City	41	30	8	419	1,783
[illegible]							
[illegible]	Gen	Indiv	10	4	4	...	400
[illegible]	Gen	Church	50	19	10	405	1,290
Jackson, 24,332—Madison							
Doctors Hospital	Gen	Part	25	18	6	215	1,060
Fitts-White Hospital	Gen	Part	46	31	16	327	1,691
Memorial Hospital	Gen	NPAssn	35	19	10	247	1,511
Webb-Williamson Hospital-Clinic	Gen	Corp	29	26	6	405	1,600
Johnson City, 25,332—Washington							
Appalachian Hospital▲◊	Gen	NPAssn	72	79	20	1,206	4,650
Budd Clinic and Hospital	Gen	Indiv	12	8	3	69	391
Campbell's Eye, Ear, Nose and Throat Hospital	ENT	Indiv	10	2	..	...	850
Jones Eye, Ear, Nose and Throat Hospital▲	ENT	Part	27	11	..	...	1,669
Kingsport, 14,404—Sullivan							
Holston Valley Community Hospital▲	Gen	NPAssn	114	103	33	1,916	6,231
Knoxville, 111,580—Knox							
Beverly Hills Sanatorium	TB	CyCo	145	70	..	...	91
Dr. H. E. Christenberry Eye, Ear, Nose and Throat Infirmary	ENT	Indiv	12	4	..	...	1,590
Eastern State Hospital	Ment	State	2,000	1,911	..	...	627
Fort Sanders Hospital★▲◊	Gen	NPAssn	200	198	45	2,387	8,041
Kingston Pike Hospital	Gen	Part	35	30	6	27	1,413
Knoxville General Hosp.★+▲◊	Gen	City	285	203	40	1,518	8,976
St. Mary's Memorial Hosp.▲◊	Gen	Church	125	120	25	1,372	6,395
La Follette, 4,010—Campbell							
Doctor's Hospital	Gen	Indiv	17	8	6	146	423
La Follette Hospital	Gen	Indiv	23	12	6	272	882
Lawrenceburg, 3,807—Lawrence							
Lawrenceburg Hospital	Gen	Church	43	26	9	480	1,980
Lebanon, 5,950—Wilson							
Martha Gaston Hospital	Gen	Indiv	25	16	10	314	1,413
McFarland Hospital	Gen	Indiv	35	43	6	531	2,700
Lewisburg, 3,582—Marshall							
Gordon Hospital	Gen	Corp	48	27	7	102	1,497
Wheat Memorial Hospital	Gen	Indiv	13	7	6	154	515
Loudon, 3,017—Loudon							
Charles H. Bacon Hospital	Gen	County	30	16	14	430	1,090
Madison College, 510—Davidson							
Madison Rural Sanitarium and Hospital+▲◊	Gen	NPAssn	165	139	20	461	3,768
Maryville, 5,609—Blount							
Blount Memorial Hosp.	Gen	NPAssn	50	...	25	Estab. 1947	
Memphis, 292,942—Shelby							
Baptist Memorial Hosp.★+▲◊	Gen	Church	510	469	60	1,999	18,146
Carrol Turner Sanatorium	N&M	Indiv	28	26	..	...	313
Collins Chapel Connectional Hospital	Gen	Church	65	50	15	153	1,205
Crippled Children's Hospital-School	Orth	NPAssn	40	33	..	...	108
Gailor Memorial Psychiatric Hospital	Ment	State	40	31	..	...	366
Gartly-Ramsay Hospital▲	N&M	Corp	50	43	..	...	1,120
Hospit ▲	Orth	NPAssn	66	38	..	...	470
John ▲	Gen	City	489	506	61	2,606	17,612
McLen	Gen	Corp	53	44	10	222	1,824
Mempl Thro ▲	ENT	Church	60	32	..	...	3,792
Methodist Hospital★+▲◊	Gen	Church	250	256	50	3,174	12,252
Psychiatric Hospital	Unit of Western State Hospital, Western State Hospital, Tenn.						
St. Joseph Hospital★+▲◊	Gen	Church	280	260	80	2,366	11,269
U. S. Marine Hospital▲	Gen	USPHS	130	105	..	...	1,604
U. S. Naval Hospital★▲	Gen	Navy	1,467	1,128	26	1	5,255
Veterans Admin. Hospital▲	Gen	Vet	300	281	..	...	2,728
Veterans Admin. Hospital (Kennedy)+▲⊙	Gen	Vet	1,436	1,131	..	...	10,295
Wallace Sanitarium	N&M	Indiv	50	39	..	...	1,096
West Tennessee Medical Center	Ven	State	250	90	..	...	4,500
Willis C. Campbell Clinic Hospital+▲	Orth	Part	60	55	..	...	1,630
Milan, 3,035—Gibson							
Milan Hospital	Gen	NPAssn	20	10	10	59	879
[illegible]							
[illegible]	Gen	NPAssn	35	15	11	341	1,050
[illegible]	Gen	Indiv	20	15	8	232	1,052
Mountain Home, 250—Washington							
Veterans Admin. Center▲	Gen	Vet	600	550	..	...	5,955
Murfreesboro, 9,495—Rutherford							
Rutherford Hospital▲	Gen	NPAssn	45	38	12	554	1,703
Veterans Admin. Hospital▲⊙	Ment	Vet	1,258	924	..	...	841
Nashville, 167,402—Davidson							
Central State Hospital	Ment	State	2,000	1,991	..	...	489
City View Sanitarium	N&M	Indiv	55	35	..	...	570
Davidson County Hospital	Ment	County	800	754	8	81	1,121
Davidson County Tuberculosis Hospital+▲	TB	County	300	208	..	...	315
Geo. W. Hubbard Hospital of Meharry Medical Coll.★+▲◊	Gen	NPAssn	160	117	21	729	2,286
Hospital for the Criminal Insane	Unit of Central State Hospital						
Middle Tennessee Tuberculosis Hospital	TB	State	54	48	..	...	346
Mid-State Baptist Hosp.★▲◊	Gen	NPAssn	112	97	20	1,162	6,336
Nashville General Hosp.★+▲◊	Gen	City	260	135	35	1,210	7,319
Riverside Sanitarium and [illegible]	Gen	Church	26	19	2	37	393
St [illegible]	Gen	Church	213	185	35	2,200	9,103
Vi [illegible] Hospital★+▲◊	Gen	NPAssn	352	251	68	1,821	9,296
Veterans Admin. Hospital+▲	Gen	Vet	500	379	..	...	5,220
Oak Ridge,—Anderson							
Oak Ridge Hospital★▲⊙	Gen	NPAssn	337	154	45	1,111	9,591
Oakville, 163—Shelby							
Oakville Memorial Sanat.+	TB	CyCo	375	314	..	...	477
Paris, 6,395—Henry							
McSwain Clinic-Hospital	Gen	Indiv	24	10	4	126	518
Nobles Memorial Hospital	Gen	Part	25	18	7	188	1,118
Pleasant Hill, 178—Cumberland							
"Uplands" Cumberland Mountain Hosp. and Sanatorium	Gen	NPAssn	50	34	5	141	740
Pressmen's Home, 200—Hawkins							
International Printing Pressmen and Assistants' Union Sanatorium	TB	NPAssn	40	25	..	...	10
Pulaski, 5,311—Giles							
Pulaski Hospital	Gen	Indiv	25	12	4	324	970
Raleigh, 450—Shelby							
Cheerfield Farm Preventorium	Unit of Oakville Memorial Sanatorium, Oakville						
Rc [illegible] Roane							
[illegible] Hosp.	Gen	NPAssn	50	28	10	300	1,546
R[illegible]							
Lyons Hosp.	Gen	Indiv	15	10	6	190	444
Sevierville, 1,161—Sevier							
Broady Hospital	Gen	Indiv	11	4	3	156	591
Wilson Hospital	Gen	Indiv	32	9	6	163	605
Sewanee, 1,600—Franklin							
Emerald-Hodgson Hospital	Gen	Church	50	22	10	163	1,407
Springfield, 6,668—Robertson							
Robertson County Hospital	Gen	County	25	15	9	400	820
Sweetwater, 2,593—Monroe							
Sweetwater Hospital▲	Gen	NPAssn.	30	16	8	353	1,194
Union City,							
Union Cit[illegible]		Corp	15	2	3	221	1,059
Western Sta[illegible]							
Western S[illegible]	[illegible]t	State	2,512	2,224	..	...	523
Woodbury, 663—Cannon							
Good Samaritan Hospital	Gen	Indiv	42	33	10	288	1,673

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Chattanooga, 128,163—Hamilton							
William L. Bork Memorial Hospital	Ment	County	300	259	..	...	94
Donelson, 1,500—Davidson							
Tennessee Home and Training School for Feebleminded Persons	MeDe	State	608	720	..	...	51
Fayetteville, 4,684—Lincoln							
Lincoln County Hospital	Gen	County	41	29	14	525	2,031
Johnson City, 25,332—Washington							
McKee-Wilson Eye Hospital	Eye	Part	15	8	..	...	448
Knoxville, 111,580—Knox							
Tennessee School for Deaf	Inst	State	20	1	..	...	376
University of Tennessee Hosp.	Inst	State	35	6	..	...	582
Memphis, 292,942—Shelby							
Dr. Henry G. Hill Clinic-Hosp.	Orth	Indiv	10	6	..	...	303
Shelby County Hospital	Inst	County	685	471	..	...	373
Nashville, 167,402—Davidson							
Junior League Home for Crippled Children	Orth	NPAssn	40	40	..	...	81
Tennessee State Penitentiary Hospital	Inst	State	104	No data supplied			
Shelbyville, 6,537—Bedford							
Bedford County Hospital	Gen	NPAssn	38	16	6	350	1,870

TEXAS

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Abilene, 26,612—Taylor							
Abilene State Hospital	Epil	State	1,391	1,331	..	...	177
Hendrick Memorial Hosp.▲◊	Gen	Church	158	109	25	1,209	6,397
St. Ann Hospital	Gen	Church	33	28	14	377	2,286
Alice, 7,792—Jim Wells							
Physicians and Surgeons Hosp.	Gen	Corp	45	33	14	580	2,765
Alvin, 3,087—Brazoria							
Alvin Memorial Hospital	Gen	Indiv	16	8	6	55	748
[illegible]							
[illegible]	Gen	County	150	138	40	1,351	6,606
[illegible]							
Cottage	Unit of Northwest Texas Hospital						
St. Anthony's Hospital▲◊	Gen	Church	127	103	28	775	5,437
Veterans Admin. Hospital	Gen	Vet	187	171	..	...	2,172
Andrews, 611—Andrews							
Andrews County Hospital	Gen	County	15	5	5	96	547
Atlanta, 2,453—Cass							
Ellington Memorial Hospital	Gen	Part	12	6	6	197	696
Austin, 87,930—Travis							
Austin State Hospital	Ment	State	2,810	2,954	..	...	1,241
Austin-Travis County Tuberculosis Sanatorium	TB	CyCo	48	30	..	...	72
Brackenridge Hospital★▲◊	Gen	City	237	155	35	1,349	6,858
Holy Cross Hospital	Gen	Church	19	12	7	258	817
St. David's Hospital	Gen	Church	61	47	20	718	3,001

Key to symbols and abbreviations is on page 1396

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Seton Hospital▲○	Gen	Church	85	71	34	1,160	4,210
Station Hospital	Gen	Army	25	12	..	...	790
Baird, 1,810—Callahan							
Callahan County Hospital	Gen	County	23	5	5	135	870
Ballinger, 4,472—Runnels							
Bailey Clinic-Hospital	Gen	Indiv	15	9	7	180	630
Bastrop, 1,976—Bastrop							
F. A. Orgain Hospital	Gen	Part	12	4	7	92	394
Bay City, 6,594—Matagorda							
Matagorda General Hospital	Gen	County	45	23	11	291	1,804
Beaumont, 59,061—Jefferson							
Beaumont Municipal Hospital	Gen	City	40	30	10	164	1,309
Hotel Dieu Hospital▲○	Gen	Church	125	100	..	...	4,571
Jefferson County Tuberculosis Hospital No. 1	TB	County	150	115	..	...	125
Jefferson County Tuberculosis Hospital No. 2	Unit of Jefferson County Tuberculosis Hospital No. 1						
St. Thereso Hospital▲	Gen	Church	123	70	30	1,533	4,498
Beeville, 6,789—Bee							
Beeville Hospital and Clinic	Gen	Indiv	40	27	10	171	872
Thomas Memorial Hospital	Gen	Corp	21	10	8	194	957
Bellville, 1,347—Austin							
Bellville Hospital	Gen	Part	10	7	4	144	685
Belton, 3,572—Bell							
Sewell Hospital	Gen	Part	20	8	6	341	673
Big Spring, 12,604—Howard							
Big Spring Hospital	Gen	Corp	40	25	6	243	1,975
Big Spring State Hospital	Ment	State	457	441	..	...	137
Cowper-Sanders Clinic and Hospital	Gen	Indiv	36	30	11	261	1,296
Malone and Hogan Clinic-Hospital	Gen	Part	41	34	17	155	1,916
Blanco, 453—Blanco							
Hospital in the Hills	Gen	Part	12	4	3	74	298
Bonham, 6,340—Fannin							
S. B. Allen Memorial Hosp.	Gen	NPAssn	32	17	10	370	1,095
Medical and Surgical Clinic-Hospital	Gen	Corp	28	...	8	Estab. 1947	
Borger, 10,018—Hutchinson							
Casa Serena Hospital	Gen	NPAssn	12	4	3	42	313
North Plains Hospital	Gen	County	100	38	21	720	2,600
Bowie, 3,470—Montague							
Bowie Clinic Hospital	Gen	Corp	27	21	10	150	1,179
Brady, 5,002—McCulloch							
Brady Hospital	Gen	Part	60	34	11	302	1,721
Brenham, 6,435—Washington							
St. Francis Hospital	Gen	Church	25	14	7	135	782
Sarah B. Milroy Memorial Hospital	Gen	Corp	32	13	8	171	857
Bridgeport, 1,735—Wise							
Bridgeport Hospital	Gen	Part	10	...	4	Estab. 1947	
Brownfield, 4,009—Terry							
Treadaway-Daniell Hospital	Gen	Part	22	12	10	326	1,340
Brownsville, 22,083—Cameron							
Mercy Hospital▲	Gen	Church	50	33	18	538	2,714
Brownwood, 13,398—Brown							
Brownwood Memorial Hosp.	Gen	NPAssn	72	31	23	711	3,039
Medical Arts Hospital	Gen	NPAssn	42	19	8	189	1,378
Bryan, 11,842—Brazos							
Bryan Hospital	Gen	Indiv	26	18	8	360	1,350
St. Joseph Hospital	Gen	Church	25	17	10	589	1,149
Burnet, 1,945—Burnet							
Shepperd Hospital	Gen	Indiv	17	15	6	140	1,600
Burton, 350—Washington							
Burton Hospital	Gen	Indiv	9	5	4	61	394
Cameron, 5,040—Milam							
Newton Memorial Hospital	Gen	NPAssn	50	14	8	35	1,332
Camp Hood,—Bell							
Station Hospital	Gen	Army	150	147	18	267	4,106
Canadian, 2,151—Hemphill							
Canadian Hospital	Gen	Indiv	8	5	4	97	283
Canyon, 2,662—Randall							
Neblett Hospital	Gen	Indiv	20	13	12	168	787
Center, 3,010—Shelby							
Center Sanitarium	Gen	Indiv	18	6	5	276	792
Warren Hospital	Gen	Part	16	3	6	152	677
Childress, 6,464—Childress							
Childress General Hospital	Gen	County	20	...	6	Estab. 1948	
Jeter-Townsend Hospital	Gen	Part	20	10	6	201	578
Cisco, 4,868—Eastland							
Graham Sanitarium	Gen	Indiv	22	5	5	103	715
Clarksville, 4,095—Red River							
Red River County Hospital	Gen	County	38	11	8	281	1,003
Cleburne, 10,558—Johnson							
Cleburne Hospital	Gen	Indiv	28	15	8	375	1,227
Johnson County Memorial Hospital	Gen	County	50	...	8	Estab. 1948	
Knox Hospital	Gen	Part	10	3	10	234	440
Clifton, 1,732—Bosque							
Goodall and Witcher Clinic-Hospital	Gen	Part	25	11	6	159	782
Coleman, 6,054—Coleman							
Overall Memorial Hospital	Gen	CyCo	50	15	8	264	1,491
College Station, 2,184—Brazos							
Agricultural and Mechanical College Hospital	Inst	State	150	14	..	...	1,618
Colorado City, 5,213—Mitchell							
Root Memorial Hospital	Gen	Indiv	28	15	10	217	1,151
Columbus, 2,422—Colorado							
Columbus Hospital and Clinic	Gen	Part	20	9	5	84	746

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Commerce, 1,699—Hunt							
Allen Hospital	Gen	Indiv	10	8	5	102	535
Leberman Clinic and Hospital	Gen	Indiv	12	12	6	141	601
Conroe, 1,621—Montgomery							
Montgomery County Hosp.	Gen	County	50	40	10	377	2,155
Corpus Christi, 57,301—Nueces							
Carline Clinic-Hospital	Gen	Indiv	10	4	6	82	388
Crippled Children's Hosp.	Orth	NPAssn	37	...	2	Estab. 1947	
Memorial Hospital	Gen	CyCo	127	111	24	1,205	3,470
Spohn Hospital▲	Gen	Church	92	73	35	1,028	5,378
U. S. Naval Air Station Dispensary	Gen	Navy	90	6	..	...	2,333
U. S. Naval Hospital★▲	Gen	Navy	458	315	23	539	4,794
Corsicana, 15,232—Navarro							
Corsicana Hospital	Gen	NPAssn	20	6	3	92	448
Navarro Clinic Hospital	Gen	Part	20	13	8	219	1,172
Physicians and Surgeons Hosp.	Gen	County	55	37	18	369	1,520
Crockett, 1,536—Houston							
Butler Memorial Hospital	Gen	Indiv	40	7	7	36	240
Jim Smith Memorial Hospital	Gen	Part	22	2	3	162	889
Stokes-Dean Hospital and Clinic	Gen	Part	16	10	5	157	804
Crosbyton, 1,615—Crosby							
Crosbyton Clinic-Hospital	Gen	NPAssn	34	...	6	Estab. 1947	
Crowell, 1,817—Foard							
Foard County Hospital	Gen	County	13	No data supplied			
Crystal City, 6,529—Zavala							
Crystal Clinic and Hospital	Gen	Indiv	26	9	7	162	826
Cuero, 5,474—Dewitt							
Burns Hospital	Gen	Church	35	18	6	116	1,320
Cuero Hospital and Clinic	Gen	Indiv	25	13	6	165	1,089
Dalhart, 1,682—Dallam							
Loretto Hospital	Gen	Church	40	29	12	372	1,636
Dallas, 294,734—Dallas							
Baylor University Hosp.★+▲○	Gen	Church	420	373	80	5,262	16,450
Beverly Hills Sanitarium+	N&M	Corp	102	92	..	...	851
Bradford Memorial Hospital for Babies	Unit of Children's Medical Center						
Carman Sanatorium	TB	Corp	25	24	..	...	44
Children's Hospital	Unit of Children's Medical Center						
Children's Medical Center+▲	Chil	NPAssn	156	29	5	...	3,102
Dallas Medical and Surgical Clinic Hospital▲	Gen	Part	23	21	..	...	1,956
East Dallas Hosp. and Clinic	Gen	Corp	38	27	7	107	1,159
Gaston Hospital▲	Gen	NPAssn	55	52	..	...	2,208
Maxfield X-Ray and Radium Clinic Hospital	Cancer	Part	16	4	..	...	130
Medical Arts Hospital+▲	Gen	Corp	110	101	..	...	5,119
Methodist Hospital★+▲○	Gen	Church	208	184	42	2,322	10,262
Nightingale Lying-In Hosp.	Unit of Baylor University Hospital						
Parkland Hospital★+▲○	Gen	CyCo	370	300	52	1,732	8,097
Pinkston Clinic-Hospital	Gen	Indiv	18	10	5	72	648
St. Paul's Hospital★+▲○	Gen	Church	310	269	40	3,803	12,667
Texas Scottish Rite Hospital for Crippled Children+▲	Orth	NPAssn	75	57	..	...	690
Timberlawn Sanitarium+	N&M	Corp	60	48	..	...	403
U. S. Naval Air Station Disensary	Gen	Navy	32	8	..	...	439
Veterans Admin. Hospital+▲	Gen	Vet	366	327	..	...	3,185
Woodlawn Hospital+	TB	CyCo	100	86	..	...	150
Dayton, 1,279—Liberty							
Dayton Memorial Hospital	Gen	Part	24	...	7	Estab. 1947	
Decatur, 2,578—Wise							
Decatur Clinic Hospital	Gen	Indiv	24	14	7	203	741
Rogers Hospital	Gen	Indiv	25	16	8	159	1,242
Del Rio, 11,693—Val Verde							
Medical and Surgical Clinic and Hospital	Gen	Indiv	18	13	3	122	829
Nightingale Memorial Hosp.	Gen	Indiv	20	...	6	Estab. 1948	
Denison, 15,581—Grayson							
Madonna Hospital	Gen	Church	50	43	12	495	2,676
Missouri, Kansas, Texas Railroad Employees' Hospital	Indus	NPAssn	60	22	..	...	703
Denton, 11,192—Denton							
Denton Hospital and Clinic	Gen	Indiv	35	27	8	388	2,041
Deport, 822—Lamar							
Stephen H. Grant Hospital	Gen	Corp	11	1	4	145	412
Eagle Lake, 2,124—Colorado							
Laughlin Hospital	Gen	Indiv	12	5	4	75	500
Eagle Pass, 6,459—Maverick							
Maverick County Memorial Hospital	Gen	County	29	12	10	17	98
East Bernard, 600—Wharton							
ital..	Gen	Indiv	10	5	4	111	429
....	Gen	CyCo	51	32	12	374	1,674
....	Gen	County	65	36	14	390	1,756
Electra Hospital	Gen	Indiv	20	7	7	125	554
Elgin, 2,008—Bastrop							
Fleming Hospital	Gen	Corp	16	4	6	39	487
El Paso, 96,810—El Paso							
El Paso City-County Hosp.★▲	Gen	CyCo	192	102	19	262	2,438
Hotel Dieu Sisters' Hosp.+▲○	Gen	Church	156	119	51	2,235	9,264
Newark Conference Maternity Hospital	Mat	Church	17	11	16	468	570
Providence Memorial Hosp.▲	Gen	NPAssn	40	31	..	...	1,586
St. Joseph Maternity Hosp.+	Unit of Hotel Dieu Sisters' Hospital						
St. Joseph's Sanatorium	TB	Church	75	47	..	...	248
Southwestern General Hosp.▲	Gen	Corp	150	105	45	1,154	5,481
William Beaumont General Hospital▲	Gen	Army	1,591	1,115	25	557	9,370

Key to symbols and abbreviations is on page 1396

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Ennis, 7,087—Ellis							
Ennis Municipal Hospital	Gen	City	24	11	8	306	1,118
Fabens, 1,623—El Paso							
Fabens Hospital	Gen	Indiv	20	9	6	97	...
Floresville, 1,708—Wilson							
Blake Hospital	Gen	Indiv	12	9	6	501	787
Floydada, 2,726—Floyd							
Floydada Hospital	Gen	Indiv	8	2	3	67	308
Pitts Hospital and Clinic	Gen	Indiv	10	7	4	83	684
Fort Worth, 177,662—Tarrant							
All Saints Hospital+▲	Gen	Church	110	97	25	1,262	5,435
City-County Hospital★▲○	Gen	CyCo	168	123	24	671	5,011
W. I. Cook Memorial Hosp.▲	Gen	NPAssn	35	37	8	1	1,442
Ethel Ransom Memorial Hosp.	Gen	Part	50	No data supplied			
Fort Worth Children's Hosp.	Chil	NPAssn	37	17	..	...	299
Harris Memorial Methodist Hospital★+▲○	Gen	Church	297	261	78	3,455	12,737
Pennsylvania Avenue Hosp.	Gen	Part	68	52	10	414	3,402
St. Joseph's Hospital★▲○	Gen	Church	239	173	48	2,058	9,414
Station Hospital▲	Gen	Army	100	36	16	115	2,205
U. S. Public Health Service Hospital+▲	MentDrug	USPHS	1,050	722	..	...	1,788
Fredericksburg, 3,544—Gillespie							
Fredericksburg Hospital and Clinic	Gen	Corp	22	2	8	209	915
Keidel Memorial Hospital	Gen	Part	16	9	5	143	528
Freeport, 2,579—Brazoria							
Dow Hospital	Gen	NPAssn	52	35	12	351	2,706
Freer, 2,346—Duval							
Thomas-Spann Hospital	Gen	Part	12	8	5	113	490
Friona, 803—Parmer							
Parmer County Community Hospital	Gen	NPAssn	24	...	7	Estab. 1947	
Gainesville, 9,651—Cooke							
Gainesville Sanitarium	Gen	Corp	42	21	10	200	1,500
Medical and Surgical Hosp.	Gen	Indiv	46	21	10	243	1,007
Galena Park, 1,562—Harris							
Deaton Hospital	Gen	Indiv	12	6	6	130	599
[illegible]							
[illegible] Medical Branch)+	Ment	State	130	120	..	...	1,364
Hospital for Crippled and Deformed Children	Unit of University of Texas Medical Branch						
John Sealy Hospital (University of Texas Medical Branch)★+▲○	Gen	State	496	436	20	984	9,110
Negro Hospital	Unit of University of Texas Medical Branch						
St. Mary's Infirmary+▲○	Gen	Church	150	138	33	1,130	4,800
U. S. Marine Hospital★▲	Gen	USPHS	202	170	..	...	3,534
Gatesville, 3,177—Coryell							
Coryell Memorial Hospital	Gen	County	34	12	8	299	1,382
Georgetown, 3,682—Williamson							
Georgetown Hosp. and Clinic	Gen	NPAssn	25	21	8	51	258
Gilmer, 3,138—Upshur							
Oak Lawn Sanitarium	Gen	Part	15	8	4	144	1,825
Ragland Clinic-Hospital	Gen	Part	30	13	10	399	1,601
Gladewater, 4,454—Gregg							
Hancock Clinic and Hospital	Gen	Indiv	25	22	6	155	1,276
Leake-Van Beber Clinic Hosp.	Gen	Part	20	16	3	100	1,043
McKean Clinic Hospital	Gen	Indiv	36	21	8	56	1,130
Gonzales, 4,722—Gonzales							
Holmes Hospital	Gen	Indiv	20	5	4	47	239
Goose Creek, 6,929—Harris							
Goose Creek Hospital	Gen	Corp	40	28	10	570	2,295
Lillie and Duke Hospital	Gen	Part	21	17	8	265	1,291
Gorman, 1,157—Eastland							
Blackwell Hospital	Gen	Part	40	7	5	456	2,043
[illegible]	Gen	NPAssn	25	13	7	286	1,011
[illegible]	Gen	Indiv	13	8	4	122	770
[illegible]	Gen	Indiv	12	4	8	73	512
Dr. Joe Becton's Hospital	Gen	Indiv	40	13	8	257	1,443
[illegible]	Gen	Indiv	35	12	12	328	1,766
[illegible]	Gen	Indiv	7	4	5	35	212
[illegible]	Gen	Indiv	22	14	6	155	798
Hamlin, 2,406—*Jones*							
Hamlin Memorial Hospital	Gen	NPAssn	18	...	4	Estab. 1948	
Harlingen, 13,306—Cameron							
Valley Baptist Hospital▲	Gen	Church	82	72	29	715	3,400
Haskell, 3,051—Haskell							
Haskell County Hospital	Gen	County	25	7	6	300	2,551
Henderson, 6,437—Rusk							
Henderson Memorial Hospital	Gen	NPAssn	50	28	13	460	2,445
Hereford, 2,584—Deaf Smith							
Deaf Smith County Hospital	Gen	County	20	15	6	210	1,272
Hillsboro, 7,799—Hill							
Boyd Sanitarium	Gen	Indiv	23	15	8	285	942
Houston, 384,514—Harris							
M. D. *Anderson Hospital* for Ca[illegible]	[illegible]	[illegible]	62	23	..	...	567
Autr[illegible]	[illegible]ston Tuberculosis Hospital						
Dr. [illegible]	[illegible]	[illegible]	40	20	..	...	53
Heig[illegible]	[illegible]	[illegible]	70	55	20	855	3,730
Hermann Hospital★+▲○	Gen	NPAssn	300	223	30	1,386	9,589
Houston Eye, Ear and Throat Hospital	ENT	NPAssn	23	13	..	...	1,920
Houston Negro Hospital	Gen	NPAssn	65	37	20	649	2,061
Houston Tuberculosis Hosp.	TB	CyCo	367	172	..	...	281
Jefferson Davis Hospital★+▲○	Gen	CyCo	441	347	52	1,803	11,340
Keightley Hospital	N&M	Indiv	42	18	..	...	110
Memorial Hospital+▲○	Gen	Church	284	255	35	2,533	11,402
Methodist Hospital★+▲○	Gen	Church	135	133	22	892	5,846
Montrose Hospital	N&M	Part	40	20	..	...	415
North Houston Hospital	Gen	Part	20	...	9	Estab. 1947	
Park View Hospital	Gen	Corp	30	18	5	126	1,552
St. Joseph's Infirmary★+▲○	Gen	Church	377	374	95	5,937	19,272
Southern Pacific Hospital+▲	Indus	NPAssn	130	94	..	...	2,651
Turner Urological Institute	Urol	Indiv	18	15	..	...	780
U. S. Naval Hospital★	Gen	Navy	520	280	..	...	3,300
Wright Clinic and Hospital▲	Gen	Indiv	31	22	6	143	1,161
Jacksboro, 2,368—Jack							
Jacksboro Hospital	Gen	Part	13	7	4	139	661
Jacksonville, 7,213—Cherokee							
Nan Travis Memorial Hosp.▲	Gen	NPAssn	116	70	20	617	4,051
Jasper, 3,497—Jasper							
Richardson Hospital	Gen	Indiv	20	15	9	216	600
Kaufman, 2,654—Kaufman							
Hall-de Blaming Hospital	Gen	Part	13	5	6	125	600
Kenedy, 2,891—Karnes							
Kenedy Clinic and Hospital	Gen	Indiv	20	12	4	162	753
Kermit, 2,584—Winkler							
Robinson-McClure Clinic-Hospital	Gen	Part	18	13	5	190	1,920
Winkler County Memorial Hospital	Gen	County	40	...	8	Estab. 1947	
Kerrville, 5,572—Kerr							
Kerrville General Hospital	Gen	NPAssn	20	12	6	246	950
Kerrville State Sanatorium	TB	State	173	147	..	...	226
Sunnyside Sanatorium	TB	Indiv	20	18	..	...	30
Kilgore, 6,708—Gregg							
Kilgore Memorial Hospital	Gen	NPAssn	21	21	7	443	1,558
Kingsville, 7,782—Kleberg							
Kleberg County Hospital	Gen	County	44	30	11	400	2,230
Knox City, 1,127—Knox							
Knox County Hospital	Gen	County	26	22	8	326	1,755
La Grange, 2,531—Fayette							
La Grange Hospital	Gen	Corp	45	26	9	212	1,211
Lamesa, 6,038—Dawson							
Lamesa General Hospital	Gen	Part	33	19	9	327	1,624
Price Clinic and Hospital	Gen	Indiv	19	4	8	165	801
Lampasas, 3,426—Lampasas							
Rollins-Brook Hospital	Gen	Part	24	16	6	248	1,507
Laredo, 39,274—Webb							
Laredo-Webb County Tuberculosis Hospital	TB	State	30	25	..	...	32
Mercy Hospital	Gen	Church	80	47	28	1,050	3,262
La Tuna, 200—El Paso							
Federal Correctional Institution	Inst	USPHS	23	15	..	...	416
Legion, 200—Kerr							
Veterans Admin. Hospital+▲	TB	Vet	400	343	..	...	900
[illegible]	Gen	Part	26	12	6	300	1,289
[illegible]							
Mercy Hospital	Gen	Church	55	24	12	320	1,114
Yettie Kerstine Memorial Hospital	Gen	County	20	14	2	159	994
Littlefield, 3,817—Lamb							
Littlefield Hospital and Clinic	Gen	Part	20	9	6	250	1,000
Payne-Shotwell Hospital and Clinic	Gen	Part	40	18	10	180	1,512
Lockhart, 5,018—Caldwell							
Lockhart Sanitarium	Gen	City	20	8	6	79	450
Longview, 13,758—Gregg							
Gregg Memorial Hospital	Gen	*County*	40	28	8	345	1,900
Hurst Eye, Ear, Nose and Throat Hospital	ENT	NPAssn	25	4	..	...	650
Markham Hospital	Gen	NPAssn	32	17	10	406	1,401
Lubbock, 31,853—Lubbock							
Chatman Hospital-Clinic	Gen	Indiv	16	4	8	80	1,400
Lubbock Memorial Hosp.▲○	Gen	NPAssn	102	82	17	659	5,055
St. Mary of the Plains Hosp.▲	Gen	Church	40	38	12	364	2,293
West Texas Hospital▲○	Gen	Corp	72	70	24	1,073	5,494
Lufkin, 9,567—Angelina							
Angelina County Hospital	Gen	County	66	47	14	934	2,648
Luling, 4,437—Caldwell							
Luling Hospital	Gen	Part	20	14	8	153	820
Marlin, 6,542—Falls							
Buie-Allen Hospital	Gen	Indiv	36	32	5	82	900
Buie Clinic and Marlin Sanitarium Bath House and Hilton Hotel	Unit of Buie-Allen Hospital						
Torbett Clinic and Hospital	Gen	Corp	73	42	10	196	2,229
Marshall, 18,410—Harrison							
Kahn Memorial Hospital	Gen	NPAssn	42	11	8	556	1,841
Texas and Pacific Railway *Employees Hospital*	Indus	NPAssn	105	73	..	...	2,571
Matador, 1,376—Motley							
Traweek Hospital	Gen	Indiv	14	8	4	69	530
Mathis, 1,950—San Patricso							
Mathis Hospital	Gen	Indiv	16	8	4	111	521
McAllen, 11,877—Hidalgo							
McAllen Municipal Hospital	*Gen*	City	65	44	18	631	2,265
McKinney, 8,555—Collin							
McKinney City Hospital▲	Gen	City	73	46	22	670	2,265
Veterans Admin. Hospital+▲	Gen	Vet	670	600	..	...	4,904
Memphis, 3,869—Hall							
Goodall Hospital	Gen	Indiv	18	9	6	155	871

Key to symbols and abbreviations is on page 1396

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Mercedes, 7,624—Hidalgo							
Mercedes General Hospital....	Gen	NPAssn	19	12	9	290	1,000
Meridian, 1,016—Bosque							
Holt Hospital and Clinic.....	Gen	Indiv	22	8	4	151	660
Merkel, 2,065—Taylor							
Sadler Clinic-Hospital	Gen	Indiv	19	7	6	124	574
Mexia, 6,410—Limestone							
Brown Hospital	Gen	Indiv	20	12	5	121	837
Midland, 9,352—Midland							
Western Clinic-Hospital	Gen	Part	32	20	10	139	1,684
Mineola, 3,223—Wood							
Mineola Hospital-Clinic	Gen	Indiv	15	4	1	120	521
Mineral Wells, 6,303—Palo Pinto							
Nazareth Hospital▲	Gen	Church	40	18	10	221	1,164
Monahans, 3,944—Ward							
Bell Clinic-Hospital	Gen	Indiv	12	...	4	Estab. 1947	
Turney Hospital	Gen	Indiv	25	14	8	318	1,078
Mount Pleasant, 4,525—Titus							
Taylor Hospital and Clinic..	Gen	Part	12	4	3	67	400
Mount Vernon, 1,443—Franklin							
Franklin County Hospital....	Gen	County	15	...	4	Estab. 1947	
Nacogdoches, 7,538—Nacogdoches							
City Memorial Hospital......	Gen	City	60	42	13	599	3,284
Navasota, 6,138—Grimes							
Brazos Valley Sanitarium....	Gen	NPAssn	25	14	8	308	1,451
New Braunfels, 6,976—Comal							
Comal Sanitarium	Gen	Part	35	6	2	32	...
New Braunfels Hospital......	Gen	City	20	18	5	249	933
New Gulf,—Wharton							
Texas Gulf Sulphur Company Hospital	Gen	NPAssn	20	8	4	82	491
Nocona, 2,605—Montague							
Major Clinic Hospital........	Gen	Part	13	9	5	100	611
Odessa, 9,573—Ector							
Headlee Hospital	Gen	Indiv	23	11	10	313	1,410
Wood Hospital	Gen	Part	30	15	10	210	1,823
Olney, 3,497—Young							
Hamilton Hospital	Gen	City	30	4	7	275	1,587
Orange, 7,472—Orange							
Frances Ann Lutcher Hosp...	Gen	Corp	45	35	12	524	1,737
Orange City Hospital.........	Gen	City	85	26	21	404	2,251
Overton, 2,313—Rusk							
Rocky Mount Hospital........	Ven	State	175	137	..	...	5,473
Paducah, 2,677—Cottle							
W. Q. Richards Memorial Hospital	Gen	Indiv	20	10	4	172	727
Palestine, 12,144—Anderson							
Missouri Pacific Lines Employees' Hospital	Indus	NPAssn	75	52	..	...	1,490
Palestine Sanitarium	Gen	Corp	30	20	9	438	1,446
Pampa, 12,895—Gray							
Worley Hospital	Gen	Indiv	44	28	11	489	3,178
Paris, 18,678—Lamar							
Geo. Griffiths Memorial Hospital for Childrden..........	Unit of Sanitarium of Paris						
Lamar County Hospital......	Gen	County	50	18	7	82	881
St. Joseph's Hospital▲........	Gen	Church	60	60	15	577	2,437
Sanitarium of Paris▲.........	Gen	Corp	81	79	12	273	2,554
Pasadena, 3,436—Harris							
Pasadena Hospital and Clinic	Gen	Part	48	26	14	698	2,649
Pearsall, 3,164—Frio							
Goodnight Clinic Hospital....	Gen	Indiv	17	10	2	99	625
Pecos, 4,855—Reeves							
Camp and Camp Hospital...	Gen	Indiv	17	7	8	149	512
Perryton, 2,325—Ochiltree							
Perryton Hospital	Gen	Indiv	15	12	6	153	744
Sanford Hospital and Clinic..	Gen	Corp	40	...	12	Estab. 1947	
Phillips, 4,000—Hutchinson							
Phillips-Pantex Hospital	Gen	NPAssn	21	10	8	106	736
Pittsburg, 2,916—Camp							
Pittsburg Medical and Surgical Hospital	Gen	NPAssn	26	15	10	308	1,982
Plainview, 8,263—Hale							
Plainview Sanitarium and Clinic	Gen	Part	161	85	12	557	3,097
Port Arthur, 46,140—Jefferson							
St. Mary's Hospital, Gates Memorial▲○	Gen	Church	154	100	35	1,830	6,818
Poteet, 2,315—Atascosa							
Shotts Memorial Hospital....	Gen	Indiv	12	5	4	62	554
Prairie View (Hempstead P. O.), 140—Waller							
Prairie View University Hospital○	Gen	State	54	28	4	31	840
Quanah, 3,767—Hardeman							
Memorial Hospital	Gen	County	56	31	8	329	1,945
Randolph Field,—Bexar							
Station Hospital▲	Gen	Army	100	48	..	...	2,027
Ranger, 4,553—Eastland							
Ranger General Hospital......	Gen	CyCo	35	20	8	135	1,000
West Texas Hospital.........	Gen	Corp	18	14	3	58	500
Raymondville, 4,050—Willacy							
Raymondville Hospital	Gen	Part	21	11	6	246	800
Refugio, 4,077—Refugio							
Refugio County Hospital.....	Gen	Church	33	15	8	202	1,006
Robstown, 6,780—Nueces							
Robstown Hospital	Gen	NPAssn	17	6	7	222	1,237
Roscoe, 1,166—Nolan							
Young Hospital	Gen	Part	25	15	7	159	1,260
Rosenberg, 3,457—Fort Bend							
Fort Bend Hospital..........	Gen	Part	23	12	6	142	1,376
Rotan, 2,029—Fisher							
Callan Hospital	Gen	Part	51	27	10	293	1,959

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Rusk, 5,699—Cherokee							
Rusk State Hospital▲........	Ment	State	2,111	2,114	..	...	581
San Angelo, 25,802—Tom Green							
Clinic-Hospital▲	Gen	Corp	55	36	15	525	2,497
St. John's Hospital▲..........	Gen	Church	40	29	12	226	1,653
Shannon West Texas Memorial Hospital▲○	Gen	NPAssn	139	118	20	603	5,896
Station Hospital	Gen	Army	75	...	..	...	...
San Antonio, 253,854—Bexar							
Baptist Memorial Hosp.★▲○	Gen	Church	232	199	45	2,600	11,960
Brooke General Hospital★+▲..	Gen	Army	2,346	2,303	52	1,197	20,840
Central Clinic Hospital.......	Gen	Indiv	10	5	4	75	230
Grace Lutheran Sanatorium..	TB	Church	40	37	..	...	146
Medical Arts Hospital........	Gen	Corp	29	21	5	35	1,760
Mission Medical Center........	Ven	State	200	139	..	...	5,058
Dr. Moody's Sanitarium......	N&M	Corp	50	31	..	...	113
Nix Memorial Hospital★▲....	Gen	Corp	119	121	30	1,475	6,508
Robert B. Green Memorial Hospital★▲	Gen	County	190	158	26	1,050	4,009
Saenz Clinic and Hospital....	Gen	Indiv	12	7	6	214	554
San Antonio State Hospital..	Ment	State	2,757	2,739	..	...	812
Santa Rosa Hospital★+▲○.....	Gen	Church	357	322	56	3,441	14,565
Station Hospital▲	Gen	Army	1,000	468	20	502	12,431
Woodmen of the World Memorial Hospital+▲	TB	NPAssn	150	85	..	...	134
Sanatorium, 1,175—Tom Green							
State Tuberculosis Sanat.▲...	TB	State	955	617	..	...	1,343
San Marcos, 6,006—Hays							
Memorial Hospital	Gen	NPAssn	44	13	11	190	1,023
Santa Anna, 1,661—Coleman							
Sealy Hospital	Gen	Part	15	7	3	91	482
Seagraves, 3,225—Gaines							
Seagraves Clinic-Hospital ...	Gen	Part	12	5	4	53	416
Sealy, 2,500—Austin							
Sealy Hospital	Gen	Indiv	10	5	4	80	580
Seguin, 7,006—Guadalupe							
Seguin Hospital	Gen	Part	21	17	12	358	948
Seminole, 1,761—Gaines							
Andrew S. Tomb Clinic-Hosp.	Gen	Indiv	30	15	6	175	...
Gaines Clinic and Hospital...	Gen	Part	16	9	6	132	512
Seymour, 3,328—Baylor							
Baylor County Hospital......	Gen	County	29	17	7	180	1,018
Sherman, 17,156—Grayson							
St. Vincent's Hospital▲.......	Gen	Church	76	61	18	471	3,074
Wilson N. Jones Memorial Hospital▲○	Gen	NPAssn	72	57	13	396	3,317
Shiner, 1,520—Lavaca							
Dr. Wagner's Hospital........	Gen	Indiv	18	12	4	137	519
Sinton, 3,770—San Patricio							
Sinton Hospital	Gen	NPAssn	26	15	8	261	1,470
Slaton, 3,587—Lubbock							
Mercy Hospital	Gen	Church	50	13	10	232	1,300
Snyder, 3,815—Scurry							
Snyder General Hospital......	Gen	Corp	25	12	10	175	907
Spearman, 1,105—Hansford							
Hansford Hospital	Gen	NPAssn	16	...	5	Estab. 1947	
Spur, 2,136—Dickens							
Nichols General Hospital.....	Gen	Indiv	20	15	7	85	625
Stamford, 4,810—Jones							
Stamford Sanitarium	Gen	Part	50	36	15	341	2,383
Stephenville, 4,768—Erath							
Stephenville Hosp. and Clinic.	Gen	NPAssn	50	36	10	278	2,194
Sugar Land, 2,400—Fort Bend							
Laura Eldridge Hospital.....	Gen	NPAssn	30	15	4	193	1,105
Sulphur Springs, 6,742—Hopkins							
Longino Hospital	Gen	Indiv	13	9	5	112	589
Sulphur Springs Clinic Hosp.	Gen	Part	13	6	5	120	500
Sweetwater, 10,367—Nolan							
Sweetwater Municipal Hosp...	Gen	City	45	35	10	462	2,983
Taylor, 7,875—Williamson							
Johns Clinic and Hospital....	Gen	Indiv	9	...	2	Estab. 1947	
Stromberg Clinic and Hosp...	Gen	Corp	38	24	8	148	915
Wedemeyer Hospital	Gen	Corp	31	26	7	250	1,720
Temple, 15,344—Bell							
Gulf, Colorado and Santa Fe Hospital▲	Indus	NPAssn	150	58	..	...	3,227
Kings Daughters Hospital★▲..	Gen	NPAssn	110	77	16	439	3,313
Scott and White Hosp.★+▲○..	Gen	Corp	204	170	16	404	6,789
Veterans Admin. Hospital+...	Gen	Vet	1,000	401	..	...	4,139
Terrell, 10,481—Kaufman							
Alexander Hospital	Gen	Indiv	20	12	6	125	1,100
Friddell Hospital	Gen	Indiv	18	10	4	76	433
Holton-Johnston Clinic-Hosp.	Gen	Part	20	13	6	192	670
Lane Clinic-Hospital	Gen	Indiv	10	4	3	28	215
Terrell State Hospital........	Ment	State	2,794	2,706	..	...	665
Texarkana, 17,019—Bowie							
Federal Correctional Institution	Inst	USPHS	29	12	..	...	420
Station Hospital	Gen	Army	25	1	..	...	334
Texarkana Hospital▲	Gen	NPAssn	56	47	8	557	2,970
Texas City, 5,748—Galveston							
Danforth Memorial Hospital	Gen	Indiv	30	23	16	219	1,016
Twidwell-Schmidt Hospital ...	Gen	Part	12	5	6	247	1,874
Tyler, 28,279—Smith							
Bryant Clinic and Hospital..	Gen	Part	15	14	8	287	1,356
Mother Frances Hospital▲....	Gen	Church	74	55	19	809	3,314
Ulvade, 6,679—Ulvade							
Merritt Hospital	Gen	Indiv	13	No data supplied			
Velasco, 1,000—Brazoria							
Dow Magnesium Corporation Hospital	Gen	NPAssn	52	38	12	358	2 956

Key to symbols and abbreviations is on page. 1396

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Vernon, 9,277—Wilbarger							
Christ the King Hospital	Gen	Church	29	12	5	177	897
Shipman Clinic Hospital	Gen	Indiv	13	9	4	16	620
Vernon Hospital	Gen	Part	24	16	8	353	1,456
Victoria, 11,566—Victoria							
DeTar Memorial Hospital	Gen	Indiv	38	35	12	388	2,070
Victoria Hospital	Gen	Indiv	20	16	13	246	1,390
Waco, 55,982—McLennan							
Hillcrest Memorial Hosp.▲○	Gen	Church	148	133	41	1,601	6,430
Providence Hospital▲○	Gen	Church	150	118	25	1,006	7,178
Riverside Hospital	Ven	State	150	131	..	...	4,723
Veterans Admin. Hospital+▲	Ment	Vet	2,214	2,080	..	...	2,578
Waxahachie, 8,655—Ellis							
Waxahachie Sanitarium▲	Gen	NPAssn	34	12	7	373	1,830
Weatherford, 5,924—Parker							
Medical and Surgical Clinic-Hospital	Gen	Part	16	12	9	274	912
Parker County Hospital	Gen	County	23	9	4	100	511
Wellington, 3,308—Collingsworth							
St. Joseph's Hospital	Gen	Church	23	15	6	204	983
Wharton, 4,386—Wharton							
Caney Valley Hospital	Gen	Part	45	12	10	390	1,101
[illegible]	Gen	Corp	39	25	6	158	2,121
Wheeler Hospital	Gen	Part	24	8	6	152	820
Wichita Falls, 45,112—Wichita							
Bethania Hospital▲	Gen	Church	55	41	16	639	2,425
Wichita Falls Clinic-Hosp.★+▲	Gen	Part	102	88	15	477	4,918
Wichita Falls State Hospital	Ment	State	2,479	2,410	..	...	829
Wichita General Hospital▲○	Gen	CyCo	135	92	18	1,058	5,145
Wills Point, 1,976—Van Zandt							
Baker Clinic-Hospital	Gen	Indiv	10	7	3	128	504
Yoakum, 4,733—Lavaca							
Huth Memorial Hospital	Gen	Church	35	25	5	240	1,220

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Alpine, 3,866—Brewster							
Lockhart Clinic-Hospital	Gen	Indiv	14	8	6	97	512
Amarillo, 51,868—Potter							
M. L. Wyatt Memorial Hosp.	Gen	Indiv	15	7	5	130	269
Arlington, 4,240—Tarrant							
Knights Templar Hospital	Inst	NPAssn	25	17	..	...	172
Woodward Hospital	ENT	Indiv	10	2	..	...	1,460
Austin, 87,930—Travis							
Austin State School	MeDe	State	2,001	1,987	..	...	271
Beaumont, 59,061—Jefferson							
Beaumont Infirmary	Mat	Indiv	17	11	20	632	635
Bronte, 754—Coke							
Karen-Gayl Hospital	Gen	Indiv	8	...	3	Estab. 1947	
Cooper, 2,537—Delta							
Janes Hospital	Gen	Indiv	10	6	6	116	316
Corpus Christi, 57,301—Nueces							
Sizer Hospital	Gen	Indiv	23	15	..	...	822
Dallas, 294,734—Dallas							
Love-Youngblood Eye and Ear Hospital	ENT	Part	6	4	..	...	129
Eastland, 3,849—Eastland							
Eastland Hospital	Gen	Indiv	12	4	4	105	345
El Paso, 96,810—El Paso							
Mesa Sanatorium	TB	Indiv	21	19	..	...	53
Fort Worth, 177,662—Tarrant							
Elmwood Sanatorium	TB	CyCo	76	65	..	...	81
Harrison Clinic and Hospital	Gen	Indiv	40	26	6	106	1,376
Howard Sanitarium	N&M	Indiv	17	9	..	...	80
West Texas Maternity Hosp.	Mat	NPAssn	30	31	10	99	116
Galveston, 60,862—Galveston							
Stewart Convalescent Home	Conv	State	30	10	..	...	11
Hallettsville, 1,581—Lavaca							
Dufner Hospital	Gen	Indiv	8	5	3	27	135
Hico, 1,241—Hamilton							
Hico Hospital and Clinic	Gen	Corp	10	...	2	Estab. 1947	
[illegible] pital	Orth	Indiv	15	15	..	...	96
Physicians and Surgeons Hospital	Gen	Part	30	13	..	...	1,222
Huntsville, 5,108—Walker							
Texas State Prison Hospital	Inst	State	138	105	..	...	1,690
Hutchins, 400—Dallas							
City-County Convalescent Hospital	Conv	CyCo	135	122	..	...	97
Kaufman, 2,654—Kaufman							
Shaw Clinic and Hospital	Gen	Indiv	6	...	3	Estab. 1918	
Longview, 13,758—Gregg							
Camp Normal Industrial Hospital	Gen	Indiv	10	3	4	48	274
Loraine, 700—Mitchell							
Johnson Hospital	Gen	Part	10	7	4	120	380
Marlin, 6,542—Falls							
Hunter Clinic-Hospital	Gen	Indiv	18	3	2	15	149
Matador, 1,376—Motley							
Stanley Clinic Hospital	Gen	Indiv	10	6	6	151	634
McCamey, 2,595—Upton							
Cooper Hospital	Gen	Indiv	11	7	4	150	300
Memphis, 3,869—Hall							
Clark Hospital	Gen	Indiv	8	7	6	140	637
Moulton, 643—Lavaca							
H. J. Strieder Hospital	Gen	Indiv	9	8	3	64	109
New Boston, 1,111—Bowie							
McGee Hospital	Gen	Indiv	12	6	6	147	506
Rosebud, 1,842—Falls							
Rosebud Hospital and Clinic	Gen	Indiv	31	10	3	139	550
San Antonio, 253,854—Bexar							
Salvation Army Home and [illegible]	Mat	Church	35	20	12	53	73
[illegible]	Gen	Indiv	12	...	5	...	...
[illegible]	Gen	Indiv	13	6	6	185	413
Teague, 3,157—Freestone							
City Hospital	Gen	Indiv	16	7	6	175	592
Texon, 1,200—Reagan							
Big Lake Oil Company Hosp.	Gen	NPAssn	9	1	4	20	89
Tulia, 2,055—Swisher							
Swisher County Hospital	Gen	County	12	11	6	170	1,054
Waco, 55,982—McLennan							
Waco State Home Hospital	Inst	State	80	6	..	...	460

UTAH

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
American Fork, 3,333—Utah							
American Fork Community [illegible]	Gen	City	22	4	18	386	797
[illegible] ke							
[illegible] Hospital▲	Gen	Indiv	40	27	8	73	942
Brigham, 5,641—Box Elder							
Cooley Memorial Hospital	Gen	Indiv	25	22	20	431	1,007
Cedar City, 4,695—Iron							
Iron County Hospital	Gen	County	45	24	16	412	1,522
Coalville, 919—Summit							
Summit County Hospital	Gen	County	17	9	8	193	533
Fort Duchesne, 101—Uintah							
Uintah and Ouray Agency Indian Hospital	Gen	IA	30	12	6	50	349
Heber, 2,748—Wasatch							
Heber Hospital	Gen	Part	14	9	10	179	369
Lehi, 2,733—Utah							
Lehi City Hospital	Gen	City	15	7	8	114	351
Logan, 11,868—Cache							
Cache Valley General Hosp.	Gen	NPAssn	43	27	18	553	1,750
William Budge Memorial Hospital▲	Gen	NPAssn	67	63	21	621	5,507
Moab, 1,084—Grand							
Grand County Public Hosp.	Gen	County	19	5	8	90	423
Ogden, 43,688—Weber							
St. Benedict's Hospital★▲○	Gen	Church	154	117	82	1,272	6,339
Thomas D. Dee Memorial [illegible]★+▲	Gen	Church	320	175	60	2,207	11,011
[illegible]▲	TB	State	96	63	..	...	115
Park City, 3,739—Summit							
Park City Miners' Hospital	Gen	NPAssn	17	9	6	63	600
Payson, 3,591—Utah							
Payson City Hospital	Gen	NPAssn	31	27	18	635	1,469
Price, 5,214—Carbon							
Price City Hospital	Gen	City	51	33	12	649	1,907
Provo, 18,071—Utah							
Utah State Hospital	Ment	State	1,200	1,149	..	...	422
Utah Valley Hospital▲	Gen	NPAssn	62	70	23	1,301	3,238
Richfield, 3,584—Sevier							
Sevier Valley Hospital	Gen	Indiv	27	17	12	328	1,121
St. George, 3,591—Washington							
D. A. McGregor Hospital	Gen	NPAssn	21	10	8	241	610
Salina, 1,616—Sevier							
Salina Hospital	Gen	City	16	9	10	123	537
Salt Lake City, 149,934—Salt Lake							
Dr. W. H. Groves Latter-Day Saints Hospital★+▲○	Gen	Church	366	334	110	4,084	14,054
Holy Cross Hospital★+▲○	Gen	Church	200	162	60	2,532	7,531
Primary Children's Hospital	Chil	Church	33	27	..	...	104
St. Mark's Hospital★+▲○	Gen	Church	214	189	80	951	6,486
Salt Lake General Hosp.★+▲○	Gen	County	232	167	22	812	3,551
Shriners Hospital for Crip[illegible]	[illegible]h	NPAssn	20	20	..	...	32
[illegible]▲		Vet	204	167	..	...	2,813
S[illegible]							
[illegible]		Indiv	12	6	7	212	431
Tremonton, 1,413—Box Elder							
Valley Hospital	Gen	NPAssn	20	14	15	180	1,194

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
American Fork, 3,333—Utah							
Utah State Training School	MeDe	State	600	650	..	...	65
Murray, 5,740—Salt Lake							
Cottonwood Stake Maternity Hospital	Mat	Church	23	19	26	986	1,003

VERMONT

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Barre, 10,909—Washington							
Barre City Hospital▲○	Gen	NPAssn	64	45	17	585	2,075
Washington County Sanat.	TB	State	47	34	..	...	52
Bellows Falls, 4,236—Windham							
Rockingham Hospital	Gen	NPAssn	40	29	12	233	1,022
Bennington, 7,628—Bennington							
Henry W. Putnam Memorial Hospital▲	Gen	NPAssn	96	72	20	524	2,419

Key to symbols and abbreviations is on page 1396

VERMONT—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Brattleboro, 9,622—Windham							
Brattleboro Memorial Hosp.▲	Gen	NPAssn	75	61	20	359	1,837
Brattleboro Retreat	Ment	NPAssn	750	693	..	...	218
	Gen	Church	115	113	25	657	3,711
Mary Fletcher Hospital★+▲○	Gen	NPAssn	193	182	37	693	5,993
Hardwick, 1,007—Caledonia							
Hardwick Hospital	Gen	NPAssn	17	10	6	135	297
Jeffersonville, 257—Lamoille							
Roger W. Mann Hospital	Gen	Indiv	15	7	6	90	205
Middlebury, 2,123—Addison							
Porter Hospital▲	Gen	NPAssn	45	27	10	310	1,707
Montpelier, 8,006—Washington							
	Gen	NPAssn	73	65	20	375	3,650
	Gen	NPAssn	31	22	5	100	850
Broadview	Gen	Indiv	26	...	10	Estab. 1947	
Orleans County Memorial Hospital▲	Gen	NPAssn	40	32	10	350	1,370
Pittsford, 576—Rutland							
Vermont Sanatorium	TB	State	65	62	..	...	124
Proctor, 2,184—Rutland							
Proctor Hospital	Gen	NPAssn	35	20	7	111	750
Randolph, 1,988—Orange							
Gifford Memorial Hospital▲○	Gen	NPAssn	53	40	11	255	1,597
Rutland, 17,082—Rutland							
Rutland Hospital▲○	Gen	NPAssn	167	130	38	816	4,787
St.							
St ▲	Gen	NPAssn	61	48	20	518	2,400
St.							
B ▲	Gen	NPAssn	55	38	12	246	,700
St. Johnsbury	Gen	Church	20	19	9	102	500
Springfield, 5,182—Windsor							
Springfield Hospital▲	Gen	NPAssn	47	45	10	408	1,568
Waterbury, 3,074—Washington							
Vermont State Hospital+	Ment	State	1,125	1,104	..	...	408
White River Junction, 2,271—Windsor							
Veterans Admin. Center+▲	Gen	Vet	250	198	..	...	3,672
	Gen	NPAssn	16	10	8	186	452
Winooski							
Fanny Allen Hospital▲○	Gen	Church	85	85	14	327	3,197

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Brandon, 2,979—Rutland							
Brandon State School	MeDe	State	383	384	..	...	21
Pittsford, 576—Rutland							
Caverly Preventorium	TB	NPAssn	44	44	..	...	75
Windsor, 3,402—Windsor							
Vermont State Prison Hosp.	Inst	State	12	4	..	...	123

VIRGINIA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Abingdon, 3,158—Washington							
Johnston Memorial Hospital○	Gen	NPAssn	65	66	5	274	2,101
Alexandria, 33,523—Arlington							
	Gen	NPAssn	168	135	60	2,259	6,438
	Gen	Part	30	10	5	103	545
and Hospital	Orth	Indiv	14	...	..	Estab. 1947	
Arlington Hospital★+▲	Gen	NPAssn	115	84	26	1,288	4,563
Bedford, 3,973—Bedford							
John Russell Hospital	Gen	Corp	21	19	10	218	1,014
Bristol, 9,768—Washington							
Fort Shelby Hospital	Gen	Indiv	14	6	6	208	514
▲	Gen	NPAssn	66	62	10	820	3,914
	See Richmond, Virginia						
	TB	State	269	269	.	...	118
Camp Lee,—Prince George							
Station Hospital	Gen	Army	1,263	439	16	211	6,404
		State	400	295	..	...	305
Blue Ridge ▲		State	370	287	..	...	341
Martha Jefferson Hospital and Sanitarium▲	Gen	NPAssn	54	48	15	509	2,498
University of Virginia Hospital★+▲○	Gen	State	498	429	59	1,721	14,021
Christiansburg, 2,299—Montgomery							
New Altamont Hospital▲	Gen	Corp	25	23	8	597	1,853
Clifton Forge, 6,461—Alleghany							
Chesapeake and Ohio	Gen	NPAssn	155	122	20	380	6,166
	Gen	Indiv	20	13	8	186	848
Coeburn, 761—Wise							
	Gen	Part	25	18	4	275	1,345
	Gen	CyCo	31	16	10	266	900
Hilltop	TB	NPAssn	36	32	..	...	93
Memorial Hospital▲○	Gen	NPAssn	170	153	26	1,289	5,034

VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Farmville, 3,475—Prince Edward							
Southside Community Hosp.▲	Gen	NPAssn	63	56	12	520	2,283
Fort Belvoir,—Fairfax							
Station Hospital	Gen	Army	839	402	40	148	6,821
Fort Eustis,—Warwick							
Stat	Gen	Army	200	100	7	62	4,001
Fort ty							
Station	Gen	Army	150	48	12	219	1,860
Fort Myer, 1,050—Arlington							
	Gen	Army	157	67	8	71	3,551
▲	Gen	NPAssn	56	42	15	214	1,848
inia							
Mary Washington Hospital	Gen	NPAssn	80	59	20	657	3,192
	Gen	NPAssn	22	17	10	323	1,359
Gordonsville, 568—Orange							
Gordonsville Community	Gen	Indiv	20	12	5	62	392
	Gen	Corp	30	27	8	145	1,494
▲	Gen	NPAssn	135	97	30	891	3,442
	Gen	NPAssn	150	132	20	1,232	6,511
Hopewell, 8,679—Prince George							
John Randolph Hospital	Gen	NPAssn	40	18	16	312	1,004
Hot Springs, 1,000—Bath							
Community House	Gen	NPAssn	13	7	4	85	335
Kecoughtan, 1,900—Elizabeth City							
Veterans Admin. Hospital▲	Gen	Vet	604	478	..	...	3,729
Langley Field,—Elizabeth City							
Station Hospital▲	Gen	Army	100	73	..	...	2,665
	Gen	Indiv	20	15	8	228	885
	Gen	Corp	26	19	5	299	1,134
	Gen	NPAssn	50	42	15	379	2,644
Luray, 1,511—Page							
Page Memorial Hospital	Gen	County	30	11	10	124	1,138
Lynchburg, 44,541—Campbell							
Guggenheimer Maternity Hospital	Unit of Marshall Lodge Memorial Hospital						
Lynchburg General Hosp.▲○	Gen	City	150	111	27	820	4,805
Marshall Lodge Memorial Hospital▲	Gen	NPAssn	135	83	30	618	3,498
Virginia Baptist Hospital▲○	Gen	Church	100	82	24	927	3,539
Marion, 5,177—Smyth							
Lee Memorial Hospital	Gen	NPAssn	84	62	18	395	5,274
Southwestern State Hospital▲	Ment	State	1,287	1,271	..	...	409
al	Gen	Indiv	25	No data supplied			
spital	Gen	NPAssn	84	55	26	285	1,445
Nassawadox, 250—Northampton							
Northampton-Accomac Me-	Gen	NPAssn	76	55	18	517	2,590
	Gen	Indiv	146	127	35	1,335	5,905
Riverside Hospital★▲∨	Gen	NPAssn	225	131	35	1,328	5,484
Whittaker Memorial Hosp.▲	Gen	NPAssn	57	39	20	276	1,265
Norfolk, 144,332—Norfolk							
De Paul Hospital★+▲○	Gen	Church	258	217	48	1,918	9,094
Grandy and Wise Hospital	TB	City	150	132	..	...	144
Hampton Roads Medical Center	Ven	USPHS	200	139	..	...	4,693
	Gen	NPAssn	166	120	40	1,312	5,790
	ENT	Part	11	4	..	...	498
▲	Gen	NPAssn	140	71	38	624	2,654
▲	Gen	NPAssn	340	260	55	1,523	9,706
U. S. Marine ▲	Gen	USPHS	420	280	..	...	5,601
U. S. Naval Air Station Dispensary	Gen	Navy	95	40	..	...	4,000
Norton, 4,006—Wise							
Dr. Botts' Eye, Ear, Nose and Throat Hospital	ENT	Indiv	38	11	..	...	3,385
Norton Clinic Hospital	Gen	Indiv	30	21	5	85	1,570
Norton General Hospital	Gen	Indiv	37	32	10	286	1,631
Pennington Gap, 1,990—Lee							
Lee General Hospital	Gen	Corp	35	26	6	172	1,703
Petersburg, 30,631—Dinwiddie							
Central State Hospital▲	Ment	State	3,374	3,904	10	5	940
Federal Reformatory Hosp.	Inst	USPHS	46	16	..	...	845
Medical Center Hospital	Unit of Central State Hospital						
Petersburg Hospital▲○	Gen	NPAssn	114	100	19	670	4,223
Petersburg State Colony	MeDe	State	250	218	..	...	63
▲	Gen	NPAssn	202	128	45	1,013	5,574
▲	Gen	Church	150	71	32	932	3,729
U. S. Naval Hospital★+▲	Gen	Navy	1,200	731	47	1,051	10,874
Pulaski, 8,792—Pulaski							
Pulaski Hospital▲	Gen	Corp	85	68	15	649	3,269
Quantico, 1,139—Prince William							
U. S. Naval Hospital	Gen	Navy	201	97	14	361	1,375
Radford, 6,990—Montgomery							
Radford Community Hosp.▲○	Gen	NPAssn	74	59	20	637	3,474
St. Albans Sanatorium	N&M	Indiv	85	75	..	...	1,033
Richlands, 2,203—Tazewell							
Clinch Valley Clinic Hosp.▲	Gen	Corp	101	69	12	415	4,461
Mattie Williams Hospital	Gen	Indiv	75	43	8	198	1,862

Key to symbols and abbreviations is on page 1396

VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Richmond, 193,042—Henrico							
Crippled Children's Hosp.+▲..	Orth	NPAssn	120	88	..	...	185
Dooley Hospital	Unit of Medical College of Va., Hosp. Div.						
Grace Hospital+▲○	Gen	Corp	90	84	20	717	1,723
Johnston-Willis Hospital★+▲○	Gen	Corp	145	125	26	1,200	5,822
Medical College of Virginia, Hospital Division★+▲○	Gen	State	720	592	90	3,080	15,621
Memorial Hospital	Unit of Medical College of Va., Hosp. Div.						
Penitentiary Hospital	Inst	State	48	32	..	...	2,010
Pine Camp Hospital▲........	TB	City	220	176	..	...	280
Retreat for the Sick+▲........	Gen	NPAssn	106	109	25	1,196	4,670
Richmond Community Hosp..	Gen	NPAssn	35	33	8	288	901
Richmond Municipal Hospital	Ven	City	80	65	..	...	2,234
St. Elizabeth's Hospital+▲○..	Gen	Corp	57	52	..	...	1,961
St. Luke's Hospital+▲○.... ..	Gen	Corp	86	81	23	999	3,655
St. Philip Hospital...........	Unit of Medical College of Va., Hosp. Div.						
Sheltering Arms Hospital+▲..	Gen	NPAssn	83	50	17	329	1,640
Stuart Circle Hospital★▲○....	Gen	Corp	111	102	23	715	4,231
Tucker Hospital▲	N&M	Corp	56	53	..	...	522
Veterans Admin. Hospital+▲..	Gen	Vet	1,000	838	..	...	8,530
Westbrook Sanatorium	N&M	Corp	140	139	..	...	512
Roanoke, 69,287—Roanoke							
Burrell Memorial Hospital▲..	Gen	NPAssn	51	38	7	223	1,250
Gill Memorial Eye, Ear and Throat Hospital+▲	ENT	NPAssn	25	11	..	...	1,109
Jefferson Hospital★+▲○	Gen	NPAssn	150	134	30	977	5,172
Lewis-Gale Hospital★+▲○	Gen	NPAssn	180	144	30	1,288	6,385
Roanoke City Sanatorium▲...	TB	City	52	25	..	...	54
Roanoke Hospital★▲○	Gen	NPAssn	130	117	20	739	1,262
Shenandoah Hospital▲	Gen	Corp	63	41	8	117	2,651
Veterans Admin. Hospital+▲..	Ment	Vet	2,000	1,852	..	...	4,024
Saltville, 2,650—Smyth							
Mathieson Hospital	Gen	NPAssn	17	15	5	140	672
South Boston, 5,252—Halifax							
South Boston Hospital.......	Gen	Corp	45	31	10	324	2,468
Staunton, 13,337—Augusta							
DeJarnette State Sanatorium	Ment	State	250	200	..	...	753
Kings Daughters Hospital▲..	Gen	NPAssn	75	57	20	681	2,699
Western State Hospital.......	Ment	State	2,519	2,480	..	...	933
Stonega, 1,650—Wise							
Stonega Hospital	Indus	NPAssn	16	3	..	...	80
Stuart, 720—Patrick							
Stuart Hospital	Gen	Indiv	22	16	7	174	485
Suffolk, 11,343—Nansemond							
Lakeview Hospital▲○	Gen	NPAssn	62	53	15	381	2,086
Virginia General Hospital....	Gen	NPAssn	14	6	6	150	373
University,—Albemarle							
University of Virginia Hosp.	See Charlottesville, Va.						
Warrenton, 1,651—Fauquier							
Physicians Hospital	Gen	Corp	40	23	10	277	1 124
Waynesboro, 7,373—Augusta							
Waynesboro Community Hospital	Gen	NPAssn	38	25	12	437	1,179
Williamsburg, 3,942—James City							
Bell Hospital	Gen	Indiv	20	10	5	156	704
Eastern State Hospital▲.....	Ment	State	1,816	1,748	..	...	650
Winchester, 12,095—Frederick							
Winchester Memorial Hosp.▲○	Gen	NPAssn	180	176	30	1,032	6,954
Woodstock, 1,546—Shenandoah							
Cora Miller Memorial Hosp..	Gen	Indiv	38	21	10	152	1,010

Related Institutions

Related Institutions							
Beaumont,—Powhatan							
Virginia Industrial School for Boys	Inst	State	21	4	..	...	500
Bristol, 9,768—Washington							
Grigsby's Hospital	Gen	Indiv	16	10	12	260	620
Colony, 100—Amherst							
Lynchburg State Colony▲....	MeDe	State	1,761	1,707	..	...	190
Medical Center Hospital▲.....	Unit of Lynchburg State Colony						
Galax, 3,195—Grayson							
Waddell Hospital	Gen	Corp	44	21	8	163	1,095
Martinsville, 10,080—Henry							
St. Mary Hospital............	Gen	Part	13	7	7	111	393
Richmond, 193,042—Henrico							
City Home Hospital.........	GenInst	City	450	291	20	24	681
State Farm, 75—Goochland							
State Farm Hospital.........	Inst	State	120	82	..	...	563
Sweet Briar, 200—Amherst							
Sweet Briar College Infirmary	Inst	NPAssn	15	3	..	...	167

WASHINGTON

Hospitals and Sanatoriums							
Aberdeen, 18,846—Grays Harbor							
St. Joseph's Hospital▲........	Gen	Church	115	119	25	985	5,593
American Lake, 800—Pierce							
Veterans Admin. Hospital▲...	Ment	Vet	1,028	840	..	...	522
Anacortes, 5,875—Skagit							
Anacortes Hospital	Gen	Corp	25	15	6	220	959
Auburn, 4,211—King							
Auburn General Hospital.....	Gen	Part	47	26	16	467	1,560
Bellingham, 29,314—Whatcom							
St. Frances Hospital..........	Gen	Indiv	33	15	..	...	210
St. Joseph's Hospital▲○.......	Gen	Church	118	104	18	1,028	3,483
St. Luke's General Hosp.▲○..	Gen	NPAssn	70	71	12	664	3,557
Whatcom County Hospital...	Gen	County	102	59	8	32	897

WASHINGTON—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bremerton, 15,134—Kitsap							
Harrison Memorial Hospital▲	Gen	NPAssn	120	79	40	1,198	5,553
Puget Sound Naval Memorial Hospital	Gen	County	130	62	30	800	4,060
U. S. Naval Hospital★▲......	Gen	Navy	630	512	17	429	5,497
Burlington, 1,632—Skaget							
Matthews General Hospital...	Gen	Indiv	30	15	6	144	891
Centralia, 7,414—Lewis							
Lewis County Hospital.......	Gen	County	51	32	16	492	1,959
Chehalis, 4,857—Lewis							
MacMillan Sanatorium	TB	Counties	63	35	..	...	50
St. Helen Hospital▲..........	Gen	Church	40	34	13	451	1,730
Chewelah, 1,565—Stevens							
St. Joseph's Hospital.........	Gen	Church	40	25	10	156	1,327
Colfax, 2,853—Whitman							
Bryant and Weisman Clinic-Hospital	Gen	Part	70	43	15	...	1,020
St. Ignatius Hospital▲.......	Gen	Church	68	45	17	350	2,363
Colville, 2,418—Stevens							
Mount Carmel Hospital......	Gen	Church	45	40	12	236	1,575
Coulee Dam, 3,100—Douglas							
Coulee Dam Community Hospital	Gen	Indiv	40	16	12	212	1,311
Dayton, 3,026—Columbia							
Brining Memorial Hospital...	Gen	Indiv	22	17	4	145	689
Ellensburg, 5,944—Kittitas							
Ellenburg General Hospital▲..	Gen	NPAssn	30	23	10	162	1,365
Kittitas County Hospital.....	Gen	County	55	30	6	72	558
Valley General Hospital......	Gen	Indiv	17	15	9	232	983
Elma, 1,370—Grays Harbor							
Elma General Hospital.......	Gen	Part	23	17	6	117	924
Oakhurst Sanatorium	TB	County	100	68	..	...	65
Ephrata, 951—Grant							
Columbia Basin Hospital.....	Gen	Corp	25	15	7	176	1,033
Everett, 30,224—Snohomish							
General Hospital▲○	Gen	NPAssn	90	77	20	1,193	2,373
Providence Hospital▲○	Gen	Church	110	85	24	703	4,360
Fort Lewis,—Pierce							
Madigan General Hospital★+▲	Gen	Army	3,071	1,529	30	583	18,250
Fort Steilacoom, 2,080—Pierce							
Western State Hospital+▲⊙..	Ment	State	2,951	2,673	..	...	797
Kirkland, 2,084—King							
Fairfax Sanitarium	N&M	Indiv	50	40	..	...	386
Kirkland Hospital	Gen	Indiv	15	10	12	350	717
Lakeview, 200—Pierce							
Mountain View Sanatorium...	TB	County	96	84	..	...	85
Longview, 12,385—Cowlitz							
Cowlitz General Hospital.....	Gen	NPAssn	70	No data supplied			
St. John's Hospital▲..........	Gen	Church	65	63	20	762	3,674
Medical Lake, 2,114—Spokane							
Eastern State Hospital+▲....	Ment	State	2,273	2,057	..	...	605
Monroe, 1,590—Snohomish							
Valley View Hospital.........	Gen	County	72	55	6	26	364
Mount Vernon, 4,278—Skagit							
Rowley General Hospital.....	Gen	Indiv	44	34	10	264	1,611
Skagit General Hospital......	Gen	NPAssn	36	29	12	185	1,236
Nespelem, 300—Okanogan							
Colville Indian Hospital......	Gen	IA	36	20	4	84	627
Newport, 1,174—Pend Oreille							
Newport Community Hospital	Gen	NPAssn	25	13	6	178	762
Olympia, 13,254—Thurston							
St. Peter's Hospital▲○........	Gen	Church	125	94	25	833	3,992
Pasco, 3,913—Franklin							
[illegible] of Lourdes Hosp.▲	Gen	Church	68	40	25	589	2,406
[illegible]tal..	Gen	Indiv	53	41	12	195	1,660
Port Angeles [illegible]osp.▲	Gen	NPAssn	90	46	18	430	2,003
Port Townsend, 4,683—Jefferson							
St. John's Hospital...........	Gen	Church	80	31	12	218	1,195
Pullman, 4,417—Whitman							
Finch Memorial Hospital.....	Gen	State	50	11	..	...	1,560
Puyallup, 7,889—Pierce							
Puyallup General Hospital...	Gen	Indiv	28	17	15	454	1,533
Renton, 4,488—King							
Renton Hospital	Gen	NPAssn	100	77	25	1,214	4,786
Richland, 247—Benton							
Kadlec Hospital	Gen	Fed	106	50	30	523	3,189
Seattle, 368,302—King							
Ballard General Hospital.....	Gen	NPAssn	35	30	12	233	1,972
Children's Orthopedic Hospital+▲⊙	Orth	NPAssn	132	116	..	...	1,666
Cobb Hospital	Gen	Indiv	26	17	..	...	3,238
Columbus Hospital★▲○	Gen	Church	200	134	44	1,133	5,834
Doctor[illegible] Hospital★+▲⊙	Gen	NPAssn	200	155	48	1,607	7,327
Firlan[illegible] ▲	TB	County	700	233	..	...	215
King No. [illegible] ▲	Gen	County	500	472	51	942	12,015
King County [illegible]t No. 2 (Georgetown Branch)	Chr	County	275	264	..	...	539
Laurel Beach Sanatorium▲...	TB	Part	100	94	..	...	125
Maynard Hospital+▲	Gen	NPAssn	100	87	40	2,315	4,578
Medical and Dental Building Surgery	Surg	Indiv	20	15	..	...	3,153
Providence Hospital★+▲○	Gen	Church	357	317	77	2,371	10,749
Riverton Hospital for Diseases of [illegible] ▲	TB	NPAssn	100	86	..	...	111
St. [illegible]	Gen	NPAssn	54	...	15	...	...
Seat[illegible] ▲	Gen	NPAssn	115	111	26	1,108	5,017
Stat[illegible]	Gen	Army	400	219	..	...	6,331
Swedish Hospital★+▲○	Gen	NPAssn	300	281	74	2,903	10,395
U. S. Marine Hospital★+▲....	Gen	USPHS	400	402	14	151	5,598
U. S. Naval Air Station Dispensary	Gen	Navy	98	11	16	210	1,005

Key to symbols and abbreviations is on page 1396

WASHINGTON—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
University of Washington Infirmary	Inst	State	75	8	..	...	771
Virginia Mason Hospital★+▲○	Gen	NPAssn	207	187	30	1,120	8,373
Washington Infirmary	Ven	State	80	28	..	...	960
Washington Memorial Hosp.	Gen	NPAssn	16	8	..	...	111
Sedro Woolley, 2,954—Skagit							
Memorial Hospital	Gen	NPAssn	25	33	10	251	[illegible]
Northern State Hospital+▲⊙	Ment	State	2,136	2,090	..	...	636
Shelton, 3,707—Mason							
Shelton General Hospital▲	Gen	NPAssn	55	40	13	335	1,607
Snohomish, 2,794—Snohomish							
Aldercrest Sanatorium	TB	County	60	42	..	...	55
Snohomish General Hospital	Gen	Indiv	16	No data supplied			
Snoqualmie Falls,—King							
Nelem's Memorial Hospital	Gen	Indiv	24	12	6	96	173
Spokane, 122,001—Spokane							
Booth Memorial Hospital	Mat	Church	40	29	20	170	163
Deaconess Hospital★+▲○	Gen	Church	200	190	44	2,000	9,010
Edgecliff Sanatorium	TB	County	145	122	..	...	112
Sacred Heart Hospital★+▲○	Gen	Church	400	374	60	2,388	12,680
St. Luke's Hospital★+▲○	Gen	NPAssn	265	227	26	1,257	7,186
Shriners Hospital for Crippled Children▲⊙	Orth	NPAssn	24	20	..	...	85
Station Hospital▲	Gen	Army	100	110	..	111	4,059
Steilacoom, 882—Pierce							
U. S. Penitentiary Hospital▲	Inst	USPHS	91	32	..	...	861
Sunnyside, 2,368—Yakima							
Valley Memorial Hospital	Gen	NPAssn	23	22	15	558	1,791
Tacoma, 109,408—Pierce							
Doctors Hospital	Gen	NPAssn	63	47	..	...	...
Northern Pacific Beneficial Association Hospital▲	Gen	NPAssn	111	64	7	132	2,061
Pierce County Hospital★▲	Gen	CyCo	200	143	21	371	3,745
St. Joseph's Hospital★+▲○	Gen	Church	279	217	71	2,591	13,409
Station Hospital	Gen	Army	75	47	..	...	803
Tacoma General Hosp.★+▲○	Gen	NPAssn	213	189	70	2,828	8,299
Tacoma Indian Hospital▲	TB	IA	336	287	..	...	1,313
Tonasket, 643—Okanogan							
St. Martin's Hospital	Gen	Church	40	32	6	219	1,150
Vancouver, 18,788—Clark							
Clark County Hospital	Gen	County	78	57	8	70	1,028
Northern Permanente Hospital★+▲	Gen	NPAssn	300	173	45	594	4,286
St. Joseph's Hospital+▲○	Gen	Church	120	81	40	1,157	5,869
Vancouver Memorial Hosp.▲	Gen	NPAssn	140	109	30	951	4,659
Veterans Admin. Hospital	Gen	Vet	600	494	..	...	3,951
Walla Walla, 18,109—Walla Walla							
Blue Mountain Sanatorium	TB	County	49	45	..	...	42
St. Mary's Hospital▲○	Gen	*Church*	125	*91*	*29*	*811*	4,571
Veterans Admin. Hospital+▲	TB	Vet	421	373	..	...	969
Walla Walla General Hosp.▲	Gen	Church	53	47	14	426	2,287
Wenatchee, 11,620—Chelan							
Central Washington Deaconess Hospital▲○	Gen	Church	50	54	20	676	2,331
St. Anthony's Hospital▲○	Gen	Church	75	57	20	521	2,097
Yakima, 27,221—Yakima							
St. Elizabeth Hospital▲○	Gen	*Church*	258	*198*	*48*	*2,345*	*10,265*
Yakima County Hospital	Gen	County	93	75	7	232	1,749

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Arlington, 1,460—Snohomish							
Arlington General Hospital	Gen	Indiv	17	9	8	145	555
Cle Elum, 2,230—Kittitas							
Roslyn Cle Elum Beneficial Company Hospital	Gen	NPAssn	24	13	1	10	500
Colville, 2,418—Stevens							
Valley View Hospital	Gen	County	36	31	4	11	167
Ione, 681—*Pend Oreille*							
Ione Hospital	Gen	Indiv	10	1	5	53	357
Medical Lake, 2,114—Spokane							
[illegible]	MeDe	State	1,416	1,413	..	...	44
[illegible]	Alcoh	Corp	42	35	..	...	883
[illegible]	Iso	City	80	14	..	...	40
[illegible] Hospital	Gen	NPAssn	21	15	..	...	1,981
White Shield Home	Mat	NPAssn	21	21	10	50	53
Walla Walla, 18,109—Walla Walla							
Washington State Penitentiary Hospital	Inst	State	61	54	..	...	387
White Salmon, 985—Klickitat							
West Klickitat Hospital	Gen	Indiv	17	11	5	86	353
Yakima, 27,221—Yakima							
Yakima Valley Sanitarium	TB	Part	45	39	..	...	70

WEST VIRGINIA

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Alderson, 1,493—Monroe							
Federal Reformatory for Women	Inst	USPHS	53	12	6	12	1,039
[illegible] ig-	MeDe	State	316	314	..	...	...
[illegible]▲	Gen	Part	171	140	15	543	6,563
Pinecrest Sanitarium▲	TB	State	650	496	..	...	633
Raleigh General Hospital▲○	Gen	Corp	100	85	15	534	3,576

WEST VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Bluefield, 20,641—Mercer							
Bluefield Sanitarium★▲	Gen	Corp	161	130	26	609	6,140
Brown's Hospital	Gen	*Indiv*	15	14	3	25	1,890
Providence Hospital	Gen	Part	25	6	4	30	622
St. Luke's Hospital○	Gen	Corp	60	50	20	378	2,109
Buckhannon, *4,450—Upshur*							
St. Joseph's Hospital▲	Gen	Church	44	29	11	387	1,196
Charleston, 67,914—Kanawha							
Charleston General Hosp.★+▲○	Gen	NPAssn	300	199	35	1,512	9,584
Kanawha Valley Hospital★▲○	Gen	Corp	150	122	15	681	4,967
McMillan Hospital+▲○	Gen	Corp	100	71	20	807	4,855
Mountain State Memorial Hospital▲○	Gen	NPAssn	88	75	12	625	6,029
St. Francis Hospital+▲○	Gen	Church	130	112	30	1,137	6,354
Salvation Army Hospital	Gen	*Church*	28	13	9	242	877
Staats *Hospital*	Gen	Corp	62	49	12	281	2,168
Charles Town, 2,926—Jefferson							
Charles Town General Hosp.	Gen	NPAssn	21	12	8	284	757
Clarksburg, 30,579—Harrison							
St. Mary's Hospital+▲○	Gen	Church	205	174	39	1,205	6,521
Union Protestant Hospital▲○	Gen	NPAssn	60	52	18	781	2,361
Denmar, 100—Pocahontas							
Denmar Sanatorium	TB	State	125	108	..	...	100
East Rainelle, 1,515—Greenbrier							
East Rainelle General Hosp.	Gen	Corp	35	16	10	152	785
Elkins, 8,133—Randolph							
Davis Memorial Hospital▲○	Gen	NPAssn	87	53	19	451	2,677
Elkins City Hospital▲	Gen	Corp	66	No data supplied			
Fairmont, 23,105—Marion							
Fairmont Emergency Hosp.▲	Gen	State	68	51	10	173	1,727
Fairmont General Hosp.+▲○	Gen	City	139	121	18	1,180	5,603
Gassaway, 1,429—Braxton							
Gassaway Hospital	Gen	Corp	18	14	7	143	597
Glen Dale, 1,318—Marshall							
Reynolds Memorial Hosp.▲○	Gen	Church	98	74	19	636	2,905
Grafton, 7,431—Taylor							
Grafton City Hospital	Gen	City	66	59	12	288	1,750
Hinton, 5,815—Summers							
Hinton Hospital▲	Gen	Corp	75	49	12	173	2,148
Holden, 3,000—Logan							
Holden Hospital	Gen	Part	35	18	2	17	1,142
Hopemont, 475—Preston							
Conley Hospital	Unit of Hopemont Sanitarium						
Hopemont Sanitarium+▲	TB	State	475	377	..	...	361
Huntington, 78,836—Cabell							
Chesapeake and Ohio Hospital★+▲	Gen	NPAssn	165	136	20	108	3,746
Huntington Memorial Hospital▲○	Gen	NPAssn	130	74	22	732	3,594
Huntington Orthopedic Hospital▲	Orth	NPAssn	120	55	..	...	522
Huntington State Hospital	Ment	State	1,168	987	..	...	658
St. Mary's Hospital★+▲○	Gen	Church	300	266	50	2,161	14,212
Veterans Admin. Hospital▲	Gen	Vet	266	267	..	...	3,219
Keyser, 6,177—Mineral							
Potomac Valley Hospital	Gen	Corp	61	45	28	533	2,072
Kingwood, 1,676—Preston							
Kercheval Memorial Clinic-Hospital	Gen	Corp	10	8	6	113	381
Lakin, 50—Mason							
Lakin State Hospital	Ment	State	410	406	..	...	146
Logan, 5,166—Logan							
Logan General Hospital▲○	Gen	Corp	100	58	20	546	4,028
Mercy Hospital	Gen	Corp	65	*56*	5	*125*	*2,366*
Madison, 1,205—Boone							
Madison General Hospital	Gen	Corp	35	14	6	168	1,190
Marlinton, 1,644—Pocahontas							
Pocahontas Memorial Hosp.	Gen	County	30	17	6	143	1,161
Martinsburg, 15,063—Berkeley							
City Hospital○	Gen	NPAssn	85	64	15	376	1,558
Kings Daughters Hospital▲○	Gen	NPAssn	96	75	18	611	2,547
Veterans Admin. Center	Gen	Vet	700	423	..	...	1,930
Milton, 1,641—Cabell							
Morris Memorial Hospital+▲	Orth	NPAssn	125	60	..	...	398
Montgomery, 3,231—Fayette							
Laird Memorial Hospital+▲○	Gen	Corp	127	100	15	407	5,216
Morgantown, 16,655—Monongalia							
Heiskell Memorial Hospital▲○	Gen	Indiv	90	78	25	605	4,160
Monongalia General Hosp.▲○	Gen	NPAssn	125	85	23	880	3,691
New Martinsville, 3,491—Wetzel							
Wetzel County Hospital	Gen	NPAssn	30	23	7	479	1,566
Oak Hill, 3,213—Fayette							
Oak Hill Hospital▲	Gen	Part	75	46	8	202	2,520
Parkersburg, 30,103—Wood							
Camden-Clark Memorial Hospital★▲○	Gen	City	154	...	33	...	...
St. Joseph's Hospital★+▲○	Gen	Church	170	157	35	1,181	6 947
Parsons, 2,077—Tucker							
Tucker County Hospital	Gen	Corp	38	25	10	118	*864*
Philippi, 1,955—Barbour							
Myers Clinic Hospital+▲○	Gen	Part	70	60	12	297	2,702
Princeton, 7,426—Mercer							
Mercer Memorial Hospital▲	Gen	Corp	57	35	12	562	2,035
Ravenswood, 1,061—Jackson							
Ravenswood Hospital	Gen	Indiv	15	7	6	53	190
Richwood, 5,051—Nicholas							
McClung Hospital	Gen	Indiv	35	7	12	160	740
Sacred Heart Hospital	Gen	Church	34	29	10	226	1,728
Ronceverte, 2,265—Greenbrier							
Greenbrier Valley Hospital▲	Gen	Corp	50	33	8	156	1,476

WEST VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
South Charleston, 10,377—Kanawha							
Dunn Hospital	Gen	Indiv	30	11	12	109	831
Herbert J. Thomas Memorial Hospital	Gen	NPAssn	77	54	16	353	1,881
Kanawha Valley Medical Center	Ven	State	207	130	7	...	4,359
Spencer, 2,497—Roane							
Du Pue Hospital	Gen	Indiv	21	11	5	162	505
Spencer State Hospital	Ment	State	973	953	..	...	551
Triadelphia, 359—Ohio							
Ohio County Tuberculosis Sanatorium	TB	County	37	35	..	...	18
Welch, 6,264—McDowell							
Grace Hospital▲	Gen	Corp	143	119	12	190	5,360
Stevens Clinic Hospital▲	Gen	Corp	110	91	15	335	5,670
Welch Emergency Hospital	Gen	State	85	51	10	81	1,056
Weston, 8,268—Lewis							
General Hospital	Gen	Indiv	41	20	10	193	1,316
Weston City Hospital	Gen	Corp	35	9	7	190	911
Weston State Hospital▲	Ment	State	1,017	1,812	..	...	678
Wheeling, 61,099—Ohio							
Ohio Valley General Hosp.★▲○	Gen	NPAssn	320	310	40	1,401	8,887
Wheeling Hospital★▲○	Gen	Church	250	235	40	1,531	7,498
Williamson, 8,366—Mingo							
Williamson Memorial Hosp.▲○	Gen	Indiv	108	78	9	492	4,217

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Berkeley Springs, 1,145—Morgan							
Morgan County War Memorial Hospital	Gen	County	39	...	3	Estab. 1947	
Charleston, 67,914—Kanawha							
Hillcrest Sanatorium	TBChil	NPAssn	52	39	..	...	59
Huntington, 78,836—Cabell							
Owen Clinic Hospital	*N&M*	*Corp*	15	6	..	...	20
Rowley Clinic Hospital	Gen	Indiv	26	16	12	178	1,061
Moundsville, 14,168—Marshall							
West Virginia Penitentiary Hospital	Inst	State	60	20	..	...	650
St. Marys, 2,201—Pleasants							
West Virginia Training School	MeDe	State	120	113	..	...	22

WISCONSIN

Hospitals and Sanatoriums

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Adams, 1,310—Adams							
Adams-Friendship Hospital	Gen	NPAssn	8	6	2	93	246
Algoma, 2,652—Kewaunee							
Algoma Hospital	Gen	NPAssn	14	8	4	150	600
Amery, 1,461—Polk							
Amery Hospital	Gen	NPAssn	19	14	5	205	617
Antigo, 9,495—Langlade							
Langlade County Memorial Hospital	Gen	Church	50	54	12	699	2,340
Appleton, 28,436—Outagamie							
St. Elizabeth Hospital★▲	Gen	Church	200	155	50	2,079	6,871
Arcadia, 1,830—Trempealeau							
St. Joseph's Hospital	Gen	Church	25	20	6	180	973
Ashland, 11,101—Ashland							
St. Joseph's Hospital	Gen	Church	132	80	18	461	3,773
Trinity Hospital	Gen	Church	60	43	8	256	1,706
Baldwin, 918—St. Croix							
Baldwin Community Hospital	Gen	NPAssn	16	10	6	221	721
Baraboo, 6,415—Sauk							
St. Mary's Ringling Hospital	Gen	Church	85	62	20	586	2,501
Barron, 2,059—Barron							
Barron City Hospital	Gen	Part	12	8	4	120	300
Bayfield, 1,212—Bayfield							
Pureair Sanatorium	TB	Counties	65	59	..	...	97
Beaver Dam, 10,356—Dodge							
Lutheran Deaconess Hospital	Gen	Church	55	44	12	368	1,826
St. Joseph's Hospital⊙	Gen	Church	70	63	19	505	2,048
Beloit, 25,365—Rock							
Beloit Municipal Hospital▲	Gen	City	120	102	32	1,233	4,910
Berlin, 4,247—Green Lake							
Berlin Memorial Hospital	Gen	NPAssn	36	28	13	339	2,378
Black River Falls, 2,539—Jackson							
Krohn Clinic and Hospital	Gen	Part	29	25	10	275	838
Boscobel, 2,008—Grant							
Brookside-Parker Hospital	Gen	Part	22	15	8	161	507
Burlington, 4,414—Racine							
Burlington Memorial Hosp.▲	Gen	NPAssn	35	25	10	394	1,366
Chippewa Falls, 10,368—Chippewa							
Northern Wisconsin Colony and Training School	MeDe	State	1,429	1,520	11	3	201
St. Joseph's Hospital	Gen	Church	150	124	25	892	4,744
Columbus, 2,760—Columbia							
St. Mary's Hospital	Gen	Church	50	34	11	285	1,374
Cumberland, 1,539—Barron							
Cumberland Hospital	Gen	NPAssn	21	10	5	149	488
Dodgeville, 2,269—Iowa							
Dodgeville General Hospital	Gen	NPAssn	23	19	5	122	756
St. Joseph's Hospital	Gen	Church	61	53	16	394	1,583
Eau Claire, 30,745—Eau Claire							
Luther Hospital★▲○	Gen	NPAssn	188	153	30	1,112	6,396
Mt. Washington Sanatorium	TB	County	91	88	..	...	86
Sacred Heart Hospital	Gen	Church	185	172	15	720	7,128
Edgerton, 3,266—Rock							
Edgerton Memorial Hospital	Gen	NPAssn	31	25	10	239	1,127

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census†	Bassinets	Number of Births	Admissions†
Elkhorn, 2,382—Walworth							
Lakeland Hospital▲	Gen	County	85	61	19	681	2,470
Fond du Lac, 27,209—Fond du Lac							
St. Agnes Hospital★▲○	Gen	Church	280	275	56	1,375	8,290
Fort Atkinson, 6,153—Jefferson							
Fort Atkinson Memorial Hospital	Gen	NPAssn	19	16	8	325	871
Frederic, 725—Polk							
Frederic Municipal Hospital	Gen	City	30	16	8	221	825
Grantsburg, 874—Burnett							
Community Hospital	Gen	NPAssn	32	25	5	92	515
Green Bay, 46,235—Brown							
Bellin Memorial Hospital▲○	Gen	Church	97	104	22	930	3,869
St. Mary's Hospital▲○	Gen	Church	103	78	25	947	4,165
St. Vincent's Hospital	Gen	Church	222	213	28	1,275	10,102
Hartford, 3,910—Washington							
St. Joseph's Hospital	Gen	Church	58	30	15	299	1,093
Hawthorne, 75—Douglas							
Middle River Sanatorium▲	TB	County	142	86	..	...	121
Hayward, 1,571—Sawyer							
Hayward Indian Hospital	Gen	IA	45	25	9	106	800
Hazel Green, 582—Grant							
Hazel Green Hospital	Gen	Indiv	25	17	8	149	1,041
Hillsboro, 1,146—Vernon							
Hansberry Hospital	Gen	Indiv	30	7	5	147	901
Iola, 746—Waupaca							
Iola Hospital	Gen	NPAssn	20	9	6	94	565
Janesville, 22,992—Rock							
Mercy Hospital★▲○	Gen	Church	120	113	30	874	3,983
Pinehurst Sanatorium▲	TB	County	75	62	..	...	77
Jefferson, 3,059—Jefferson							
Forest Lawn Sanatorium	TB	County	58	36	..	...	95
Kaukauna, 7,382—Outagamie							
Riverview Sanatorium▲	TB	County	65	52	..	...	99
Kenosha, 47,765—Kenosha							
Kenosha Hospital▲	Gen	NPAssn	150	99	30	706	4,565
St. Catherine's Hospital▲	Gen	Church	78	75	24	996	3,501
Willowbrook Sanatorium▲	TB	County	40	31	..	...	33
Keshena, 500, Shawano							
St. Joseph's Indian Hospital	Gen	Fed	63	31	9	126	938
Kewaunee, 2,533—Kewaunee							
Witepalek-Nesemann Hospital	Gen	Part	10	4	5	150	290
La Crosse, 42,707—La Crosse							
Grandview Hospital	Gen	NPAssn	90	51	10	226	1,055
La Crosse Hospital	Gen	NPAssn	36	27	8	98	775
La Crosse Lutheran Hosp.★+▲	Gen	Church	140	126	12	371	5,013
St. Ann's Hospital	Unit of St. Francis Hospital						
St. Francis Hospital★▲○	Gen	Church	292	260	48	1,747	7,918
Ladysmith, 3,671—Rusk							
St. Mary's Hospital	Gen	Church	44	37	12	358	2,518
Lancaster, 2,963—Grant							
Doolittle-Glynn Hospital	Gen	Part	18	6	4	142	373
Lancaster General Hospital	Gen	Part	15	8	8	134	298
Laona, 1,800—Forest							
Ovitz Hospital	*Gen*	*Part*	20	7	6	144	317
Madison, 67,447—Dane							
Lake View Sanatorium▲	TB	County	142	132	..	...	128
Madison General Hosp.★+▲○	Gen	NPAssn	177	179	26	1,218	6,714
Methodist Hospital★▲○	Gen	Church	110	100	21	265	4,721
Morningside Sanatorium	TB	NPAssn	50	43	..	...	43
St. Mary's Hospital★+▲○	Gen	Church	200	190	50	1,867	7,739
State of Wisconsin General Hospital★+▲○	Gen	State	750	594	22	429	12,498
Wisconsin Orthopedic Hospital for Children	Unit of State of Wisconsin General Hosp.						
Wisconsin Psychiatric Institute	Unit of State of Wisconsin General Hosp.						
Manitowoc, 24,404—Manitowoc							
Holy Family Hospital▲○	Gen	Church	165	161	32	1,209	6,961
Marinette, 14,183—Marinette							
Marinette General Hospital	Gen	County	80	73	25	656	3,441
Marshfield, 10,359—Wood							
St. Joseph's Hospital★+▲○	Gen	Church	198	170	18	1,103	7,053
Mauston, 2,621—Juneau							
Mauston Hospital	Gen	Corp	45	30	10	249	1,220
Medford, 2,361—Taylor							
Medford Clinic Hospital	Gen	Corp	38	25	12	299	1,373
Mendota, 400—Dane							
Mendota State Hospital	Ment	State	860	742	..	...	1,112
Veterans Admin. Hospital+▲	*Ment*	*Vet*	257	201	..	...	462
Menomonie, 6,582—Dunn							
Menomonie City Hospital	Gen	City	28	35	12	292	824
Merrill, 8,711—Lincoln							
Holy Cross Hospital▲	Gen	Church	64	54	11	452	2,357
Lincoln County Hospital	InstGen	County	25	18	4	...	136
Milwaukee, 587,472—Milwaukee							
Columbia Hospital★+▲○	Gen	NPAssn	150	133	35	1,128	4,821
Evangelical Deaconess Hospital★+▲○	Gen	Church	135	117	32	1,660	6,677
Johnston Emergency Hosp.▲	Emer	City	25	25	4	8	1,710
Milwaukee Children's Hospital+▲⊙	Chil	NPAssn	150	119	..	...	4,915
Milwaukee County Asylum for Chronic Insane	Ment	County	1,993	2,130	..	...	385
Milwaukee County Hosp.★+▲○	Gen	County	950	685	33	413	16,335
Milwaukee County Hospital for Mental Diseases+▲	Ment	County	1,015	1,005	..	...	603
Milwaukee Hospital★+▲○	Gen	Church	290	232	69	2,737	10,712
Milwaukee Sanitarium	See Wauwatosa						
Misericordia Hospital★▲○	Gen	Church	110	95	30	1,563	4,763
Mount Sinai Hospital★+▲○	Gen	NPAssn	175	160	40	1,956	7,797
Muirdale Sanatorium+▲⊙	TB	County	595	463	..	...	482

Key to symbols and abbreviations is on page 1396

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Sacred Heart Sanitarium▲○	Gen	Church	250	211	..	...	2,407
St. Anthony Hospital	Gen	Church	111	70	40	1,233	3,692
St. Joseph's Hospital★†▲○	Gen	Church	350	291	85	3,433	12,579
St. Luke's Hospital★†▲	Gen	Church	135	97	28	1,411	5,269
St. Mary's Hill Sanitarium▲	N&M	Church	100	79	..	...	367
St. Mary's Hospital★†▲○	Gen	Church	210	185	42	1,913	7,379
St. Michael Hospital★⊙	Gen	Church	135	110	25	719	4,411
Shorewood Hospital-Sanitarium▲	N&M	Corp	65	48	..	...	365
South View Hospital▲	Iso	City	295	30	..	...	953
Stark Hospital	Unit of Milwaukee Children's Hospital						
Veterans Admin. Hospital†▲◐	Gen	Vet	1,461	1,325	..	2	6,850
West Side Hospital	Gen	NPAssn	35	21	11	236	1,666
Mondovi, 2,077—Buffalo							
Gillette Hospital	Gen	Part	22	9	4	109	491
Mondovi Clinic Hospital	Gen	Indiv	17	11	6	77	316
Monroe, 6,182—Green							
St. Clare Hospital	Gen	Church	75	75	20	600	3,963
Neenah, 10,645—Winnebago							
Theda Clark Memorial Hosp.▲	Gen	NPAssn	65	61	18	780	2,671
Neillsville, 2,562—Clark							
Neillsville Hospital	Gen	Part	22	11	9	190	815
New London, 4,825—Waupaca							
Borchardt Clinic Memorial Hospital	Gen	NPAssn	15	10	6	92	518
Community Hospital	Gen	Church	50	47	14	476	1,729
Oconomowoc, 4,562—Waukesha							
Rogers Memorial Sanitarium	N&M	NPAssn	51	47	..	...	123
Summit Hospital	Gen	Corp	46	42	6	145	641
Oconto Falls, 1,888—Oconto							
Oconto Falls Hospital	Gen	City	20	10	8	212	689
Onalaska, 1,742—La Crosse							
Oak Forest Sanatorium	TB	County	60	50	..	...	53
Osceola, 612—Polk							
Ladd Memorial Hospital	Gen	Indiv	14	7	2	61	437
Oshkosh, 39,089—Winnebago							
Mercy Hospital★▲○	Gen	Church	189	163	50	1,305	5,780
Park Falls, 3,252—Price							
Park Falls Hospital	Gen	Indiv	25	14	4	220	752
Platteville, 4,762—Grant							
Wilson Cunningham Hospital	Gen	Part	25	10	8	150	366
Plum City, 368—Pierce							
Plum City Hospital	Gen	NPAssn	16	12	5	123	611
Plymouth, 4,170—Sheboygan							
Plymouth Hospital	Gen	Church	42	22	14	237	778
Rocky Knoll Sanatorium▲	TB	County	80	48	..	...	49
Portage, 7,016—Columbia							
St. Savior's General Hospital	Gen	Church	90	73	14	511	2,807
Port Washington, 4,046—Ozaukee							
St. Alphonsus Hospital	Gen	Church	70	62	15	469	2 037
Prairie du Chien, 4,622—Crawford							
Beaumont Hospital	Gen	NPAssn	21	13	8	170	483
Prairie due Chien Sanitarium-Hospital	Gen	NPAssn	55	37	8	231	2,136
Prescott, 857—Pierce							
St. Croixdale Sanitarium	Gen N&M	Corp	66	60	2	55	290
Racine, 67,195—Racine							
St. Luke's Hospital▲○	Gen	Church	110	96	40	1,236	4,429
St. Mary's Hospital★▲	Gen	Church	220	130	51	1,236	5,572
Sunny Rest Sanatorium	TB	County	82	69	..	...	76
[illegible]							
[illegible] Hospital	Gen	City	30	25	10	349	1,212
[illegible]							
St. Mary's Hospital	Gen	Church	73	67	10	616	3,222
Rice Lake, 5,719—Barron							
Lakeside Methodist Hospital	Gen	Church	50	36	14	354	1,665
St. Joseph's Hospital	Gen	Church	40	39	11	359	2,304
Richland Center, 4,364—Richland							
Richland Hospital	Gen	NPAssn	73	60	15	704	2,853
Ripon, 4,5(6—Fond du Lac							
Ripon Municipal Hospital	Gen	City	23	18	10	219	1,068
River Falls, 2,806—Pierce							
City Hospital	Gen	City	25	20	8	232	671
St. Croix Falls, 1,007—Polk							
[illegible]al	Gen	NPAssn	21	13	4	101	531
[illegible]							
[illegible]ospital	Gen	NPAssn	65	62	20	527	2,266
[illegible]ygan							
[illegible]	Gen	Church	208	205	40	1,302	6,699
[illegible]pital	Gen	NPAssn	100	78	20	490	2,924
[illegible]							
[illegible]	Gen	Indiv	12	7	4	9	129
[illegible]waukee							
South Milwaukee Hospital	Gen	Indiv	16	12	6	361	755
Sparta, 5,820—Monroe							
St. Mary's Hospital	Gen	Church	65	45	20	667	2,531
Stanley, 2,021—Chippewa							
Victory Memorial Hospital	Gen	NPAssn	21	18	7	351	1,404
Statesan, 110—Waukesha							
Wisconsin State Sanatorium†▲⊙	TB	State	241	146	..	...	98
Stevens Point, 15,777—Portage							
River Pines Sanatorium▲	TB	Church	62	60	..	...	51
St. Michael's Hospital▲	Gen	Church	135	121	35	826	4,861
Stoughton, 4,743—Dane							
Stoughton Hospital	Gen	NPAssn	36	26	12	318	1,129
Sturgeon Bay, 5,439—Door							
Door County Memorial Hosp.	Gen	NPAssn	60	37	21	400	2,227
Superior, 35,136—Douglas							
St. Francis Hospital	Gen	Church	50	48	15	329	1,597
St. Joseph's Hospital	Gen	Church	38	31	14	511	1,321
St. Mary's Hospital†	Gen	Church	133	107	28	402	3,388
Tomah, 3,817—Monroe							
Veterans Admin. Hospital	Ment	Vet	1,172	...	..	Estab. 1947	

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Tomahawk, 3,365—Lincoln							
Sacred Heart Hospital	Gen	Church	42	31	6	153	1,067
Two Rivers, 10,302—Manitowoc							
Two Rivers Municipal Hosp.	Gen	City	47	35	12	451	1,988
Union Grove, 973—Racine							
Southern Wisconsin Colony and Training School	MeDe	State	913	875	..	...	151
Veterans Administration,—Milwaukee							
Veterans Admin. Hospital	See Milwaukee						
Viroqua, 3,519—Vernon							
Viroqua Hospital	Gen	Corp	28	26	7	372	1,378
Washburn, 2,363—Bayfield							
Washburn Hospital	Gen	NPAssn	15	9	5	36	349
Watertown, 11,301—Jefferson							
St. Mary's Hospital	Gen	Church	80	67	20	738	2,991
Waukesha, 19,242—Waukesha							
Milwaukee Children's Hospital Convalescent Home	Unit of Milwaukee Children's Hospital						
Veterans Admin. Hospital▲	TB	Vet	232	214	..	...	258
Waukesha Memorial Hosp.▲	Gen	City	95	70	31	1,181	3,588
Waupaca, 3,458—Waupaca							
City Hospital	Gen	Indiv	12	9	5	74	320
Waupaca Hospital and Clinic	Gen	Part	18	12	6	100	419
Waupun, 6,798—Fond du Lac							
Central State Hospital	Ment	State	350	340	..	...	78
Wausau, 27,268—Marathon							
Mount View Sanatorium	TB	County	74	60	..	...	66
St. Mary's Hospital▲○	Gen	Church	205	186	45	1,140	7,759
Wausau Memorial Hospital▲	Gen	NPAssn	95	81	25	656	3,431
Wauwatosa, 27,769—Milwaukee							
Milwaukee Sanitarium†▲	N&M	Corp	147	132	..	...	412
West Bend, 5,452—Washington							
St. Joseph's Hospital	Gen	Church	100	55	24	410	2,109
West de Pere,—Brown							
Hickory Grove Sanatorium	TB	County	86	75	..	...	62
Whitehall, 1,035—Trempealeau							
Whitehall Community Hosp.	Gen	NPAssn	34	32	9	229	1,470
Whitelaw, 225—Manitowoc							
Maple Crest Sanatorium	TB	County	52	33	..	...	34
Wild Rose, 559—Waushara							
Wild Rose Hospital	Gen	Indiv	24	17	6	107	847
Winnebago, 150—Winnebago							
Sunny View Sanatorium	TB	Counties	77	75	..	...	95
Winnebago State Hospital▲	Ment	State	949	898	..	...	1,138
Wisconsin Rapids, 11,416—Wood							
Riverview Hospital	Gen	NPAssn	85	56	24	786	2,939
Wood,—Milwaukee							
Veterans Admin. Hospital	See Milwaukee						

Related Institutions

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Appleton, 28,436—Outagamie							
Outagamie County Hospital	Ment	County	268	268	..	...	40
Chippewa Falls, 10,368—Chippewa							
Chippewa County Hospital	Ment	County	375	370	..	...	79
Dodgeville, 2,269—Iowa							
Iowa County Hospital	Ment	County	190	169	..	...	18
Eau Claire, 30,745—Eau Claire							
Eau Claire County Hospital	Ment	County	250	246	..	...	49
Elkhorn, 2,382—Walworth							
Walworth County Hospital	Ment	County	236	233	..	...	35
Fond du Lac, 27,209—Fond du Lac							
Fond du Lac County Hosp.	Ment	County	332	313	..	...	40
Green Bay, 46,235—Brown							
Brown County Hospital	Ment	County	316	309	..	...	57
Wisconsin State Reformatory Hospital	Inst	State	10	3	..	...	140
Itasca,—Douglas							
Douglas County Hospital and Tuberculosis Sanatorium	MentTb	County	362	331	..	...	79
Parkland Sanatorium	Unit of Douglas County Hospital and Tuberculosis Sanatorium						
Janesville, 22,992—Rock							
Rock County Hosp. and Home	Ment	County	370	317	..	...	98
Jefferson, 3,059—Jefferson							
Jefferson County Hospital	Ment	County	276	273	..	...	23
Juneau, 1,301—Dodge							
Dodge County Institutions	Ment	County	207	209	..	...	216
Kewaunee, 2,533—Kewaunee							
Cmejla Hospital	Gen	Part	8	2	2	34	125
Lake Tomahawk, 105—Oneida							
Lake Tomahawk State Camp	TB	State	48	27	..	...	35
Lancaster, 2,963—Grant							
Grant County Hospital	Ment	County	246	235	..	...	27
Madison, 67,447—Dane							
East Washington Avenue Hospital	Iso	City	50	5	..	...	103
Manitowoc, 24,404—Manitowoc							
Manitowoc County Hospital	Ment	County	222	222	..	...	31
Marshfield, 10,359—Wood							
Wood County Hospital	Ment	County	252	251	..	...	25
Menomonie, 6,582—Dunn							
Dunn County Hospital	Ment	County	186	186	..	...	28
Milwaukee, 587,472—Milwaukee							
Layton Home	Unit of Milwaukee Hospital						
Milwaukee County Home for Dependent Children	Inst	County	75	74	..	...	2,445
St. Camillus Hospital	Chr	Church	83	83	..	...	40
Salvation Army Martha Washington Women's Home and Hospital	Mat	Church	76	51	15	239	251
Shore View Home	Conv	Corp	59	52	..	...	129
Monroe, 6,182—Green							
Green County Hospital	Ment	County	274	245	..	...	74

WISCONSIN—Continued

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
New Richmond, 2,388—St. Croix							
St. Croix County Hospital...	Ment	County	182	179	..	...	23
Oconto, 5,362—Oconto							
Oconto County and City Hospital	Gen	NPAssn	42	16	15	165	595
Oshkosh, 39,089—Winnebago							
Alexian Brothers Hospital...	N&M	Church	84	81	..	...	62
Owen, 1,683—Clark							
Clark County Hospital......	Ment	County	385	380	..	...	23
Peshtigo, 1,947—Marinette							
Marinette County Hospital...	Ment	County	310	284	..	...	24
Racine, 67,195—Racine							
Lincoln Memorial Hospital...	Iso	City	50	15	..	...	309
Racine County Asylum.......	Ment	County	292	285	..	...	62
Racine County Hospital.....	InstGen	County	51	45	..	...	11
Reedsburg, 3,608—Sauk							
Sauk County Hospital and Home	Ment	County	230	220	..	...	45
Richland Center, 4,364—Richland							
Richland County Hospital....	Ment	County	151	147	..	...	3
Shawano, 5,565—Shawano							
Shawano County Hospital...	Ment	County	190	191	..	...	20
Sheboygan, 10,638—Sheboygan							
Sheboygan County Hospital for Chronic Insane..........	Ment	County	300	288	..	...	67
Shell Lake, 872—Washburn							
Shell Lake Hospital..........	Gen	NPAssn	12	...	6	Estab. 1947	
Sparta, 5,820—Monroe							
Monroe County Hospital.....	Ment	County	190	187	..	...	20
Sturgeon Bay, 5,439—Door							
Olsen Hospital	Gen	Indiv	11	10	3	20	189
Superior, 35,136—Douglas							
Douglas County Hospital and Tuberculosis Sanatorium ..	See Itasca						
Verona, 535—Dane							
Dane County Hospital and Home	Ment	County	293	285	..	...	21
Viroqua, 3,549—Vernon							
Vernon County Hospital.....	Ment	County	165	163	..	...	39
Watertown, 11,301—Jefferson							
Bethesda Lutheran Home....	MeDe	Church	370	350	..	...	7
Waukesha, 19,242—Waukesha							
Waukesha County Mental Hospital	Ment	County	230	206	..	...	89
Waupun, 6,798—Fond du Lac							
Wisconsin State Prison Hosp.	Inst	State	21	18	..	...	276
Wausau, 27,268—Marathon							
Marathon County Hospital..	Ment	County	225	223	..	...	53
Marathon County Home and Hospital	Inst	County	65	63	..	...	98
Wauwatosa, 27,769—Milwaukee							
Milwaukee County Home for Dependent Children	See Mil						
St. Camillus Hospital.........	See Mil						
Salvation Army Martha Washington Women's Home and Hospital	See Milwaukee						
West Bend, 5,452—Washington							
Washington County Hospital	Ment	County	172	154	..	...	154
West Salem, 1,254—La Crosse							
La Crosse County Hospital..	Ment	County	303	280	..	...	38
Weyauwega, 1,173—Waupaca							
Waupaca County Hospital...	Ment	County	193	193	..	...	15
Whitehall, 1,035—Trempealeau							
Trempealeau County Hospital	Ment	County	162	159	..	...	157
Winnebago, 150—Winnebago							
Winneago County Hospital..	Ment	County	266	266	..	...	33
Wyocena, 706—Columbia							
Columbia County Hospital...	Ment	County	320	308	..	...	28

WYOMING

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Afton, 1,211—Lincoln							
Latter Day Saints Star Valley Hospital	Gen	Church	14	6	6	200	614
Basin, 1,099—Big Horn							
Basin Hospital	Gen	Part	13	3	5	86	675
Wyoming State Sanatorium▲	TB	State	34	23	..	...	24
Casper, 17,964—Natrona							
Memorial Hospital of Natrona County▲	Gen	County	141	108	24	789	4,611
Cheyenne, 22,474—Laramie							
Memorial Hospital of Laramie County▲	Gen	County	122	115	25	1,082	4,817
Veterans Admin. Center▲.....	Gen	Vet	201	141	..	...	2,381
Cody, 2,536—Park							
Cody Hospital	Gen	NPAssn	35	23	12	209	1,229
Douglas, 2,205—Converse							
Converse County Memorial Hospital	Gen	County	20	18	8	120	817
Evanston, 3,605—Uinta							
Wyoming State Hospital▲...	Ment	State	650	596	..	...	151
Fort Warren, 22—Laramie							
Station Hospital	Gen	Army	380	59	11	93	2,213
Fort Washakie, 150—Fremont							
Wind River Indian Hospital..	Gen	IA	44	13	6	78	414
Gillette, 2,177—Campbell							
McHenry Hospital	Gen	Indiv	13	7	5	84	659
Greybull, 1,828—Big Horn							
St. Luke's Hospital..........	Gen	Part	12	5	5	82	702

WYOMING—Continued

Hospitals and Sanatoriums	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Jackson, 1,046—Teton							
St. John's Hospital..........	Gen	Church	31	10	7	262	797
Kemmerer, 2,026—Lincoln							
Lincoln County Miners Hosp.	Gen	NPAssn	25	7	6	112	491
Lander, 2,594—Fremont							
Bishop Randall Hospital.....	Gen	Church	20	17	6	160	716
Laramie, 10,627—Albany							
Ivinson Memorial Hospital...	Gen	County	70	49	17	455	3,703
Lovell, 2,175—Big Horn							
Lovell Hospital	Gen	Part	20	9	8	170	705
Lusk, 1,814—Niobrara							
Lusk Hospital	Gen	Indiv	16	6	9	57	394
Spencer Hospital	Gen	Indiv	23	13	8	90	1,115
Rock Springs, 9,827—Sweetwater							
Memorial Hospital of Sweetwater County◇	Gen	County	120	...	20	Estab. 1948	
Sheridan, 10,529—Sheridan							
Sheridan County Memorial Hospital	Gen	County	78	49	16	393	2,080
Veterans Admin. Hospital▲⊙..	Ment	Vet	900	691	..	...	976
Wheatland, 2,110—Platte							
Wheatland General Hospital▲	Gen	NPAssn	41	28	7	105	2,744
Worland, 2,710—Washakie							
Worland Hospital	Gen	Corp	19	12	8	140	440

Related Institutions

Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Hanna, 1,127—Carbon							
Hanna Hospital	Gen	NPAssn	13	5	3	40	305
Lander, 2,594—Fremont							
Wyoming State Training School	MeDe	State	413	396	..	...	22
Sheridan, 10,529—Sheridan							
Reynolds Home	Gen	Indiv	11	9	10	149	309
Yellowstone Park, 200—Yellowstone National Park							
Mammoth Hospital	Gen	Part	50	9	3	12	332

ALASKA

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Anchorage, 3,495							
Providence Hospital	Gen	Church	73	59	20	431	3,411
Barrow, 363							
Point Barrow Hospital.......	GenTb	Fed	16	8	4	35	238
Bethel, 376							
Alaska Native Service Hosp...	Gen	IA	47	42	6	64	626
Cordova, 938							
Cordova Community Hosp...	Gen	NPAssn	23	10	4	30	407
Fairbanks, 3,455							
St. Joseph's Hospital.........	Gen	Church	54	46	10	203	1,426
Fort Yukon, 274							
Hudson Stuck Memorial Hospital▲	Gen	Church	40	27	4	26	241
Juneau, 5,729							
Alaska Native Service Hosp.	GenTb	IA	59	39	5	47	493
St. Ann's Hospital...........	Gen	Church	55	33	8	203	1,237
Kanakanak, 133							
Alaska Native Service Hosp.	Gen	IA	32	20	6	15	270
Ketchikan, 4,695							
Ketchikan General Hospital..	Gen	Church	75	59	17	228	1,967
Kodiak, 864							
Griffin Memorial Hospital....	Gen	Church	19	9	6	106	576
U. S. Naval Air Station Dispensary	Gen	Navy	106	11	..	...	1,095
Kotzebue, 372							
Alaska Native Service Hosp..	Gen	IA	17	14	..	...	279
Nome, 1,559							
Maynard-Columbus Hospital..	Gen	Church	21	7	4	59	455
Palmer, 150							
Matanuska Valley Hospital..	Gen	NPAssn	12	...	4	...	...
Petersburg, 1,323							
Petersburg General Hospital..	Gen	City	9	5	4	35	224
St. Paul Island (Unalaska P. O.), 299							
St. Paul Island Hospital.....	Gen	Fed	10	2	3	17	79
Seldovia, 410—Alaska							
Seldovia General Hospital....	Gen	Church	8	2	3	20	147
Seward, 949							
Seward General Hospital.....	Gen	Church	30	16	4	164	607
Sitka, 1,987							
Pioneers' Home Hospital.....	Inst	Ter	50	...	..	...	...
Skagway, 634							
Pacific and Arctic Railway and Navigation Company Hosp.	Gen	NPAssn	10	...	2	26	...
Tanana, 170							
Tanana Hospital	Gen	IA	31	21	4	4	56
Valdez, 529							
Valdez Community Hospital..	Gen	NPAssn	40	25	6	30	300
Wrangell, 1,162							
Bishop Rowe General Hosp..	Gen	Church	16	2	3	42	500

CANAL ZONE

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Ancon, 1,946							
Gorgas Hospital★+▲	Gen	Fed	939	713	49	1,203	14,263
Balboa, 3,922							
Palo Seco Leper Colony......	Lepro	Fed	140	113	..	...	3
Coco Solo, 56							
U. S. Naval Hospital.........	Gen	Navy	150	60	10	154	1,443

CANAL ZONE—Continued

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Corozal, 1,370							
Corozal Hospital	Ment	Fed	487	321	..	...	163
Cristobal, 826							
Colon Margarita Hospital....	Gen	Fed	450	188	25	533	7,152
Fort Clayton, 3,898							
Station Hospital	Gen	Army	350	225	15	359	5,256

GUAM

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Agana							
U. S. Naval Hospital★........	Gen	Navy	500	359	18	93	7,271

HAWAII

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Aiea, 3,553—Honolulu							
U. S. Naval Hospital★........	Gen	Navy	750	579	18	195	9,197
Ewa, 3,570—Honolulu							
Ewa Plantation Hospital.....	Gen	NPAssn	41	21	6	185	1,501
Haina,—Hawaii							
Honokaa Plantation Hospital	Gen	NPAssn	30	13	4	43	151
Hakalau, 525—Hawaii							
Hakalau Plantation Hospital	Gen	NPAssn	20	11	3	45	333
Hana, 293—Maui							
Hana County Hospital.......	Gen	County	25	8	4	35	293
Hilo, 23,351—Hawaii							
Hilo Memorial Hospital▲.....	Gen	County	183	117	22	522	3,690
Dr. Z. Matayoshi Hospital...	Gen	Indiv	42	9	5	42	422
Puumaile Hospital	TB	County	225	161	..	...	122
Honokaa, 1,069—Hawaii							
Okada Hospital	Gen	Indiv	6	3	3	52	167
Honolulu, 179,358—Honolulu							
Kalihi Hospital	Lepro	Ter	41	11	..	2	19
Kapiolani Maternity and Gynecological Hospital+	MatGyn	NPAssn	165	79	87	3,489	4,812
Kauikeolani Children's Hospital+▲⊙	Chil	NPAssn	122	77	..	...	4,424
Kuakini Hospital★	Gen	NPAssn	120	102	20	811	5,073
Leahi Hospital+▲⊙	TB	NPAssn	738	520	..	...	516
Queen's Hospital★+▲○	Gen	NPAssn	380	307	44	1,861	12,278
St. Francis Hospital★▲○	Gen	Church	208	151	42	1,862	7,561
Shriners Hospital for Crippled Children+▲	Orth	NPAssn	28	27	..	...	128
Tripler General Hospital★▲...	Gen	Army	750	378	22	407	8,560
Hoolehua,—Maui							
Robert W. Shingle, Jr., Memorial Hospital	Gen	Church	32	23	6	95	1,007
Kahuku, 1,505—Honolulu							
Kahuku Hospital▲	Gen	NPAssn	30	18	6	142	875
Kalaupapa,—Kalawao							
Kalaupapa Settlement	Lepro	Ter	340	288	2	1	35
Kaneohe, 112—Honolulu							
Territorial Hospital	Ment	Ter	1,159	1,163	..	...	347
Kapaa, 2,828—Kauai							
Samuel Mahelona Memorial Hospital	TB	County	110	85	..	...	55
Kealakekua, 350—Hawaii							
Kona Hospital	Gen	County	50	15	9	123	474
Kohala, 720—Hawaii							
Kohala County Hospital.....	Gen	County	50	15	6	101	883
Kula (Waiakoa P. O.),—Maui							
Kula General Hospital........	Gen	County	20	7	6	22	369
Kula Sanatorium	TB	County	212	182	..	...	153
[illegible] Hosp.	Gen	NPAssn	65	42	9	135	1,248
Lanai City Hospital..........	Gen	NPAssn	23	7	6	79	528
Laupahoehoe, 430—Hawaii							
Laupahoehoe Sugar Company Plantation Hospital	Gen	NPAssn	28	13	4	34	509
Lihue, 4,272—Kauai							
G. N. Wilcox Memorial Hosp.▲	Gen	NPAssn	94	46	14	373	2,102
[illegible]	Gen	NPAssn	19	5	5	10	263
[illegible]	Gen	NPAssn	41	22	11	72	745
[illegible]	Gen	NPAssn	9	4	4	15	91
[illegible] Company	Gen	NPAssn	11	6	2	21	253
[illegible]	Gen	NPAssn	37	20	6	96	822
[illegible]	Gen	NPAssn	78	42	10	225	1,924
[illegible]	McDe	Ter	650	612	..	...	618
Pepeekeo Plantation Hospital	Gen	NPAssn	41	20	4	90	793
Puunene, 4,456—Maui							
Puunene Hospital	Gen	NPAssn	95	60	10	222	2,007
Waialua, 2,532—Honolulu							
Waialua Agricultural Company, Ltd., Hospital.......	Gen	NPAssn	37	12	6	100	472
Wailuku, 7,319—Maui							
Malulani Hospital	Gen	County	110	54	21	384	3,388

HAWAII—Continued

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Waimea, 2,091—Kauai							
Waimea Hospital▲	Gen	NPAssn	35	28	7	208	1,276
Waipahu, 6,906—Honolulu							
Oahu Sugar Company Hosp..	Gen	NPAssn	52	32	6	118	1,332
Tamura Hospital	Gen	Indiv	7	3	3	121	175

PUERTO RICO

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Aguadilla, 13,165—Aguadilla							
Aguadilla Charity Dist. Hosp.	Gen	Govt	300	200	35	895	5,717
Aibonito, 4,163—Guayama							
Aibonito Tuberculosis Hosp...	TB	Govt	97	90	..	...	130
Arecibo, 22,132—Arecibo							
Charity District Hospital★....	Gen	Govt	281	179	31	493	4,216
Clinica Dr. Susoni...	Gen	Indiv	190	89	13	146	2,159
Bayamon, 11,356—San Juan							
Charity District Hospital★▲○	Gen	Govt	300	209	35	1,574	6,621
Caguas, 24,378—Guayama							
Clinica San Rafael...........	Gen	Indiv	60	35	6	94	989
Castaner, 3,856—Aguadilla							
Castaner General Hospital...	Gen	Church	29	23	6	145	1,022
Cayey, 5,622—Guayama							
Clinica Font	Gen	Indiv	50	38	..	...	557
Central Aguirre,—Guayama							
Central Aguirre Hospital.....	Gen	NPAssn	26	16	2	18	974
Fajardo, 7,168—Humacao							
Coomb's Hospital	Indus	NPAssn	25	12	..	...	407
Charity District Hospital★▲○	Gen	Govt	300	192	24	816	4,655
Guayama, 16,910—Guayama							
Tuberculosis Hospital	TB	Govt	100	98	..	...	163
Hato Rey,—San Juan							
Clinica Dr. M. Julia▲.........	N&M	Corp	325	312	..	...	932
Sanatorio de la Sociedad Espanola de Auxilio Mutuo y Beneficencia de Puerto Rico	Gen	NPAssn	120	90	15	334	2,139
Humacao, 7,624—Humacao							
Clinica Oriente	Gen	Indiv	77	58	4	32	1,333
Ryder Memorial Hospital.....	Gen	Church	52	41	8	314	1,529
Jayuya, 1,808—Ponce							
Catalina Figueras Memorial Hospital	Gen	City	12	10	..	65	1,008
Juana Diaz, 3,931—Ponce							
Municipal Hospital	Gen	City	42	...	5	...	...
Manati, 6,771—Arecibo							
Manati Municipal Hospital...	Gen	City	50	...	8	...	...
Mayaguez, 30,371—Mayaguez							
Clinica Betances	Gen	Indiv	125	54	10	45	1,287
Clinica Drs. Perea.............	Gen	Part	120	95	12	400	3,244
Tuberculosis Hospital	TB	Govt	200	140	..	...	168
Ponce, 65,179—Ponce							
Clinica Quirurgica Dr. Pila★▲○	Gen	NPAssn	220	184	27	161	3,552
Hospital Municipal Valentin Tricoche	Gen	City	180	...	..	...	...
Hospital Santo Asilo de Damas○	Gen	Church	130	123	20	267	4,627
St. Luke's Memorial Hosp.◇..	Gen	Church	99	72	12	187	2,128
Tuberculosis Hospital	TB	Govt	300	285	..	...	366
Rio Piedras, 19,933—San Juan							
Clinica Antillas	TB	Corp	75	44	..	...	287
Clinica Pereira Leal▲.........	Gen	Indiv	140	80	15	322	2,465
Hospital for the Lepers.......	Lepro	Govt	80	52	..	...	64
Insular Hosp. of Psychiatry..	Ment	Govt	1,000	1,250	..	...	478
Insular Tuberculosis Sanatorium▲	TB	Govt	800	806	..	. .	918
Salinas, 3,176—Guayama							
Salinas Municipal Hospital...	Gen	City	50	26	6	200	1,922
San Juan, 169,255—San Juan							
Clinica Miramar Hospital. ..	Gen	Indiv	160	30	5	1	212
Hospital Pavia▲○	Gen	Corp	75	51	20	710	1,721
Hospital San Jose............	Gen	Corp	100	49	16	209	1,389
Ophthalmic Institute of Puerto Rico	Eye	Corp	60	51	..	...	2,275
Presbyterian Hospital★▲○	Gen	Church	115	97	22	716	2,768
Rodgriquez General Hospital⊙	Gen	Army	600	274	9	142	5,386
San Juan City Hospital★○....	Gen	City	437	328	82	4,217	14,813
U. S. Marine Hospital▲.......	Gen	USPHS	90	76	..	...	1,324
University Hospital+▲	Gen	Govt	54	41	2	...	839
Veterans Admin. Hospital....	Gen	Vet	200	185	..	...	3,084
Santurce,—San Juan							
Hospital Miniya	Gen	Indiv	100	69	15	23	911
Utuado, 4,430—*Arecibo*							
Clinica San Miguel...........	Gen	Indiv	92	51	3	...	1,424

VIRGIN ISLANDS

Hospitals, Sanatoriums and Related Institutions	Type of Service	Ownership or Control	Beds	Average Census †	Bassinets	Number of Births	Admissions †
Charlotte Amalie, 9,801—St. Thomas Island							
Municipal Hospital	Gen	CyCo	100	83	12	228	1,862
Christiansted, 4,495—St. Croix Island							
Christiansted Municipal Hosp.	Gen	City	74	47	8	132	1,334
St. Croix Hospital for Leprosy	Lepro	City	92	36	..	...	3
Frederiksted, 2,498—St. Croix Island							
Frederiksted Municipal Hosp.	Gen	City	61	36	10	133	1,190

Key to symbols and abbreviations is on page 1396

SCHOOLS FOR X-RAY TECHNICIANS

The American Registry of X-Ray Technicians, which is sponsored by the American College of Radiology, requested the American Medical Association to assume the responsibilities of approving schools for x-ray technicians. A resolution embodying this request was presented to the House of Delegates of the American Medical Association during the 1943 session. Action on the resolution delegated the Council on Medical Education and Hospitals to establish standards of training, inspect schools and publish lists of approved schools. With the advice of the Registry and the College, suitable standards were prepared and during the 1944 session were accepted by the House of Delegates.

Prior to this time approval was granted by the Registry. All the schools on the 1944 list published by the Registry were surveyed before the standards, or "Essentials" as they are referred to by the Council, were finally adopted. This information as well as that obtained from other schools which were anxious to be approved has been tabulated and made available to the Registry, The first list of schools approved by the Council was printed in The Journal on Jan. 13, 1945.

There are 211 schools presently approved, which is an increase for the year of 50 schools. Thirty-two states and the District of Columbia are represented.

Only a relatively small number of the schools have entrance requirements beyond high school graduation, 174 of the schools accepting high school graduates. Fifteen schools accept graduate nurses. There are 18 schools that require one year of college and 17 that require two years of college for entrance.

No tuition is required by 133 of the schools. Thirty-one schools have a tuition fee of less than $100, and 35 others have fees ranging from $100 to $200.

Of the 211 approved schools, 137 offer twelve months of training, the percentage being approximately that of the previous year. Twenty-one schools offer courses of eighteen months, but 46 schools require twenty-four months of training and experience for completion of their course.

Maximum enrolment is 948, an increase of 184. There were 499 graduates reported, which is 72 more than last year and only 17 less than the anticipated number. It is expected that 660 students will be graduated next year.

Correspondence regarding schools for x-ray technicians should be addressed to the Council on Medical Education and Hospitals. Graduates desiring registration should communicate with the American Registry of X-Ray Technicians, 2900 East Minnehaha Parkway, Minneapolis 6.

APPROVED SCHOOLS FOR X-RAY TECHNICIANS

Council on Medical Education and Hospitals of the American Medical Association

NOTE: Complete details regarding admission to an approved school for x-ray technicians can be obtained by communicating directly with the radiologist. Asterisk (*) after name of school indicates that male as well as female students are admitted.

Name and Location of School	Radiologist in Charge	Entrance Requirements	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition	Certificate, Diploma, Degree
ARIZONA							
St. Monica's Hospital, Phoenix *	J. Foster, M.D.	High school	12	2	Spring	None[c]	Certificate
ARKANSAS							
University Hospital, Little Rock *	I. Meschan, M.D.	High school	12	12	FebJuly	$200	Certificate
CALIFORNIA							
Herrick Memorial Hospital, Berkeley *	W. A. Ward, M.D.	High school	24	4	Quarterly	$100	Certificate
California Hospital, Los Angeles *	W. Hiemstra, M.D.	High school	24	4	Varies	$ 50[c]	Diploma
Cedars of Lebanon Hospital, Los Angeles *	E. Friedman, M.D.	High school	12	..	Quarterly	None	Certificate
College of Medical Evangelists, Los Angeles *	W. Stilson, M.D.	1 yr. college	12	6	Every 2 mo.	$100	Diploma
Los Angeles County Hospital, Los Angeles *	R. A. Carter, M.D.	2 yrs. coll. or R.N.	12	8	Varies	None[c]	Certificate
Collis P. & Howard Huntington Mem. Hosp., Pasadena	R. S. Harrison, M.D.	2 yrs. college	12	3	Sept	$ 25	Certificate
Mercy Hospital, Sacramento	J. D. Lawson, M.D.	High school	12	3	JanJuly	None	Certificate
COLORADO							
Colorado General Hospital, Denver	E. A. Schmidt, M.D.	High school	12	8	Varies	None	Certificate
Denver General Hospital, Denver *	J. H. Weiss, M.D.	High school	12	6	JanJuly	None	Certificate
Presbyterian Hospital, Denver *	K. D. A. Allen, M.D.	High school	12	2	Every 6 mo.	None	Degree
St. Anthony Hospital, Denver	J. S. Bouslog, M.D.	1 yr. college	12	8	JanJune	None	Certificate
St. Luke's Hospital, Denver *	W. P. Stampfli, M.D.	High school	12	4	Quarterly	None	Cert. & Dipl.
Weld County Hospital, Greeley *	K. D. A. Allen, M.D.	1 yr. college	12	3	Every 6 mo.	None	Diploma
CONNECTICUT							
Grace Hospital, New Haven *	R. M. Lowman, M.D.	High school	18-24	8	Every 6 mo.	None	Certificate
The Hospital of St. Raphael, New Haven *	R. Shapiro, M.D.	High school	12	4	JanJuly	None	Certificate
New Haven Community Hospital, New Haven *	A. H. Janzen, M.D.	1 yr. coll. or R.N.	24	6	OctApril	None	Certificate
GEORGIA							
Crawford W. Long Memorial Hospital, Atlanta *	W. F. Lake, M.D.	2 yrs. college	12	7	JanJuly	None	Certificate
Georgia Baptist Hospital, Atlanta *	L. Long, M.D.	High school	12	3	JanJune	None	Cert. & Dipl.
Grady Memorial Hospital, Atlanta *	H. S. Weens, M.D.	High school	12	5	Quarterly	None	Certificate
Piedmont Hospital, Atlanta	G. R. Hrdlicka, M.D.	High school	12	2	JanJuly	None	Certificate
University Hospital, Augusta *	L. P. Holmes, M.D.	High school	12	10	Varies	None	Certificate
Emory University Hospital, Emory, Univ.*	T. F. Leigh, M.D.	2 yrs. college	12	3	Every 4 mo.	$100	Certificate
IDAHO							
St. Alphonsus Hospital, Boise *	J. B. Morris, M.D.	High school	12	3	Fall&Spring	None[c]	Certificate
St. Luke's Hospital, Boise *	A. M. Popma, M.D.	1 yr. college	15	4	Fall&Spring	None	Certificate
ILLINOIS							
Alexian Brothers Hospital, Chicago *	M. Indovina, M.D.	High school	24	3	JanJune	None[c]	Certificate
Augustana Hospital, Chicago.	D. S. Beilin, M.D.	1 yr. coll. or R.N.	18	2	FebJuly	None[c]	Diploma
Chicago Memorial Hospital, Chicago	J. F. Sammet, M.D.	High school	12	2	Quarterly	None	Certificate
Cook County Graduate School of Medicine, Chicago *	G. M. Landau, M.D.	High school	12	6	JanJuly	$150	Certificate
Edgewater Hospital, Chicago *	N. S. Zeitlin, M.D.	High school	12	10	Varies	$200	Certificate
Englewood Hospital, Chicago	B. C. Cushway, M.D.	High school	18	2	Every 6 mo.	None	Certificate
Evangelical H [illegible] Chicago	B. C. Cushway, M.D.	1 yr. coll. or R.N.	18	3	OctApr	None[c]	Certificate
Michael Reese	R. A. Arens, M.D.	1 yr. college	18	6	Varies	$ 25[c]	Certificate
Mount Sinai	J. Arendt, M.D.	High school	12	6	Every 6 mo.	None	Certificate
Norwegian-American [illegible]	R. H. Warden, M.D.	High school	24	4	Varies	$250	Certificate
Provident Hospital, Chicago *	W. P. Quinn, M.D.	High school	12	6	Quarterly	$150	Certificate

APPROVED SCHOOLS FOR X-RAY TECHNICIANS—Continued

Name and Location of School	Radiologist in Charge	Entrance Requirements	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition	Certificate, Diploma, Degree
Ravenswood Hospital, Chicago	D. L. Jenkinson, M.D.	High school	18	3	Varies	$ 50	Diploma
St. Bernard's Hospital, Chicago	B. C. Cushway, M.D.	1 yr. coll. or R.N.	18	5	AprOct	None[c]	Certificate
St. Elizabeth's Hospital, Chicago *	*J. Brams, M.D.*	High school	12	2	Varies	*None[c]*	*Certificate*
St. George's Hospital, Chicago	B. C. Cushway, M.D.	1 yr. coll. or R.N.	18	5	OctApr	None[c]	Certificate
St. Joseph's Hospital, Chicago *	*W. E. Anspach, M.D.*	High school	12	2	*FebSept*	*$100[b]*	*Certificate*
St. Luke's Hospital, Chicago	E. L. Jenkinson, M.D.	2 yrs. coll. or R.N.	18	13	Varies	$ 50	Diploma
St. Mary of Nazareth Hospital, Chicago *	C. J. Challenger, M.D.	High school	21	3	Varies	$ 35[c]	Diploma
South Chicago Community Hospital, Chicago *	B. D. Braun, M.D.	High school	18	6	Varies	None[c]	Diploma
Woodlawn Hospital, Chicago	H. A. Olin, M.D.	High school	18	3	Varies	None[c]	Certificate
Dixon Public Hospital, Dixon *	R. E. Kinzer, M.D.	High school	12	2	Varies	None[c]	Diploma
St. Francis Hospital, *Evanston* *	A. C. Ledoux, M.D.	High school	12	4	JanJuly	$ 50[c]	Certificate
John C. Proctor Hospital, Peoria *	P. B. Goodwin, M.D.	High school	12	4	Every 6 mo.	$100	Certificate
Methodist Hospital of Central Illinois, Peoria *	F. H. Decker, M.D.	1 yr. coll. or R.N.	12	2	Varies	None	....
St. Francis Hospital, Peoria *	P. R. Dirkse, M.D.	High school	21	3	FebSept	$100	Certificate
St. Anthony's Hospital, Rockford	T. J. Lang, M.D.	High school	18	1	Fall	$ 25	Diploma
Swedish-American Hospital, Rockford	H. W. Ackermann, M.D.	High school	15	2	JanJuly	None	Certificate
Memorial Hospital, Springfield *	J. E. King, M.D.	High school	12	3	*JanJuly*	*None*	*Certificate*
St. John's Hospital, Springfield	W. DeHollander, M.D.	High school	12	6	Sept	$ 50	Certificate
Victory Memorial Hospital, Waukegan *	E. W. Spackman, M.D.	High school	18	2	Varies	None[c]	Diploma
INDIANA							
St. Catherine's Hospital, East Chicago	B. D. Braun, M.D.	High school	18	8	Quarterly	$100	Diploma
Methodist Hospital, Gary *	J. P. Bennett, M.D.	High school	12	2	JanJuly	None[c]	Diploma
Indiana University Medical Center, Indianapolis *	J. A. Campbell, M.D.	High school	12-18	4	July	None	Certificate
Methodist Hospital, Indianapolis *	H. O. Oehsner, M.D.	High school	12	6	Varies	None[c]	Diploma
St. Anthony's Hospital, Terre Haute *	*H. J. Pierce, M.D.*	2 yrs. coll. or R.N.	12	3	Every 6 mo.	$ 50	Certificate
IOWA							
Mercy Hospital, Cedar Rapids *	A. W. Erskine, M.D.	1 yr. college	16	1	July	None[c]	Certificate
St. Luke's Methodist Hospital, Cedar Rapids *	*J. V. Prouty, M.D.*	*High school*	12	1	Varies	None[c]	Certificate
Finley Hospital, Dubuque *	R. P. Rusk, M.D.	High school	24	3	Every 6 mo.	$200	Certificate
St. Joseph Mercy Hospital, Dubuque *	R. P. Rusk, M.D.	High school	24	3	Every 6 mo.	$200	Certificate
University Hospitals, Iowa City *	H. D. Kerr, M.D.	High school	12	8	Every 6 wks.	None	Certificate
St. Joseph Mercy Hospital, Sioux City *	H. M. McCuistion, M.D.	High school	24	2	FebSept	None	Diploma
KANSAS							
Bethany Hospital, Kansas City	L. G. Allen, M.D.	High school	12	2	MarSept	None[c]	Certificate
University of Kansas School of Medicine, Kansas City *	G. M. Tice, M.D.	3 yrs. college	12	5	Varies	None[c]	Certificate
Wesley Hospital, Wichita	*N. C. Nash, M.D.*	*2 yrs. college*	12	2	*Sept*	*None[c]*	*Certificate*
KENTUCKY							
Louisville General Hospital, Louisville	E. L. Pirkey, M.D.	High school	12	4	Varies	$ 50	Certificate
St. Joseph Infirmary, Louisville *	S. E. Johnson, M.D.	High school	24	4	FebSept	None[c]	Certificate
LOUISIANA							
Charity Hospital, *New Orleans* *	*L. J. Menville, M.D.*	High school	12	25	Aug	None	Cert. & Dipl.
United States Marine Hospital, New Orleans *	A. Mayoral, M.D.	High school	12	2	JanJuly	None[c]	Certificate
Shreveport Charity Hospital, Shreveport *	G. M. Riley, M.D.	1 yr. coll. or R.N.	18	6	Varies	None	Certificate
MARYLAND							
Baltimore City Hospitals, Baltimore *	S. H. Macht, M.D.	High school	24	6	Varies	None[c]	Cert. & Dipl.
Johns Hopkins Hospital, Baltimore *	R. H. Morgan, M.D.	High school	12	15	MarSept	$100	Certificate
MASSACHUSETTS							
Lahey Clinic, Boston *	H. I. Hare, M.D.	High school	12	6	JanJune	None	....
Massachusetts Memorial Hospitals, Boston	G. Levene, M.D.	*High school*	12	3	*Varies*	None	Certificate
Providence Hospital, Holyoke	E. J. Harrington, M.D.	High school	15	2	Spring & Fall	None	Certificate
Lawrence General Hospital, Lawrence *	W. C. Miller, M.D.	High school	12	4	JanSept	$120	Certificate
St. Luke's Hospital, Pittsfield	W. G. *Gross*, M.D.	*High school*	12	3	Quarterly	None	Diploma
Mercy Hospital, Springfield	J. W. Turner, M.D.	High school	12	3	Every 6 mo.	None	Certificate
St. Vincent's Hospital, Worcester	A. E. O'Connell, M.D.	High school	12	3	JanSept	None	Certificate
MICHIGAN							
St. Joseph Mercy Hospital, Ann Arbor	S. W. Donaldson, M.D.	High school	12	2	July	$125	Certificate
Leila Y. Post Montgomery Hospital, Battle Creek *	S. P. Barden, M.D.	High school	12	2	JanJune	None	Diploma
Mt. Carmel Mercy Hospital, Detroit	J. M. Grace, M.D.	High school[a]	12	6	Sept	$150	Cert., Dipl. & Deg.
St. Mary's Hospital, Detroit *	J. E. Lofstrom, M.D.	High school	12	10	MarSept	$125	Certificate
Hurley Hospital, Flint *	D. R. Limbach	High school	12	6	JanJuly	None	Certificate
Blodgett Memorial Hospital, Grand Rapids *	H. C. Jones, M.D.	High school	12	2	Varies	None[c]	Certificate
St. Joseph Mercy Hospital, Pontiac *	J. A. Morton, M.D.	High school	12	2	MarSept	None[c]	Certificate
MINNESOTA							
St. Luke's	A. L. Abraham, M.D.	High school	18	6	Every 3 mo.	None	Cert. & B.S.
St. Mary's	J. R. McNutt, M.D.	2 yrs. coll. or R.N.	12	6	SeptMar	None	Diploma
Eitel Hosp	*R. H. Berswanger, M.D.*	*High school*	12	2	*JanJuly*	*None[c]*	*Certificate*
Minneapolis	O. Lipschultz, M.D.	High school	12	15	Varies	None	Diploma
St. Mary's	W. Ude, M.D.	High school	12	6	OctApr	None	Certificate
Swedish Hospital, *Minneapolis* *	G. T. Nordin, M.D.	2 yrs. college	12	10	Every 2 mo.	$125[c]	Cert. & B.S.
University of Minnesota Hospitals, Minneapolis	L. G. Rigler, M.D.	2 yrs. coll. or R.N.	15	10	Varies	$ 42	Certificate
St. Cloud Hospital, St. Cloud	C. B. Nessa, M.D.	High school	24	2	Sept	None	Certificate
Bethesda Hospital, St. Paul *	J. P. Medelman, M.D.	High school	12	4	Varies	None	Certificate
Charles T. Miller Hospital, St. Paul *	H. O. Peterson, M.D.	High school	12	2	Varies	None	Certificate
St. Joseph's Hospital, St. Paul *	J. P. Medelman, M.D.	High school	12	2	Fall	None	....
MISSISSIPPI							
Mercy Hospital-Street Memorial, Vicksburg *	T. B. Dominick, M.D.	High school	12	3	Varies	None	Certificate
MISSOURI							
Independence Sanitarium and Hospital, Independence *	J. F. Bowser, M.D.	High school	12	2	JanJuly	None[c]	Certificate
Kansas City General Hospital, Kansas City	L. Scarpellino, M.D.	High school	12	6	Every 4 mo.	None	Certificate
Kansas City *General Hospital No. 2, Kansas City* *	*I. H. Lockwood, M.D.*	High school	12	4	Every 6 mo.	*None*	*Certificate*
Menorah Hospital, Kansas City	D. S. Dann, M.D.	High school	12	4	Quarterly	None[c]	Certificate
Research Hospital, Kansas City	I. H. Lockwood, M.D.	High school	*12*	*6*	*JanJuly*	*None*	*Certificate*
St. Luke's Hospital, Kansas City	L. Scarpellino, M.D.	High school	*12*	4	*Quarterly*	$ 25	Certificate
De Paul Hospital, St. Louis *	E. C. Ernst, M.D.	High school	12	4	JanJuly	$180	Certificate
Evangelical Deaconess Hospital, St. Louis	J. C. Peden, M.D.	High school	24	4	Sept	None[c]	Certificate
Homer G. Phillips Hospital, St. Louis *	*W. E. Allen Jr., M.D.*	*High sch. or R.N.*	24	6	*Sept*	*$ 15*	Certificate
St. Louis University School of Nursing, St. Louis *	L. R. Sante, M.D.	High school	4 yrs.	..	Each semester	$150 per sem.	Dipl. & Deg.
St. Mary's Infirmary, St. Louis	W. E. Allen Jr., M.D.	High school	24	2	Sept	$150	Certificate
NEBRASKA							
Lincoln General Hospital, Lincoln	J. M. Neely, M.D.	High school	12	2	MarSept	None	Certificate
St. Elizabeth's Hospital, Lincoln *	J. M. Neely, M.D.	High school	24	2	June	$100[c]	Cert. & Dipl.
Creighton Memorial St. Joseph's Hospital, Omaha *	J. F. Kelly, M.D.	2 yrs. college	24	4	Sept	$100	Certificate
Immanuel Deaconess Institute, Omaha	F. L. Simonds, M.D.	1 yr. college	12	4	SeptJan	$175	*Diploma*
University of Nebraska College of Medicine, Omaha	H. B. Hunt, M.D.	High school	12	3	JanJuly	$ 75	Diploma

APPROVED SCHOOLS FOR X-RAY TECHNICIANS—Continued

Name and Location of School	Radiologist in Charge	Entrance Requirements	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition	Certificate, Diploma, Degree
NEW HAMPSHIRE							
Mary Hitchcock Memorial Hospital, Hanover	L. K. Sycamore, M.D.	2 yrs. coll. or R.N.	12	2	JanJuly	$ 50	Certificate
Laconia Hospital, Laconia *	A. Oppenheimer, M.D.	1 yr. coll. or R.N.	12	6	MayOct	$ 75	Certificate
NEW JERSEY							
Jersey City Medical Center, Jersey City *	H. J. Perlberg, M.D.	High school	12	10	FebAug	None	Certificate
Paterson General Hospital, Paterson *	E. L. Warren, M.D.	High school	12	5	SeptMar	None	Diploma
The Mercer Hospital, Trenton	M. P. Mains, M.D.	High school	12	2	June	None	Certificate
NEW YORK							
Albany Hospital, Albany *	W. P. Howard, M.D.	High school	24	7	Sept	$350[c]	Certificate
Edward J. Meyer Memorial Hospital, Buffalo *	E. G. Eschner, M.D.	High school	24	4	July	None	Certificate
Brooks Memorial Hospital, Dunkirk *	S. B. Clark, M.D.	High school	24	2	JanJuly	None[c]	Certificate
New York Hospital, New York *	H. Temple, M.D.	High school	18	20	Sept	$700[c]	Diploma
New York Polyclinic Med. ' New York *	E. E. Smith, M.D.	High school	12	20	Oct	$350	Certificate
St. Clare's Hospital, New *	D. G. Batera, M.D.	High school	12	2	Sept	None	Certificate
Rochester General Hospital, *	E. F. Merrill, M.D.	High school	12	4	SeptFeb	$120	Certificate
Strong Memorial Hospital, Rochester *	G. H. Ramsey, M.D.	High school	12	4	Every 3 mo.	$100	Certificate
NORTH CAROLINA							
Duke University School of Medicine, Durham *	R. J. Reeves, M.D.	Coll. Dipl. or R.N.	12	4	MarOct	$ 25	Certificate
Watts Hospital, Durham *	W. W. Vaughan, M.D.	High school	12	2	JanJuly	None	Certificate
Bowman Gray School of Medicine, Winston-Salem	*J. P. Rousseau, M.D.*	*High school*	*12*	*1*	*JanJuly*	$ 50	Certificate
City Memorial Hospital, Winston-Salem *	J. Selman, M.D.	High school	12	2	JanJuly	None	Certificate
NORTH DAKOTA							
St. Alexius Hospital, Bismarck *	H. M. Berg, M.D.	High school	24	2	Varies	None[c]	Certificate
Quain and Ramstead Clinic, Bismarck *	H. M. Berg, M.D.	High school	24	4	Varies	None[c]	Certificate
Trinity Hospital, Minot	W. W. Wall, M.D.	2 yrs. college	12	2	AprSept	None[c]	....
OHIO							
City Hospital, Akron *	F. T. Moore, M.D.	High school	24	4	FebJuly	None[c]	Cert. & Dipl.
Cincinnati General Hospital, Cincinnati *	B. Felson, M.D.	High school	12	5	Quarterly	$ 50	Certificate
City Hospital, Cleveland *	H. Hauser, M.D.	High school	12	8	Every 6 wks.	$100	Certificate
Mount Sinai Hospital, Cleveland	H. A. Mahrer, M.D.	High school	12	4	Quarterly	$100	Certificate
St. Luke's Hospital, Cleveland *	D. D. Brannan, M.D.	High school	12	1	Quarterly	$ 50	Diploma
St. Vincent Charity Hospital, Cleveland *	E. J. O'Malley, M.D.	High school	12	2	Varies	$100	Certificate
University Hospitals, Cleveland *	H. L. Friedell, M.D.	High school	12	8	Every 6 wks.	$100	Certificate
Starling-Loving University Hospital, Columbus *	H. J. Means, M.D.	High school	12	4	Varies	None[c]	Certificate
Good Samaritan Hospital, Dayton	H. Snow, M.D.	High school	24	2	Every 6 mo.	$ 50	Certificate
Miami Valley Hospital, Dayton *	G. A. Nicoll, M.D.	High school	12	4	Quarterly	None	Cert. & Deg.[d]
St. Elizabeth's Hospital, Dayton *	H. Snow, M.D.	High school	12	2	JanJune	$ 50	Cert. & Deg.
Huron Road Hospital, East Cleveland *	J. O. Newton, M.D.	High school	12	1	Quarterly	$100	Certificate
St. Rita's Hospital, Lima *	D. W. English, M.D.	High school	18	3	JanJuly	None[c]	Certificate
St. Joseph's Hospital, Lorain *	D. A. Russell, M.D.	High school	12	3	Jan	$ 50	Certificate
Youngstown Hospital, Youngstown	E. C. Baker, M.D.	High school	12	5	Varies	None[c]	Certificate
OKLAHOMA							
St. Anthony's Hospital, Oklahoma City	J. E. Heatley, M.D.	High school	12	3	Spring & Fall	None[c]	Certificate
University Hospitals, Oklahoma City *	J. E. Heatley, M.D.	High school	12	3	June	None	Certificate
St. John's Hospital, Tulsa	L. M. Pascucci, M.D.	High school	24	6	June	None[c]	Certificate
OREGON							
University of Oregon Medical School, Portland *	W. Y. Burton, M.D.	High school	12	8	Varies	None	Certificate
PENNSYLVANIA							
Chester Hospital, Chester	A. M. Sharpe, M.D.	High school	12	2	Varies	None	Certificate
Geo. F. Geisinger Memorial Hospital, Danville *	C. L. Hinkel, M.D.	High school	24	4	July	None[c]	Certificate
Fitzgerald-Mercy Hospital, Darby	F. K. Alexander, M.D.	High school	12	5	JanJuly	None	Certificate
St. Vincent's Hospital, Erie *	R. D. Bacon, M.D.	High school	24	1	Varies	None[c]	....
Conemaugh Valley Memorial Hospital, Johnstown *	C. B. Cobern, M.D.	R.N.	..	2	Varies	....	....
Grad. Hosp. of the Univ. of Penn Philadelphia *	A. Finkelstein, M.D.	High school	24	12	OctJune	$150	Certificate
Hahnemann Hospital, Philade ,	J. W. Frank, M.D.	High school	14	9	Quarterly	$150	Diploma
Hospital of the Univ. of Per *	E. P. Pendergrass, M.D.	High school	24	..	Sept	$250	Certificate
Jefferson Medical College Hospital, *	P. C. Swenson, M.D.	High school	24	8	Varies	None[c]	....
Jewish Hospital, Philadelphia	L. Solis-Cohen, M.D.	High school	15	10	Monthly	$100	Diploma
Nazareth Hospital, Philadelphia	J. S. Fetter, M.D.	High school	24	2	Sept	None[c]	Certificate
Philadelphia General Hospital, Philadelphia	B. P. Widmann, M.D.	High school	18	30	MarSept	None	Diploma
Western Pennsylvania Hospital, Pittsburgh *	R. G. Alley, M.D.	High school	12	2	MarSept	None[c]	Certifiacte
Chester County Hospital, West Chester *	J. G. Cohen, M.D.	High school	24	4	Sept	None	Certificate
Wilkes-Barre General Hospital, Wilkes-Barre *	P. E. Ringawa, M.D.	High school	12	4	Every 6 mo.	None	Certificate
SOUTH CAROLINA							
Roper Hospital, Charleston *	H. Rudisill Jr., M.D.	2 yrs. coll. or R.N.	12	8	MarSept	$100	Cert. & Dipl.
The Tri-County Hospital, Orangeburg *	A. E. Willis, M.D.	High school	12	2	Feb	None[c]	Certificate
Tuomey Hospital, Sumter *	M. E. Parrish, M.D.	High school	12	2	Varies	$ 50	Cert. & Dipl.
SOUTH DAKOTA							
McKennan Hospital, Sioux Falls *	N. J. Nessa, M.D.	High school	24	2	SeptMar	None[c]	Diploma
Sioux Valley Hospital, Sioux Falls *	D. H. Breit, M.D.	High school	12	3	Varies	None	Certificate
Sacred Heart Hospital, Yankton	D. J. Tschetter, M.D.	2 yrs. coll. or R.N.	12	3	FebAug	$ 80	Cert. & Dipl.
TENNESSEE							
Knoxville General Hospital, Knoxville	H. H. McCampbell, M.D.	High school	12	3	Every 4 mo.	None	Certificate
University of Tennessee College of Medicine, Memphis *	D. S. Carroll, M.D.	High school	12	2	Quarterly	$ 80	Certificate
Meharry Medical College, Nashville *	L. D. Scott, M.D.	2 yrs. coll. or R.N.	24	2	Sept	$ 75	Certificate
TEXAS							
Hotel Dieu Hospital, Beaumont	L. H. Ledbetter, M.D.	1 yr. coll. or R.N.	12	..	JuneSept	None	Certificate
Baylor University Hospital, Dallas	F. M. Windrow, M.D.	2 yrs. college	12	3	JanJuly	$100	Certificate
Methodist Hospital, Dallas *	M. L. Mazer, M.D.	High school	12	2	July	None	Certificate
Parkland Hospital, Dallas *	J. E. Miller, M.D.	High school	18	8	Varies	None	Certificate
St. Paul's Hospital, Dallas *	G. D. Carlson, M.D.	High school	24	6	Quarterly	None	Certificate
University of Texas School of Medicine, Galveston *	M. Schneider, M.D.	1 yr. college	12	6	Every 6 mo.	$118	Certificate
Methodist Hospital, Houston *	C. H. Burge, M.D.	High school	24	1	July	None[c]	Certificate
St. Joseph's Infirmary, Houston *	P. E. Wigby, M.D.	High school	24	6	Every 6 mo.	None[c]	Certificate
Santa Rosa Hospital, San Antonio	M. Davis, M.D.	High school	24	4	SeptJune	$ 50	Certificate
Scott and White Clinic, Temple *	C. A. Stevenson, M.D.	High school	24	3	Varies	None[c]	Certificate
UTAH							
Salt Lake County General Hospital, Salt Lake City *	H. H. Lerner, M.D.	High school	12	4	June	None	Certificate
VERMONT							
Mary Fletcher Hospital, Burlington *	A. B. Soule Jr., M.D.	High school	12	3	Every 4 mo.	$100	Certificate
VIRGINIA							
University of Virginia Hospital, Charlottesville *	V. W. Archer, M.D.	High school	12	8	JanJuly	None	Certificate
Medical College of Virginia Hosp. Division, Richmond	F. B. Mandeville, M.D.	High school	12	15	Every 4 mo.	None	Certificate
St. Luke's Hospital, Richmond	J. L. Tabb, M.D.	High school	12	2	JanJune	None[c]	Certificate

APPROVED SCHOOLS FOR X-RAY TECHNICIANS—Continued

Name and Location of School	Radiologist in Charge	Entrance Requirements	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition	Certificate, Diploma, Degree
WEST VIRGINIA							
St. Luke's Hospital, Bluefield *	D. V. Kechele, M.D.	High school	12	2	JanJune	None	Certificate
Kanawha Valley Hospital, Charleston	W. P. Elkin, M.D.	High school	12	1	Summer	None	Certificate
McMillan Hospital, Charleston *	W. P. Elkin, M.D.	High school	12	1	June	None	Certificate
St. Francis Hospital, Charleston	W. P. Elkin, M.D.	High school	12	1	Nov	None	Diploma
WISCONSIN							
St. Francis Hospital, LaCrosse	P. V. Hulick, M.D.	High school	12	2	Sept	$ 50	Certificate
Madison General Hospital, Madison *	L. V. Littig, M.D.	High school	12	4	Every 4 mo.	None[c]	Certificate
St. Mary's Hospital, Madison	C. F. Sherman, M.D.	High school	24	1	Sept	None	Certificate
University of Wisconsin Medical School, Madison *	E. A. Poole, M.D.	1 yr. college	12	16	Every 6 wks.	$ 10	Certificate
Columbia Hospital, Milwaukee *	S. A. Morton, M.D.	High school	24	4	Varies	None[c]	Certificate
Evangelical Deaconess Hospital, Milwaukee *	A. Melamed, M.D.	High school	12	1	Quarterly	$160	Diploma
Milwaukee Hospital, Milwaukee	H. W. Hefke, M.D.	High school	24	5	Quarterly	None[c]	Certificate
Mount Sinai Hospital, Milwaukee *	M. Moel, M.D.	2 yrs. coll. or R.N.	12	4	Every 4 mo.	$100	Certificate
St. Joseph's Hospital, Milwaukee *	A. R. Altenhofen, M.D.	High school	24	14	Varies	$ 35	Certificate
St. Michael's Hospital, Stevens Point *	J. A. Knights, M.D.	High school	12	3	AprOct	None	Certificate
St. Mary's Hospital, Wausau *	J. M. Foerster, M.D.	High school	24	4	AugMar	None	Diploma

a. Three years of college academic work required for degree.
b. Tuition refunded at end of course.
c. Students are paid a stipend.
d. Degree given to University of Dayton affiliates.

SCHOOLS FOR MEDICAL RECORD LIBRARIANS

The American Association of Medical Record Librarians presented a formal resolution to the 1942 session of the House of Delegates of the American Medical Association requesting the latter to assume the responsibilities of approving schools for medical record librarians. Action on the resolution granted the Council on Medical Education and Hospitals authority to establish standards, inspect training programs and publish lists of approved schools. Minimum essentials were formulated with the assistance of the American Association of Medical Record Librarians after all existing schools were inspected. These essentials were officially accepted by the House of Delegates in 1943. The first list of approved schools was published in June 1943. Currently there are 12 schools on the approved list. One new approved school is included.

There were 63 students who completed the prescribed course during 1947. In addition, 10 students completed a special or short course which is given for experienced but untrained medical record librarians. Three schools offer these short courses with a reported enrolment of 12 students. This year's reports indicate a current enrolment of 59 students in the regular course and an anticipated graduation of 59 students. Two schools anticipate no graduates in 1948.

A satisfactory proficiency in shorthand and typewriting is a prerequisite for entrance to all schools. Nine schools require two or more years of college and seven of these admit graduate nurses. Three schools provide four year courses admitting high school graduates which lead to a degree. The Educational Board of the American Association of Medical Record Librarians has authority to review applications of persons who lack the college credits required by a school but have experience in the medical or business world. If the applicant's background of experience is satisfactory, the Educational Board can notify the school that the student is acceptable. These students, unfortunately, are not eligible for scholarships.

The length of the hospital training which includes the didactic instruction is twelve months. Tuition varies between $125 and $300, with an average of $170 and a mean of $150. The courses are arranged to issue a certificate or diploma after completion of the twelve month course, while 1 hospital and all university courses have facilities to offer a degree.

APPROVED SCHOOLS FOR MEDICAL RECORD LIBRARIANS

Council on Medical Education and Hospitals of the American Medical Association

Name and Location of School	College Affiliation	Length of Course	Classes Start	Entrance Requirements*	Tuition	Certificate, Diploma, Degree	Maximum Enrolment
Samuel Merritt Hospital, Oakland, Calif.	None	12 mos.	MarAug	2 yrs. coll. or R.N.	$150	Certificate	5
Univ. of Colorado School of Med. & Hosp., Denver	University of Colorado	12 mos.	Sept	3 yrs. coll. or R.N.	$204	Degree	8
Grant Hospital, Chicago	None	12 mos.	FebSept	2 yrs. coll. or R.N.	$150	Certificate	8
St. Joseph Hospital, Chicago	DePaul University	12 mos.	Mar	2 yrs. coll. or R.N.	$150	Certificate	6
Wesley Memorial Hospital, Chicago	Northwestern University	12 mos.	Sept	2 yrs. coll. or R.N.	$275	Certificate	12
Massachusetts General Hospital, Boston	Harvard Medical School	12 mos.	Sept	2 yrs. coll. or R.N.	$125	Certificate	8
Mercy College, Detroit	Mercy College	12 mos.	Sept	High school	$150	Dipl.&Deg.	10
College of St. Scholastica, Duluth, Minn.		†	Sept	High school	$130 yr.	Degree	10
St. Louis University, St. Louis	St. Louis University	4 yrs.	JanSept	High school	$300 yr.	Degree	16
Rochester General Hospital, Rochester, N. Y.	None	1 yr.	FebSept	2 yrs. coll. or R.N.	$150 yr.	Certificate	10
Duke Hospital, Durham, N. C.	Duke University	12 mos.	JuneOct	Degree	$175	Certificate	12
Graduate Hosp. of the Univ. of Penn., Philadelphia	University of Pennsylvania	12 mos.	Sept	2 yrs. coll. or R.N.	$300	Certificate	16

* All students are required to be proficient in typing and shorthand.
† Four academic years and one summer session.

The demand for adequately trained medical record librarians continues. Although the very considerable increase in the number of graduates this year over the 25 graduates of 1946 is gratifying, the fact remains that the present schools are not providing sufficient trained personnel to meet the needs of the hospitals. The scholarships that have been made available by the

National Foundation for Infantile Paralysis are doubtless of much help in increasing the enrolment. The inservice training programs provided through funds given by the Foundation together with the institutes sponsored by the American Hospital Association in cooperation with the American Association for Medical Record Librarians have been of valuable assistance.

Correspondence regarding registration should be addressed to the American Association of Medical Record Librarians, 18 East Division Street, Chicago 10.

SCHOOLS FOR OCCUPATIONAL THERAPY TECHNICIANS

At the 1933 sessions of the House of Delegates of the American Medical Association a resolution was introduced that some plans be effected for the establishment of standards, ratings and inspections of training schools for occupational therapy technicians. This program was referred to the Council on Medical Education and Hospitals, and all of the 13 existing schools were surveyed. The Essentials of an Acceptable School of Occupational Therapy were ratified by the House of Delegates of the American Medical Association at the Atlantic City session in 1935, such standards to become effective on Jan. 1, 1939. A report of the Council on Medical Education and Hospitals to the House of Delegates in 1936 contained the names of 4 schools which had already met these standards. There are currently 25 schools on the approved list, 7 new schools having been approved.

The 25 approved schools offer 36 curriculums, and 3 schools offer advanced courses. Entrance requirements vary according to the curriculum. Eighteen are designed for high school graduates who, it is expected, will devote four or five academic years to complete the combined college and professional subjects. Eight of the curriculums require one year of college as a prerequisite, while 2 prescribe two years of college credits and 7 require a degree.

There is a correlation between the length of training and entrance requirements among the various curriculums. Those that require a college degree usually enable the student to complete all work in two years, but 1 school presents three academic years of subjects in the course designed for college graduates.

All the approved schools are affiliated with recognized colleges, and 32 of the curriculums enable the student to acquire college credit. The amount of college credits available vary from about one semester in some of the shorter courses to 128 semester hours. Thus, degrees are granted by 23 schools and a diploma or certificate is presented by the other 2 schools. The curriculums which are shorter than the basic course are designed for a certificate or diploma when the student completes all requirements.

Tuition ranges between $21 and $600 per year. These amounts are, of course, determined by university fees, and there is no instance in which a certificate course fee exceeds the fee for a degree course. The fees for 10 courses have been increased by amounts varying from $25 to $125.

A total of 320 graduates have been reported by 19 schools with 74 students reported as having completed advanced courses at 10 schools. An equal number is anticipated to graduate from approved schools in 1948.

APPROVED SCHOOLS FOR OCCUPATIONAL THERAPY TECHNICIANS

Council on Medical Education and Hospitals of the American Medical Association

NOTE: The duration of the course is expressed in academic years.

Name and Location of School	College Affiliation	Duration of Course	Classes Start	Entrance Requirements	Tuition per Year	Certificate, Diploma, Degree	Graduates in 1947
University of Southern California, 925½ 35th Place, Los Angeles	University of Southern California	2 yrs. 5 yrs.	FebSept FebSept	Degree High sch.	$120 $450	Certificate Cert.&B S.	22
Mills College, Oakland, Calif.	Mills College	3 yrs.	FebSept	Degree	$200 $550	Certificate	..
San Jose State College, San Jose, Calif.	San Jose State College	1½ yrs. 3¾ yrs.	Varies Varies	Degree High sch.	$ 21 $ 21	Certificate Degree	10
University of Illinois College of Medicine, 1853 W. Polk St., Chicago	University of Illinois	5 yrs.	Feb	High sch.	$152	B.S.	14
University of Iowa, Iowa City, Iowa	State University of Iowa, College of Medicine	5 yrs.	......	High sch.	$ 85	Cert.&Deg.	
University of Kansas, Lawrence	University of Kansas	2 yrs. 4 yrs.	FebSept FebSept	Degree High sch.	$131 $131	Certificate B.S.	10
Boston School of Occupational Therapy, 7 Harcourt St., Boston	Tufts College	2 yrs. 5 yrs.	Sept Sept	Degree High sch.	$500 $450	Diploma B.S.	13
Wayne University, 4841 Cass, Detroit, Mich.	Wayne University, College of Med., Coll. of Liberal Arts, Coll. of Education	5 yrs.	......	High sch.	....	....	
Kalamazoo School of Occupational Therapy, Western Michigan College of Education, Kalamazoo	Western Michigan College of Education	1½ yrs. 4 yrs.	FebSept FebSept	Degree 1 yr. coll.	$127 $127	Diploma Degree	20
Michigan State Normal College, Ypsilanti	University of Michigan	5 yrs.	Varies	High sch.	$118	Cert.&Deg.	8
University of Minnesota, Church Street, Minneapolis	University of Minnesota	4 yrs.	......	High sch.	$360	B.S.	
College of St. Catherine, St. Paul, Minn.	The College of St. Catherine	3½ yrs.	Varies	1 yr. coll.	$210	Degree	4
Washington University School of Medicine, St. Louis	Washington University	3 yrs.	Sept	2 yrs. coll.	$100	Degree	10
University of New Hampshire, Durham	University of New Hampshire	5 yrs.	Sept	High sch.	$160	Cert.&Deg.	6
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York City	Columbia University	1½ yrs. 2½ yrs.	Sept Sept	Degree 2 yrs. coll.	$450 $450	Certificate Degree	23
New York University School of Education, 100 Washington Sq., E., New York City	New York University	4½ yrs.	FebSept	High sch.	$500	Cert.&Deg.	20
Ohio State University, Columbus	Ohio State University	3 yrs.	Quarterly	High sch.	$105	Degree	21
Philadelphia School of Occupational Therapy, 419 S. 19th St., Philadelphia	University of Pennsylvania	1½ yrs. 3 yrs.	Sept Sept	Degree 1 yr. coll. High sch.	$500 $500 $600	Diploma Diploma	35
Texas State College for Women, Denton, Texas	Texas College for Women	5 yrs.	FebSept	High sch.	$150	Degree	13
Richmond Professional Institute, 901 W. Franklin St., Richmond, Va.	Medical College of Virginia	1½ yrs. 3 yrs.	Sept Sept	Degree 1 yr. coll.	$200 $200	Certificate Certificate	20
College of Puget Sound, Tacoma, Wash.	College of Puget Sound	3 yrs. 5 yrs.	FebSept FebSept	Degree High sch.	$350 $400	Certificate Cert.&Deg.	
University of Wisconsin, Madison	University of Wisconsin	4 yrs.	FebSept	High sch.	$320	Cert.&Deg.	8
Milwaukee-Downer College, Dept. of Occupational Therapy, 2512 E. Hartford, Milwaukee	Milwaukee-Downer College	2½ yrs. 4 yrs.	Sept Sept	1 yr. coll. High sch.	$300 $300	Diploma Dipl.&Deg.	22
Mount Mary College, 2900 Menomonee River Dr., Milwaukee		Varies 5 yrs.	Sept Sept	Degree High sch.	$335 $260	Certificate B.S. Degree	15
University of Toronto, Dept. of University Extension, Toronto, Ont., Canada	University of Toronto	3 yrs.	Sept	1 yr. coll.	$222	Diploma	110

SCHOOLS FOR PHYSICAL THERAPY TECHNICIANS

The House of Delegates of the American Medical Association in 1934 requested that some plan be effected for the establishment of standards, ratings and inspections of schools for the training of physical therapy technicians. The Council on Medical Education and Hospitals assumed responsibility for this program and by 1936 had completed a survey of these schools. Certain minimum standards were formulated. These were presented to the House of Delegates of the American Medical Association and were ratified in May 1936. The first list of 13 approved schools appeared in THE JOURNAL in August 1936. Revisions have been published annually since that time.

There are 25 approved schools, with 1 new school approved in 1947. Twenty-one schools reported a total of 383 graduates of their regular courses. Ten schools offering advanced courses reported satisfactory completion of these courses by 20 students. The reports anticipate an approximately equal number of graduates in 1948.

Entrance requirements include graduates of accredited schools of nursing, graduates of physical education courses or collegiate training including science courses. Eighteen of the schools admit nurses, 15 accept physical education graduates and all but 2 of the schools will permit college students to enroll in the one year curriculum. The list of schools requiring college training for admission contains 14 that specify three years of college credits, 10 which mention two years of credits, and 4 that require a degree. A total of eight courses are combined with college curriculums, so that high school graduates can obtain a degree in physical therapy after four academic years of study. All but 7 of the schools offer college credits, although 2 schools which list two courses state that only one course will permit the student to accumulate college credit.

The length of training is twelve months in most instances, but 3 schools require fourteen, fifteen and twenty-four months respectively for the regular course, while high school graduates must complete the four year program.

APPROVED SCHOOLS FOR PHYSICAL THERAPY TECHNICIANS

Council on Medical Education and Hospitals of the American Medical Association

Name and Location of School	Medical Director and Technical Director	Entrance Requirements*	Duration of Course	Time of Admission	Maximum Enrolment	Tuition	Certificate, Diploma, Degree
Children's Hospital, Los Angeles	Samuel Mathews, M.D. Miss Sarah S. Rogers	a-b-d	14 mos.	Sept	14	$200	Certificate
College of Medical Evangelists, Los Angeles [1]	Fred B. Moor, M.D. R. William Berdan	a-b-c	12 mos.	Sept	16	$226.50	Cert. & Degree
University of Southern California, Los Angeles	O. L. Huddleston, M.D. Miss Charlotte W. Anderson	a-b-d	14 mos.	Sept	20	$561	Certificate
University of California Hospital, San Francisco [1]	Frances Baker, M.D. Mrs. Margery Wagner	d-e	12 mos.	Sept	12	$220[3]	Cert. or Degree
Stanford University, Stanford University, Calif.	W. H. Northway, M.D. Miss Lucille Daniels	a-b-d	12 mos.	JanJune	24	$523.30	Cert. or Degree
University of Colorado Medical Center, Denver [1]	Harold Dinken, M.D. Miss Mary Lawrence	a-b-d	12 mos.	Sept	12	$300[3]	Certificate
Northwestern University Medical School, Chicago	John S. Coulter, M.D. Miss Gertrude Beard	a-b-d	12 mos.	Oct	16	$400 yr.	Certificate
State University of Iowa Medical School, Iowa City	W. D. Paul, M.D. Miss Olive C. Farr	b-c	12 mos.	Sept	12	$200	Certificate
University of Kansas School of Medicine, Kansas City [1]	Donald L. Rose, M.D. Mrs. Ruth G. Monteith	a-b-c[2]	12 mos.	FebSept	15	$ 80[3]	Certificate
Bouve-Boston School of Physical Education, Boston	Howard Moore, M.D. Miss Constance Greene	H.S.	4 yrs.	Sept	15	$500	Dipl. & Degree
Simmons College, Boston	W. T. Green, M.D. Miss J. B. Merrill	a-b-d	16 mos.	....	20	$550	Diploma
Boston University College of Physical Education for Women, Sargent College, Cambridge, Mass.	Kenneth Christophe, M.D. Miss Adelaide McGarrett	c-d	12 mos.	Sept	28	Varies	Cert. or Degree
University of Minnesota, Minneapolis [1]	M. E. Knapp, M.D. Miss Ruby Green	H.S.	4 yrs.	Sept	16	$120[3] yr.	Degree
Mayo Clinic, Rochester, Minn.	F. H. Krusen, M.D. Miss Lucille Fitzpatrick	a-b-c	12 mos.	Sept	30	None	Certificate
Barnes Hospital, St. Louis	F. H. Ewerhardt, M.D. Miss B. F. Schulz	a-b-c	12 mos.	Oct	12	$250	Certificate
St. Louis University School of Nursing, St. Louis [1]	A. J. Kotkis, M.D. Sister Mary Imelda	2	4 yrs.	JanSept	10	$300 yr.	Degree
Albany Hospital, Albany, N. Y.	J. W. Ghormley, M.D. Catherine Graham	a-b-c	12 mos.	Sept	6	$200	Certificate
Columbia University College of Physicians and Surgeons, New York City [1]	William Snow, M.D. Floy Pinkerton	a-c	2 yrs.	Sept	25	$940	Degree
New York University School of Education, New York City [1]	George G. Deaver, M.D. Miss Elizabeth Addoms	a-b-d	12 mos.	Sept	40	$540	Cert. or Degree
Duke Hospital, Durham, N. C.[1]	Lenox D. Baker, M.D. Miss Helen Kaiser	a	15 mos.	Oct	12	$300	Certificate
D. T. Watson School of Physiotherapy, Leetsdale, Pa.[1]	Jessie Wright, M.D. Miss Kathryn Kelley	a-b-d	12 mos.	Oct	30	$300	Diploma
Graduate Hospital of the University of Pennsylvania, Philadelphia [1]	George M. Piersol, M.D. Miss D. E. Baethke	a-b-c	12 mos.	Sept	20	$300	Certificate
University of Texas School of Medicine, Galveston [1]	G. W. N. Eggers, M.D. Miss Ruby Decker	a-b-d	12 mos.	Jan	8	$143[3]	Certificate
Baruch Center of Physical Medicine of the Medical College of Virginia, Richmond, in affiliation with Richmond Professional Institute [1]	Walter Jerome Lee, M.D. Miss Susanne Hirt	a-b-d	12 mos.	Sept	48	$200	Dipl. or Degree
University of Wisconsin Medical School, Madison [1]	Harry Bouman, M.D. Miss Margaret A. Kohli	a-b-c[2]	12 mos.	FebSept	20	$120[3] yr.	Cert. & Degree

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* Courses are so arranged that any of the entrance requirements will qualify students for training. a = *Graduation from accredited school of* nursing; b = Graduation from accredited school of *physical education*; c = Two years of college with science courses; d = Three years of college with science courses; e = Four years of college with science courses. H.S. = High school graduation.

1. Male students are admitted.
2. High school graduates admitted to four-year course leading to degree.
3. Non-residents charged additional fee.

SCHOOLS FOR MEDICAL TECHNOLOGISTS

The original survey of 196 schools for medical technologists was published in The Journal, Aug. 29, 1936, together with the first list of 96 approved schools. Essentials had been formulated by the Council on Medical Education and Hospitals of the American Medical Association with the cooperation of the American Society of Clinical Pathologists and ratified by the House of Delegates of the American Medical Association in May 1936.

There are 337 schools reported in the current list with 45 states represented. This is an increase of 44 schools. One school was discontinued.

Concerning entrance requirements, 239 schools admit students who have completed two years of college subjects, 52 require three years of college preparation and 38 require a degree for admission. The requirements for admission to 4 schools are intermediate between two and four years.

The course length in 278 of the schools is twelve months. Of the remainder, 31 give courses of eighteen months, 14 of fifteen months and 8 of twenty-four months.

Of the 337 schools listed, 213 require no tuition, an increase of approximately 12 per cent. Excluding university fees, less than 5 per cent of the schools charge over $150 for the course. Approximately 100 independent schools have tuition fees and 28 more are required to collect university fees.

Certificates are issued by 204 schools on completion of the course. Diplomas are granted at 47 schools, and 73 schools have college or university affiliations which give their students a degree. Forty-seven schools offer no certifying instrument.

The maximum enrolment was 2,239, an increase over last year of 192. There were 1,206 graduates, which was 128 more than the previous year. It is anticipated that 1,582 students will be graduated next year.

Correspondence regarding schools for the training of medical technologists should be addressed to the office of the Council on Medical Education and Hospitals. Graduates of approved schools desiring registration should communicate with the Board of Registry of Medical Technologists, Ball Memorial Hospital, Muncie, Indiana.

APPROVED SCHOOLS FOR MEDICAL TECHNOLOGISTS

Council on Medical Education and Hospitals of the American Medical Association

NOTE: Under "Tuition" the letter B indicates that a breakage fee is charged; the letter U indicates university fees. Students lacking the scholastic requirements should contact the registrar of the college or university and not the hospital. Those who wish to enroll in a course given by the college or university or who desire to transfer their credits should correspond with the registrar and not the hospital.

Name and Location of School	College Affiliation	Pathologist in Charge	Minimum Prerequisite College	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition
ALABAMA							
Baptist Hospital, Birmingham [a]	Alabama Coll.[b]; Howard Coll.[b]	A. E. Casey, M.D.	3½ yrs.	12	6	Varies	None
Jefferson and Hillman Hospitals, Birmingham [a]	Univ. of Alabama School of Medicine	R. R. Kracke, M.D.	3 yrs.	12	18	JuneOct	B
Norwood Hospital, Birmingham [a]		J. A. Cunningham, M.D.	2 yrs.	12	4	JanJune	None
South Highlands Infirmary, Birmingham [a]		J. A. Cunningham, M.D.	2 yrs.	12	2	JanSept	None
Employees Hospital, Fairfield		L. C. Posey, M.D.	2 yrs.	12	4	Varies	None
St. Margaret's Hospital, Montgomery [a]	Huntingdon College [b]	C. R. Lafferty, M.D.	Degree	12	4	JanJune	B
ARIZONA							
St. Joseph's Hospital, Phoenix [a]	Arizona State Teachers Coll.(Tempe)[b]	O. O. Williams, M.D.	3 yrs.	12	4	July	$125
ARKANSAS							
University Hospital, Little Rock [a]	Univ. of Arkansas School of Med.[b]	A. Nettleship, M.D.	2 yrs.	12	20	Sept	$150
CALIFORNIA							
Herrick Memorial Hospital, Berkeley [a]		H. R. Fishback, M.D.	Degree	12	2	FebJuly	None
Childrens Hospital, Los Angeles		R. E. Knutti, M.D.	Degree	12	6	Varies	None
Los Angeles County Hospital, Los Angeles [a]		E. M. Butt, M.D.	Degree	14	18	Varies	None
St. Vincent's Hospital, Los Angeles		J. E. Kahler, M.D.	Degree	12	2	Varies	B
White Memorial Hospital, Los Angeles [a]	College of Medical Evangelists [b]	O. B. Pratt, M.D.	3 yrs.	15	12	Quarterly	$100
Collis P. and Howard Huntington Memorial Hospital, Pasadena		A. G. Foord, M.D.	Degree	12	9	July	B
Univ. of California Med. School, San Francisco [a]	University of California	J. Hopper Jr., M.D.	3 yrs.	12	24	FebSept	$105
St. John's Hospital, Santa Monica [a]		G. J. Hummer, M.D.	Degree	12	2	July	None
COLORADO							
Colorado General Hospital, Denver [a]	University of Colorado [b]	E. R. Mugrage, M.D.	3 yrs.	12	16	Summer	U&B
Denver General Hospital, Denver [a]		F. McConnell, M.D.	2 yrs.	12	12	Varies	None
Mercy Hospital, Denver [a]	University of Denver [b]; Loretto Heights College [b]	A. W. Freshman, M.D.	3 yrs.	12	2	Quarterly	U&B
St. Anthony's Hospital, Denver [a]	University of Denver [b]; Loretto Heights College [b]	A. W. Freshman, M.D.	3 yrs.	12	4	Quarterly	U&B
St. Joseph's Hospital, Denver [a]	St. Mary College (Xavier, Kan.)	E. I. Dobos, M.D.	4 yrs.	12	3	July	None
CONNECTICUT							
Danbury Hospital, Danbury [a]		P. T. McIlroy, M.D.	2 yrs.	12	3	Varies	None
Hartford Hospital, Hartford		R. E. Kendall, M.D.	2 yrs.	12	4	Varies	None
St. Francis Hospital, Hartford		L. P. Hasting, M.D.	2 yrs.	12	3	....	None
New Britain General Hospital, New Britain		P. D. Rosahn, M.D.	Degree	12	5	Oct	None
Waterbury Hospital, Waterbury		J. O. Collins, M.D.	2 yrs.	12	3	Varies	$75
DELAWARE							
Delaware Hospital, Wilmington		J. W. Howard, M.D.	2 yrs.	12	4	....	None
Wilmington General Hospital, Wilmington [a]		O. J. Pollack, M.D.	2 yrs.	18	2	July	None
DISTRICT OF COLUMBIA							
Doctors Hospital, Washington [a]	American University [b]	O. B. Hunter, M.D.	2 yrs.	12	6	Quarterly	None
Freedmen's Hospital, Washington	Howard University	F. B. Johnson, M.D.	3 yrs.	24	5	Varies	U
Garfield Memorial Hospital, Washington [a]		E. C. Rice, M.D.	2 yrs.	12	6	Varies	None
George Washington Univ. Hosp., Washington	George Washington Univ. Med. Sch.	R. M. Choisser, M.D.	2 yrs.	12	6	Varies	None
Providence Hospital, Washington [a]		H. H. Leffler, M.D.	2 yrs.	12	4	Varies	None
Sibley Memorial Hospital, Washington [a]	American University [b]	O. B. Hunter, M.D.	2 yrs.	12	4	Quarterly	None
FLORIDA							
Florida State Hospital, Chattahoochee [a]	Florida State University [b]	E. H. Ruediger, M.D.	3 yrs.	12	5	Varies	None
St. Vincent's Hospital, Jacksonville [a]		N. A. Murray, M.D.	Degree	12	2	Varies	None
Jackson Memorial Hospital, Miami [a]		Ph. R. Rezek, M.D.	Degree	12	16	Varies	None

APPROVED SCHOOLS FOR MEDICAL TECHNOLOGISTS—Continued

Name and Location of School	College Affiliation	Pathologist in Charge	Minimum Pre-requisite College	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition
GEORGIA							
Crawford W. Long Memorial Hospital, Atlanta [a]		D. Ayer Jr., M.D.	2 yrs.	12	2	JanJune	None
Georgia Baptist Hospital, Atlanta		J. Funke, M.D.	2 yrs.	12	2	JanJune	None
Grady Memorial Hospital, Atlanta [a]	Emory University	*W. Sheldon, M.D.*	2 yrs.	12	13	Varies	None
Piedmont Hospital, Atlanta	Emory University Medical School	W. B. Mathews, M.D.	Degree	12	4	Quarterly	None
St. Joseph's Infirmary, Atlanta	Emory University Medical School	W. B. Mathews, M.D.	Degree	12	2	MarSept	None
University Hospital, Augusta [a]	Univ. of Georgia School of Medicine	E. R. Pund, M.D.	2 yrs.	12	2	Sept	$100B
Columbus City Hospital, Columbus		C. L. Blumstein, M.D.	2 yrs.	12-18	1	....	None
Emory University Hospital, Emory University	Emory University	S. Madden, M.D.	2 yrs.	13	6	Varies	None
IDAHO							
St. Luke's Hospital, Boise [a]		J. Beeman, M.D.	2 yrs.	12	4	Varies	None
ILLINOIS							
Copley Hospital, Aurora [a]	Aurora College [b]	C. C. Mason, M.D.	3 yrs.	12	3	Varies	B
St. Joseph's Hospital, Bloomington	Illinois State Normal University	B. Markowitz, M.D.	2 yrs.	12	6	Varies	$25
City of Chicago Municipal Tuberculosis Sanitarium, Chicago [a]		*H. C. Sweany, M.D.*	2 yrs.	15	16	Quarterly	B
Michael Reese Hospital, Chicago		O. Saphir, M.D.	2 yrs.	18	18	Every 2 mo.	$150
Mt. Sinai Hospital, Chicago [a]	Roosevelt College [b]	I. Davidsohn, M.D.	2 yrs.	12-18	13	Varies	$170B
Northwestern Univ. Medical School, Chicago	Northwestern University Med. Sch. [b1]	O. E. Hepler, M.D.	2 yrs.	12	12	Monthly	$50
Provident Hospital, Chicago [a]		*A. C. Webb, M.D.*	2 yrs.	12	5	Monthly	$200
St. Bernard's Hospital, Chicago [a]		C. S. Hagerty, M.D.	2 yrs.	12	8	Monthly	$200B
U. S. Marine Hospital, Chicago [a]	University of Illinois	H. Conti, M.D.	2 yrs.	12	1	Sept	None
Wesley Memorial Hospital, Chicago	Northwestern Univ. Medical School	T. C. Laipply, M.D.	2 yrs.	12	21	....	$175
Evanston Hospital, Evanston	Northwestern University	J. C. McCarter, M.D.	2 yrs.	12	4	JanJuly	$50
St. Frances Hospital, Evanston		*H. I. Brown, M.D.*	2 yrs.	12	4	*Varies*	B
Methodist Hospital of Central Illinois, Peoria [a]		D. O. Manshardt, M.D.	2 yrs.	12	3	Varies	$50B
St. Francis Hospital, Peoria [a]		*J. E. Kraus, M.D.*	2 yrs.	12	7	Sept	$100B
Rockford Memorial Hospital, Rockford		W. Bissell, M.D.	2 yrs.	12	..	July	B
St. Anthony's Hospital, Rockford [a]		A. R. K. Matthews, M.D.	2 yrs.	15	6	Varies	$25
Memorial Hospital, Springfield [a]		A. Vass, M.D.	2 yrs.	12	6	FebSept	$100
St. John's Hospital, Springfield	Quincy College [b]	H. M. Steen, M.D.	2 yrs.	12	12	Sept	$50
St. Therese's Hospital, Waukegan	DePaul University	G. J. Rukstinat, M.D.	2 yrs.	12	8	Sept	$100B
INDIANA							
St. Joseph Hospital, Fort Wayne [a]	St. Francis College [b]	S. M. Rabson, M.D.	2 yrs.	12	3	Varies	$125B
Indiana University Med. Center, Indianapolis [a]	Indiana University [b]	J. L. Arbogast, M.D.	2½ yrs.	12	12	Sept	U&B
Methodist Hospital, Indianapolis	Butler University [b]; Franklin Coll. [b]	L. H. Hoyt, M.D.	Degree	12	6	Varies	$50
St. Elizabeth's Hospital, Lafayette [a]	Michigan State College	J. M. McFadden, M.D.	2 yrs.	12	6	Oct	$100B
South Bend Medical Laboratory, South Bend		*A. S. Giordano, M.D.*	2 yrs.	*18*	2	*JanJuly*	*$125*
IOWA							
Mercy Hospital, Cedar Rapids		R. E. Weiland, M.D.	2 yrs.	12	3	JanJuly	None
St. Luke's Methodist Hospital, Cedar Rapids		R. E. Weiland, M.D.	2 yrs.	12	2	Varies	None
Mercy Hospital, Des Moines [a]		*F. C. Coleman, M.D.*	*3 yrs.*	12	2	*July*	None
St. Joseph Mercy Hospital, Dubuque [a]		E. T. Thorsness, M.D.	2 yrs.	12	4	July	None
St. Joseph Mercy Hospital, Sioux City [a]	Briar Cliff College	E. A. Fullgrabe, M.D.	2 yrs.	12	4	July	None
KANSAS							
Bethany Hospital, Kansas City		W. W. Summerville, M.D.	2 yrs.	12	6	Varies	None
Providence Hospital, Kansas City		V. B. Buhler, M.D.	2 yrs.	12	3	Varies	None
University of Kansas Hospitals, Kansas City [a]	University of Kansas	L. H. Leger, M.D.	Degree	12	24	July	None
The Lattimore Laboratories, Topeka [a]		J. L. Lattimore, M.D.	2 yrs.	12	3	JanJune	None
St. Francis Hospital, Wichita	University of Wichita [b]	C. A. Hellwig, M.D.	2 yrs.	12	10	FebSept	$150
Wichita Hospital, Wichita [a]	Sacred Heart College	L. C. Murphy, M.D.	2 yrs.	12	6	JuneSept	$150B
KENTUCKY							
Good Samaritan Hospital, Lexington [a]	University of Kentucky [b]	E. S. Maxwell, M.D.	3 yrs.	12	30	Quarterly	U&B
St. Joseph's Hospital, Lexington		E. S. Maxwell, M.D.	2 yrs.	12	4	JanSept	$150
Kentucky State Department of Health Laboratory, Louisville [a]		L. H. South, M.D.	2 yrs.	12	50	Varies	$300
Norton Memorial Infirmary, Louisville [a]		W. R. Platt, M.D.	2 yrs.	12	4	Quarterly	$150
St. Joseph's Infirmary, Louisville [a]	Nazareth College [b]	S. H. Black, M.D.	3½ yrs.	12	6	JulySept	$75
SS. Mary and Elizabeth Hospital, Louisville	Nazareth College [b]	*S. H. Black, M.D.*	2 yrs.	12	2	*Sept*	$120B
LOUISIANA							
Charity Hospital, New Orleans [a]		E. S. Moss, M.D.	Degree	12	24	Monthly	None
Mercy Hosp.-Soniat Memorial, New Orleans [a]	Loyola University [b]	G. H. Hauser, M.D.	Degree	12	10	Yearly	None
Southern Baptist Hospital, New Orleans		E. H. Lawson, M.D.	2 yrs.	12	12	Quarterly	*None*
U. S. Marine Hospital, New Orleans [a]		G. Adams, M.D.	2 yrs.	12	4	JanSept	None
T. E. Schumpert Memorial Sanit., Shreveport [a]	Northwestern State College [b]	W. P. Butler, M.D.	2 yrs.	12	6	Varies	$50
Shreveport Charity Hospital, Shreveport [a]	Northwestern State College [b]	W. R. Mathews, M.D.	2 yrs.	12	4	JanSept	None
MAINE							
Eastern Maine General Hospital, Bangor [a]	University of Maine [b]	R. C. Wadsworth, M.D.	3 yrs.	18	2	July	$150B
Central Maine General Hospital, Lewiston	Colby College [b]; Univ. of Maine [b]	J. Gottlieb, M.D.	2 yrs.	12	8	Varies	$150
Maine General Hospital, Portland		J. E. Porter, M.D.	2 yrs.	12	8	Varies	None
MARYLAND							
Mercy Hospital, Baltimore	Mount St. Agnes [b]	H. T. Collenberg, M.D.	2 yrs.	24	20	Sept	U&B
St. Joseph's Hospital, Baltimore [a]	Coll. of Notre Dame of Maryland [b]	H. L. Wollenweber, M.D.	2 yrs.	12	4	Varies	None
Union Memorial Hospital, Baltimore [a]		W. C. Merkel, M.D.	2 yrs.	12	5	AprSept	$145
MASSACHUSETTS							
Faulkner Hospital, Boston	Simmons College [b]	P. M. LeCompte, M.D.	Degree	12	2	JanSept	U
Massachusetts Memorial Hospitals, Boston [a]		C. S. Keefer, M.D.	2 yrs.	12	8	MarSept	None
New England Deaconess Hospital, Boston		S. Warren, M.D.	2 yrs.	18	4	....	None
New England Hospital for Women and Children, Boston		G. L. Muller, M.D.	2 yrs.	12	4	JulySept	B
Truesdale Hospital, Fall River [a]		W. Freeman, M.D.	2 yrs.	12	4	Quarterly	None
Holyoke Hospital, Holyoke	University of Massachusetts	W. Kaufmann, M.D.	Degree	12	6	....	None
St. Luke's Hospital, Pittsfield		E. F. Joslin, M.D.	2 yrs.	15	2	....	None
Salem Hospital, Salem		D. A. Nickerson, M.D.	Degree	12	2	July	None
Mercy Hospital, Springfield		J. Rini, M.D.	2 yrs.	12	6	Quarterly	None
Taunton State Hospital, Taunton [a]		H. N. Naumann, M.D.	2 yrs.	12	4	July	None
Tewksbury State Hospital and Infirmary, [a] Tewksbury		H. S. Glidden, M.D.	2 yrs.	12	2	Varies	None
Worcester City Hospital, Worcester		R. H. Goodale, M.D.	2 yrs.	12	6	Varies	None
Worcester State Hospital, Worcester [a]		W. Freeman, M.D.	2 yrs.	12	3	JanJuly	None
MICHIGAN							
University Hospital, Ann Arbor	University of Michigan [b]	F. H. Bethell, M.D.	3 yrs.	12	16	June	$300
Leila Y. Post Montgomery Hosp., Battle Creek		G. W. Schelm, M.D.	Degree	12	3	Varies	None
Mercy Hospital, Bay City [a]		W. G. Gamble Jr., M.D.	2 yrs.	12	3	Varies	$100

APPROVED SCHOOLS FOR MEDICAL TECHNOLOGISTS—Continued

Name and Location of School	College Affiliation	Pathologist in Charge	Minimum Prerequisite College	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition
MICHIGAN—Continued							
Chas. Godwin Jennings Hospital, Detroit [a]	Wayne University [b]	M. E. Maun, M.D.	3 yrs.	12	2	Varies	U
City of Detro Hospital, Detroit	Wayne University [b]	O. A. Brines, M.D.	3 yrs.	12	12	July	$100
Evangelical I	Wayne University [b]	M. E. Madsen, M.D.	3 yrs.	12	2	JanJuly	$100B
Grace Hospit	Wayne Univ. [b]; Mich. State Coll. [b]	C. I. Owen, M.D.	2 yrs.	12	10	Varies	None
Henry Ford	Wayne University [b]	F. W. Hartman, M.D.	Degree	18	18	Varies	None
Mt. Carmel Mercy	Mercy College [b]	L. W. Gardner, M.D.	3 yrs.	12	12	Sept	$150
Providence Hospital	Wayne University [b]	D. H. Kaump, M.D.	2 yrs.	12	12	Varies	$100
St. Mary's Hospital		M. E. Maun, M.D.	2 yrs.	12	8	July	$100
Woman's Hospital,	Wayne Univ. [b]; Mich. State Coll. [b]	D. C. Beaner, M.D.	3 yrs.	12	12	JulySept	$100
Wayne County Genera	Wayne Univ. [b]; Univ. of Detroit [b]; Michigan State College [b]	S. E. Gould, M.D.	Degree	12	8	Quarterly	None
Hurley Hospital, Flint [a]	Michigan State College [b]	R. J. Jermstad, M.D.	3 yrs.	12	7	July	None
St. Joseph Hospital, Flint [a]	Michigan State University [b]	R. J. Jermstad, M.D.	2 yrs.	12	2	July	None
Blodgett Memorial Hospital, Grand Rapids [a]	Michigan State College [b]	C. A. Payne, M.D.	2 yrs.	12	4	July	None
Butterworth Hospi		P. A. Van Pernis, M.D.	2 yrs.	12	12	July	None
St. Mary's Hospita		E. F. Ducey, M.D.	2 yrs.	12	4	FebJuly	None
Borgess Hospital,	Western Michigan College [b]; Michigan State College [b]; Nazareth College	H. R. Prentice, M.D.	2 yrs.	12	3	July	None
Bronson Methodist Hospital, Kalamazoo	Western Michigan College [b]; Michigan State College [b]	H. R. Prentice, M.D.	2 yrs.	12	5	July	B
Edward W. Sparrow Hospital, Lansing	Michigan State College [b]	C. E. Black, M.D.	3 yrs.	12	6	Varies	None
Michigan Department of Health Bureau of Laboratories, Lansing [a]	[a]	H. E. Cope, M.D.	3 yrs.	12	45	Varies	None
St. Lawrence Hospital, Lansing	Michigan State College [b]	C. E. Black, M.D.	3 yrs.	12	6	Varies	None
Port Huron Hospital, Port Huron [a]	Michigan State College [b]	W. E. B. Hall, M.D.	2 yrs.	12	2	July	None
Saginaw General Hospital, Saginaw		R. Bucklin, M.D.	2 yrs.	12	4	....	B
Wyandotte General Hospital, Wyandotte [a]		W. A. Stryker, M.D.	3 yrs.	12	2	July	$100
MINNESOTA							
St. Luke's Hospital, Duluth	Michigan State Coll.; Hamline Univ.; Duluth State Teachers' College	A. H. Wells, M.D.	2 yrs.	18	10	JanJuly	None
St. Mary's Hospital, Duluth	College of St. Scholastica [b]	W. V. Knoll, M.D.	3 yrs.	12	14	Varies	$75B
Minneapolis General Hospital, Minneapolis	University of Minnesota [b]	S. S. Barron, M.D.	Degree	12	18	Varies	None
Swedish Hospital, Minneapolis	Gustavus Adolphus College [b]	S. V. Lofsness, M.D.	2 yrs.	12	8	Varies	$125
University Hospitals, Minneapolis [a]	University of Minnesota [b]	G. T. Evans, M.D.	3 yrs.	12	60	Quarterly	U
St. Cloud Hospital, St. Cloud [a]	St. Cloud Teachers College [b]; St. Benedict's College	P. E. Stangl, M.D.	2 yrs.	18	3	Fall	None
Ancker Hospital, St. Paul	University of Minnesota [b]	J. F. Noble, M.D.	3 yrs.	12	3	July	None
Charles T. Miller Hospital, St. Paul [a]	Macalester College [b]	K. Ikeda, M.D.	3 yrs.	12	12	FebJuly	$110
MISSISSIPPI							
Mississippi Baptist Hospital, Jackson		F. G. Bratley, M.D.	2 yrs.	12	4	....	None
Mercy Hospital-Street Memorial, Vicksburg [a]	Mississippi State College [b]	R. H. Fenstermacher, M.D.	2 yrs.	12	8	Varies	B
MISSOURI							
St. Louis County Hospital, Clayton [a]	LeClerc College [b]	H. C. Allen, M.D.	2 yrs.	12	6	Varies	None
Kansas City General Hospital, Kansas City		V. B. Buhler, M.D.	2 yrs.	18	18	Monthly	None
Kansas City General Hosp. No. 2, Kansas City [a]		V. B. Buhler, M.D.	2 yrs.	18	4	Monthly	None
Menorah Hospital, Kansas City [a]		R. Koritschoner, M.D.	Degree	12	5	Quarterly	None
Research Hospital, Kansas City		H. K. B. Allebach, M.D.	2 yrs.	12	10	Varies	None
St. Joseph Hospital, Kansas City		R. W. Kerr, M.D.	Degree	12	12	Varies	B
St. Luke's Hospital, Kansas City		F. C. Helwig, M.D.	2 yrs.	15	12	Monthly	None
St. Mary's Hospital, Kansas City [a]		A. E. Upsher, M.D.	Degree	12	6	Varies	B
Barnes Hospital, St. Louis [a]	Washington Univ. School of Medicine	G. J. Dammin, M.D.	2 yrs.	12	8	Jan	$50
Firmin Desloge Hospital, St. Louis	St. Louis University [b]	G. O. Broun, M.D.	3 yrs.	12	15	Sept	$150
Homer G. Phillips Hospital, St. Louis [a]		J. A. Saxton Jr., M.D.	2 yrs.	18-24	5	Varies	None
St. Anthony's Hospital, St. Louis	Marquette University (Milwaukee) [b]	B. C. Portuondo, M.D.	3 yrs.	12	1	Varies	None
St. Louis City Hospital, St. Louis		J. A. Saxton Jr., M.D.	2 yrs.	15	8	Quarterly	None
Burge Hospital, Springfield	Drury College [b]	E. B. Hanan, M.D.	2 yrs.	12	5	June	B
MONTANA							
St. Vincent's Hospital, Billings		M. E. Martin, M.D.	3 yrs.	12	3	Varies	None
Murray Hospital, Butte [a]	University of Montana [b]; Montana State College [b]	R. F. Peterson, M.D.	3 yrs.	12	4	June	None
Columbus Hospital, Great Falls [a]	College of Great Falls [b]	C. M. Mezey, M.D.	4 yrs.	12	4	JuneSept	None
NEBRASKA							
Bryan Memori Hospital, Lincoln [a]	Nebraska Wesleyan University [b]	F. H. Tanner, M.D.	2 yrs.	12	6	Varies	B
Lincoln Gener		F. H. Tanner, M.D.	2 yrs.	12	6	Quarterly	None
St. Elizabeth		J. M. Neely, M.D.	2 yrs.	12	3	....	None
Bishop Clarkson		J. P. Tollman, M.D.	2 yrs.	12	5	Varies	$25
Creighton Memorial St. Joseph's Hosp., Omaha	Creighton University [b]	B. C. Russum, M.D.	3 yrs.	12	12	Quarterly	$100
University of Nebraska Hospital, Omaha [a]	Univ. of Nebraska College of Medicine	J. P. Tollman, M.D.	2 yrs.	12	8	Varies	$75
NEVADA							
St. Mary's Hospital, Reno	University of Nevada [b]	L. Parsons, M.D.	3 yrs.	18	2	JanJuly	None
[illegible]							
Concor		J. Park, M.D.	2 yrs.	12	4	Varies	None
Mary	Colby Junior College [b]	R. E. Miller, M.D.	2 yrs.	12	8	Quarterly	B
Elliot		S. M. Brooks, M.D.	2 yrs.	12	2	July	B
Notre Dame Hospital,		R. E. Biron, M.D.	2 yrs.	15	2	JanJuly	$100
NEW JERSEY							
Newark Beth Israel Hospital, Newark [a]	Newark University [b]	L. M. Goldman, M.D.	2 yrs.	12	10	Varies	$20
Newark City Hospital, Newark [a]	New York University [b]	H. S. Martland, M.D.	3 yrs.	12	2	June	U&B
Presbyterian Hospital, Newark [a]	Rutgers University [b]	S. A. Goldberg, M.D.	2 yrs.	12	4	Sept	B
St. Michael's Hospital, Newark [a]	Seton Hall College	S. J. Rose, M.D.	2 yrs.	15	2	JanJuly	$100
Mercer Hospital, Trenton		T. K. Rathmell, M.D.	2 yrs.	18	3	....	$150
NEW YORK							
Bender Hygienic Laboratory, Albany [a]	Union University	J. J. Clemmer, M.D.	2 yrs.	18	15	Sept	$200
Binghamton City Hospital, Binghamton [a]		V. W. Bergstrom, M.D.	2 yrs.	12	3	Varies	$100
Jewish Hos		D. M. Grayzel, M.D.	4 yrs.	18	6	Quarterly	None
Prospect H		S. H. Polayes, M.D.	2 yrs.	12	3	Varies	None
St. Mary's		W. Moltrier Jr., M.D.	2 yrs.	12	5	Mar Sept	B
Buffalo General	University of Buffalo [b]	S. L. Vaughan, M.D.	2 yrs.	12	26	Varies	$50
Edward J. Meyer Memorial Hospital, Buffalo	University of Buffalo [b]	D. K. Miller, M.D.	2 yrs.	12	10	Monthly	None
Arnot-Ogden Memorial Hospital, Elmira [a]		S. E. Cohen, M.D.	2 yrs.	12	4	Varies	None
St. Joseph's Hospital, Elmira [a]	Nazareth College [b]	L. Weiss, M.D.	2 yrs.	12	5	JuneSept	$100
Meadowbrook Hospital, Hempstead [a]	Adelphi College [b]	T. J. Curphey, M.D.	2 yrs.	18	3	Varies	None

APPROVED SCHOOLS FOR MEDICAL TECHNOLOGISTS—Continued

Name and Location of School	College Affiliation	Pathologist in Charge	Minimum Prerequisite College	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition
NEW YORK—Continued							
Mary Immaculate Hospital, Jamaica [a]		M. Bevilacqua, M.D.	Degree	16	5	*October*	*B*
St. [illegible] Hospital, Long Isl[illegible]		J. Werne, M.D.	Degree	12-24	3	JanJuly	None
Montefiore [illegible] York Cit[illegible]	New York University [b]	S. H. Rosen, M.D.	3 yrs.	12	2	June	U
Rochester [illegible]		M. G. Bahrod, M.D.	Degree	18	12	Varies	$100
St. Mary's [illegible]		S. M. Bouton, M.D.	Degree	12	4	Varies	None
Ellis Hospital, [illegible]		E. Kellert, M.D.	2 yrs.	12-18	8	Varies	$100
U. S. Marine Hospital, Staten Island [a]	Wagner Memorial Lutheran College [b]	L. H. Sophian, M.D.	3½ yrs.	12	6	Quarterly	B
Samaritan Hospital, Troy [a]	Russell Sage College [b]	G. H. Klinck Jr., M.D.	2 yrs.	12	3	Sept	U
Grasslands Hospital, Valhalla [a]	New York University [b]	S. Gross, M.D.	3 yrs.	12	2	July	None
NORTH CAROLINA							
Charlotte Memorial Hospital, Charlotte	Queens College [b]	P. Kimmelstiel, M.D.	2 yrs.	12	5	July	B
Duke Hospital, Durham [a]	Duke University [b]	D. S. Martin, M.D.	2 yrs.	18	40	Sept	B
Watts Hospital, Durham [a]	University of North Carolina	*J. U. Gunter, M.D.*	2 yrs.	12	*8*	*JanJuly*	$50
North Carolina Baptist Hosp., Winston-Salem [a]	Salem College [b]; Wake Forrest Coll. [b]	C. C. Carpenter, M.D.	2 yrs.	12	12	October	$75
NORTH DAKOTA							
St. Alexius Hospital, Bismarck		L. W. Larson, M.D.	2 yrs.	12	6	....	B
Grand Forks Deaconess Hospital, Grand Forks	University of North Dakota	A. K. Saiki, M.D.	2 yrs.	12	6	....	None
Trinity Hospital, Minot [a]	Minot State Teachers College	*P. J. Breslich, M.D.*	2 yrs.	12	5	Sept	None
OHIO							
Children's Hospital, Akron [a]		M. R. Baker, M.D.	2 yrs.	12	2	JanJuly	None
City Hospital, Akron [a]		L. Catron, M.D.	2 yrs.	12	7	Varies	None
Peoples H[illegible]		G. R. Dochat, M.D.	2 yrs.	12	5	July	B
St. Thom[illegible]		G. G. Proskauer, M.D.	2 yrs.	12	4	....	$100
Aultman [illegible]		D. G. Henderson, M.D.	2 yrs.	12-15	3	July	None
Bethesda [illegible]	Universit[illegible]	E. A. Gall, M.D.	3 yrs.	12	1	Varies	U
Christ Ho[illegible]	Universit[illegible]	J. W. Leichliter, M.D.	3 yrs.	12	4	Varies	U
Good Sa[illegible]	Coll. of Mt. St. Joseph on-the-Ohio [b]	W. M. Germain, M.D.	3 yrs.	12	5	Sept	$300
The Jewish Hospital, [illegible]	University of Cincinnati	P. Wasserman, M.D.	2 yrs.	12	4	Varies	$125
Mt. Sinai Hospital, Cleveland	Flora Stone Mather Coll. [b]; Western Reserve University	B. S. Kline, M.D.	2 yrs.	12	12	Varies	$100
[illegible] [a]	Flora Stone Mather College [b]	H. Z. Lund, M.D.	2 yrs.	12	19	Varies	$100
[illegible] [a]	Ohio University [b]	H. B. Davidson, M.D.	2 yrs.	12	12	Monthly	None
[illegible], Columbus [a]	Ohio State University [b]	H. L. Reinhart, M.D.	3 yrs.	12	30	Quarterly	U
[illegible]	University of Dayton [b]	M. Oosting, M.D.	2 yrs.	12	5	July	None
[illegible] [a]	University of Dayton [b]	W. Abramson, M.D.	2 yrs.	12	4	JanJune	U
[illegible]veland [a]	Cleveland College [b]	E. Goodsitt, M.D.	2 yrs.	12	12	JanJuly	$50
Lakewood [illegible]	Baldwin Wallace [b]	O. Eitzen, M.D.	2 yrs.	12	8	Varies	$100
Springfield City [illegible]		M. P. Hunter, M.D.	2 yrs.	12	5	Sept	B
Mercy Hospital, [illegible]		J. B. Rucker, M.D.	2 yrs.	12	3	JuneOct	None
Riverside Hospit[illegible]	[illegible]	S. S. Hindman, M.D.	Degree	12-24	..	....	....
St. Vinc[illegible]	University of Toledo [b]	T. L. Ramsey, M.D.	3 yrs.	12	8	Varies	None
Toledo [illegible]	University of Toledo [b]	B. Steinberg, M.D.	3 yrs.	12	8	FebSept	$75B
Youngst[illegible]		H. K. Giffen, M.D.	2 yrs.	12	10	October	$50
OKLAHOMA							
St. Anthony's Hospital, Oklahoma City	Univ. of Oklahoma Agricultural and Mechanical College [b]	H. Jeter, M.D.	Degree	12	8	Varies	None
University Hospitals, Oklahoma City [a]	Univ. of Oklahoma School of Med.	*B. Halpert, M.D.*	*Degree*	12	*6*	*Varies*	None
Wesley Hospital, Oklahoma City		W. F. Keller, M.D.	Degree	12	3	Varies	None
St. John's Hospital, Tulsa [a]	University of Tulsa	E. E. Palik, M.D.	Degree	12	8	Varies	None
OREGON							
Sacred Heart [illegible]		E. D. Furrer, M.D.	2 yrs.	12	4	Varies	None
Emanuel Hos[illegible]		H. H. Foskett, M.D.	2 yrs.	12	2	Varies	B
Good Samarit[illegible]		C. H. Manlove, M.D.	2 yrs.	12	4	Varies	None
Portland Sanitarium and Hosp[illegible]	University of Oregon Med. School	W. C. Hunter, M.D.	2 yrs.	12	2	Varies	None
St. Vincent's Hospital, Portland [a]		F. P. Menne, M.D.	Degree	12	5	Sept	$185
University of Oregon Medical School Hospitals and Clinics, Portland [a]	University of Oregon Med. School	R. D. Grondahl, M.D.	2 yrs.	12	14	Varies	None
PENNSYLVANIA							
Abington Memorial Hospital, Abington [a]		J. Eiman, M.D.	2 yrs.	18	8	Varies	None
Allentown Hospital, Allentown	Cedar Crest College [b]; Moravian College for Women [b]	J. J. Wenner, M.D.	2 yrs.	12	3	June	$75
Sacred Heart Hospital, Allentown [a]	Cedar Crest College [b]; Moravian College for Women [b]	D. E. Stader, M.D.	3 yrs.	12	6	JuneSept	$30
St. Luke's *Hospital*, Bethlehem	Moravian College for Women [b]	H. A. Rothrock, M.D.	2 yrs.	12	4	*July*	$100
Bryn Mawr Hospital, Bryn Mawr [a]		M. M. Strumia, M.D.	2 yrs.	15	4	Quarterly	$125
Geo. F. Geisinger Memorial Hospital, Danville	Bucknell University [b]	H. F. Hunt, M.D.	2 yrs.	12	6	FebJuly	....
Fitzgerald-Mercy Hospital, Darby		A. *Valdes-Dapena*, M.D.	2 yrs.	12	4	Varies	B
Easton [illegible]	Moravian College for Women [b]	F. O. Zillessen, M.D.	2 yrs.	12	3	JulySept	None
St. Vinc[illegible]		K. L. Burt, M.D.	2 yrs.	12	5	July	None
Harrisb[illegible]		G. R. Moffitt, M.D.	2 yrs.	12	10	Varies	None
Harrisb[illegible]		J. S. Forrester, M.D.	2 yrs.	12	4	July	$100
Hazleton [illegible]	Penn. State College; Hazleton Undergraduate Center	J. Foldes, M.D.	2 yrs.	12	6	FebSept	B
Mercy Hospital, Johnstown [a]	Mt. Aloysius Junior College	B. J. McCloskey, M.D.	2 yrs.	12	4	June	None
Nesbitt Memorial Hospital, Kingston [a]		T. Baker, M.D.	2 yrs.	12	3	June	None
St. Joseph's Hospital, Lancaster		E. E. Ziegler, M.D.	2 yrs.	12	4	Monthly	B
Germantown Dispensary and Hosp., Philadelphia		F. B. Lynch Jr., M.D.	2 yrs.	12	5	FebSept	$200
Hahnemann Hospital, Philadelphia	Hahnemann Medical College	J. E. Gregory, M.D.	2 yrs.	24	24	....	$100
Jefferson Medical College Hospital, Philadelphia	Jefferson Medical College	C. J. Bucher, M.D.	2 yrs.	18	12	MarSept	$100B
Jewish Hospital, Philadelphia [a]		C. Weiss, M.D.	2 yrs.	12	6	Quarterly	$100
Lankenau Hospital, Philadelphia		C. E. Brown, M.D.	2 yrs.	12	4	Sept	$100
Mt. Sinai Hospital, Philadelphia	Hahnemann Medical College	D. R. Meranze, M.D.	2 yrs.	18	3	Varies	$150B
Pennsylvania Hospital, Philadelphia [a]		A. R. Crane, M.D.	2 yrs.	12	15	Monthly	$100
Pepper Laboratory of Clinical Medicine, University of Pennsylvani[illegible]	University of Pennsylvania	J. H. Austin, M.D.	2 yrs.	18	4	Varies	$150
Philadelphia General [illegible]	Pennsylvania State College	J. H. Clark, M.D.	2 yrs.	12	8	Varies	None
Presbyterian Hospital, [illegible]	University of Pennsylvania	R. P. Custer, M.D.	2 yrs.	18′	3	....	$150
St. Agnes Hospital, Philadelphia		J. Stasney, M.D.	2 yrs.	12	6	Quarterly	B
St. Joseph's Hospital, Philadelphia [a]		J. Stasney, M.D.	2 yrs.	12	4	FebSept	$120B
Temple University Hospital, Philadelphia [a]	Temple University [b]	E. H. Valentine, M.D.	2 yrs.	21	20	JulySept	$100
Montefiore Hospital, Pittsburgh [a]		K. Y. Yardumian, M.D.	2 yrs.	12	8	Varies	$100B
Pottsville Hospital, *Pottsville* [a]		*R.* E. Hobbs, M.D.	2 yrs.	12	3	Varies	None

APPROVED SCHOOLS FOR MEDICAL TECHNOLOGISTS—Continued

Name and Location of School	College Affiliation	Pathologist in Charge	Minimum Prerequisite College	Length of Training in Months	Maximum Enrolment	Classes Begin	Tuition
PENNSYLVANIA—Continued							
Community General Hospital, Reading [a]		H. S. Cook, M.D.	2 yrs.	18	2	Varies	None
Reading Hospital, Reading	Albright College [b]	W. P. Jennings, M.D.	2 yrs.	12	4	Sept	$150
St. Joseph's Hospital, Reading		G. P. Desjardins, M.D.	2 yrs.	12	4	Varies	$150
Robert Packer Hospital, Sayre [a]	Elmira College for Women	C. H. DeWan, M.D.	2 yrs.	12	3	July	None
Moses Taylor Hospital, Scranton		C. L. Mattas, M.D.	2 yrs.	12	4	JulySept	None
Scranton State Hospital, Scranton [a]		E. P. Swartz, M.D.	2 yrs.	18	5	Varies	None
Wilkes-Barre General Hospital, Wilkes-Barre [a]		C. R. Tuthill, M.D.	2 yrs.	12	4	Sept	B
Williamsport Hospital, Williamsport [a]	Bucknell University [b]	M. G. Colvin, M.D.	2 yrs.	12	3	Varies	None
SOUTH CAROLINA							
Medical College of the State of South Carolina, Charleston [a]		D. W. Ellis, M.D.	2 yrs.	15	20	Varies	B
SOUTH DAKOTA							
McKennan Hospital, Sioux Falls [a]	University of South Dakota [b]	E. Pekelis, M.D.	2 yrs.	12	4	FebSept	$70B
Sioux Valley Hospital, Sioux Falls [a]	University of South Dakota [b]	A. M. Harris, M.D.	3 yrs.	12	8	Sept	$70B
Sacred Heart Hospital, Yankton	University of South Dakota	J. C. Ohlmacher, M.D.	2 yrs.	12	4	....	$84B
TENNESSEE							
Knoxville General Hospital, Knoxville		R. H. Monger, M.D.	2 yrs.	12	4	JanJuly	B
John Gaston Hospital, Memphis [a]	Univ. of Tennessee Coll. of Med. [b]	D. H. Sprunt, M.D.	2 yrs.	15	8	MarSept	$256
Methodist Hospital, Memphis	Univ. of Tennessee Coll. of Med.	W. W. Tribby, M.D.	2 yrs.	21	7	Quarterly	$100
St. Joseph's Hospital, Memphis [a]		T. C. Moss, M.D.	2 yrs.	15	10	Quarterly	B
Geo. W. Hubbard Hospital, Nashville [a]	Tennessee A. & I. State College [b]	G. D. Holloway, M.D.	2 yrs.	21	12	Yearly	$250
Nashville General Hospital, Nashville [a]		W. A. DeMonbreun, M.D.	2 yrs.	12	5	Varies	None
TEXAS							
Brackenridge Hospital, Austin [a]		S. W. Bohls, M.D.	2 yrs.	12	2	FallSpring	None
Hotel Dieu Hospital, Beaumont	Lamar College	E. D. Furey, M.D.	2 yrs.	18	4	JanSept	B
St. Therese Hospital, Beaumont [a]	Lamar Junior College	H. B. Williford, M.D.	2 yrs.	18	2	FebSept	B
Baylor University Hospital, Dallas	Baylor University [b]	J. M. Hill, M.D.	2 yrs.	13	18	FebJuly	$100
St. Paul's Hospital, Dallas		J. L. Goforth, M.D.	2 yrs.	12	4	....	None
Harris Memorial Methodist Hosp., Ft. Worth [a]	Texas Christian University [b]	J. J. Andujar, M. D.	3 yrs.	12	10	Sept	U
Terrell's Laboratories, Ft. Worth [a]	North Texas State Teachers College [b]	T. C. Terrell, M.D.	3 yrs.	12	5	FebJuly	None
John Sealy Hospital, Galveston [a]	University of Texas School of Med.	W. C. Lenin, M.D.	2 yrs.	12	14	Monthly	$122B
Jefferson Davis Hospital, Houston [a]	University of Houston [b]	W. W. Coulter Sr., M.D.	2 yrs.	12	12	Monthly	$50
Methodist Hospital, Houston	Baylor University	H. Davenport Jr., M.D.	2 yrs.	12	4	JanJuly	None
St. Joseph's Infirmary, Houston		S. Knittel, M.D.	2 yrs.	12	4	JuneSept	None
St. Mary's Hospital, Port Arthur [a]	Northwestern State College [b]	H. B. Williford, M.D.	2 yrs.	12	4	JuneSept	None
Med. and Surg. Memorial Hosp., San Antonio [a]		A. O. Severance, M.D.	2 yrs.	12	6	Varies	None
Santa Rosa Hospital, San Antonio		J. M. Moore, M.D.	2 yrs.	12	9	Quarterly	None
Scott and White Hospital, Temple		W. N. Powell, M.D.	2 yrs.	12	10	Varies	None
UTAH							
St. Benedict's Hospital, Ogden	Univ. of Utah; Loretto Heights Coll.	R. C. Ellis, M.D.	2 yrs.	12	4	....	$75B
Thomas D. Dee Memorial Hospital, Ogden [a]	University of Utah [b]	E. D. Zeman, M.D.	3 yrs.	12	4	JanJune	U
Dr. W. W. Groves Latter-Day Saints Hospital, Salt Lake City [a]		J. H. Carlquist, M.D.	2 yrs.	12	3	JanJuly	None
Holy Cross Hospital, Salt Lake City [a]		C. McNeil, M.D.	Degree	12	4	July	None
St. Mark's Hospital, Salt Lake City [a]	Brigham Young University [b]	O. A. Ogilvie, M.D.	3 yrs.	12	4	JuneSept	None
Salt Lake County Gen. Hosp., Salt Lake City [a]	University of Utah [b]	F. D. Gunn, M.D.	Degree	12	8	Varies	U
VERMONT							
University of Vermont College of Medicine, Burlington [a]	University of Vermont [b]	B. Pearson, M.D.	3 yrs.	15	8	Yearly	$117
VIRGINIA							
University of Virginia Hosp., Charlottesville [a]		W. E. Bray, M.D.	2 yrs.	12	12	Sept	B
DePaul Hospital, Norfolk [a]	Richmond Professional Institute [b]	A. F. Strauss, M.D.	2 yrs.	18	9	Quarterly	$90B
Norfolk General Hospital, Norfolk [a]		I. J. Motyca, M.D.	2 yrs.	15	5	Quarterly	$10B
Johnston-Willis Hospital, Norfolk [a]		W. A. Shepherd, M.D.	2 yrs.	12	2	....	$100
Medical College of Virginia Hospital Division, Richmond	Medical College of Virginia	G. Z. Williams, M.D.	2 yrs.	16	16	Varies	$200B
Stuart Circle Hospital, Richmond	Richmond Professional Institute [b]	R. C. Beck, M.D.	2 yrs.	12	4	JuneSept	B
WASHINGTON							
King County Hospital, Seattle		C. R. Jensen, M.D.	2 yrs.	12	8	Varies	None
Providence Hospital, Seattle	Seattle College [b]	D. G. Mason, M.D.	2 yrs.	12	4	Quarterly	B
Deaconess Hospital, Spokane [a]	University of Idaho [b]	G. A. C. Snyder, M.D.	2 yrs.	12	4	Varies	None
Sacred Heart Hospital, Spokane [a]		M. M. Patton, M.D.	2 yrs.	12	6	MarJuly	None
St. Luke's Hospital, Spokane [a]	Univ. of Idaho [b]; Montana State Coll. [b]; State College of Washington [b]	O. O. Christianson, M.D.	2 yrs.	12	12	FebSept	$10
St. Joseph's Hospital, Tacoma [a]	Seattle College [b]	G. R. McCall, M.D.	2 yrs.	12	3	FebSept	None
Tacoma General Hospital, Tacoma [a]	Pacific Lutheran College [b]; College of Puget Sound [b]	C. P. Larson, M.D.	2 yrs.	12	6	Varies	None
WEST VIRGINIA							
School of Med., West Va. Univ., Morgantown [a]	West Virginia University [b]	W. G. Putschar, M.D.	3 yrs.	12	8	JulySept	$150B
Camden-Clark Memorial Hospital, Parkersburg	Mariette College	W. S. Dick, M.D.	2 yrs.	12	2	....	None
WISCONSIN							
St. Francis Hospital, LaCrosse		O. Kanner, M.D.	2 yrs.	12	6	FebSept	$100B
Madison General Hospital, Madison		L. McGary, M.D.	2 yrs.	12	5	October	None
St. Mary's Hospital, Madison [a]	Mount Mary College [b]	L. F. Bleyer, M.D.	2 yrs.	12	10	Varies	B
State of Wisconsin General Hospital, Madison	University of Wisconsin [b]	W. D. Stovall, M.D.	3 yrs.	12	20	Varies	U
Columbia Hospital, Milwaukee	Marquette University [b]	G. Ritchie, M.D.	2 yrs.	18	6	JanJuly	None
Milwaukee County Hospital, Milwaukee [a]	Marquette University [b]	J. F. Kuzma, M.D.	2 yrs.	21	8	June	None
Milwaukee Hospital, Milwaukee [a]		E. A. Birge, M.D.	2 yrs.	12	5	July	None
Mt. Sinai Hospital, Milwaukee [a]		N. Enzer, M.D.	2 yrs.	24	2	Varies	None
St. Joseph's Hospital, Milwaukee	Marquette University [b]	W. A. D. Anderson, M.D.	2 yrs.	18	6	JuneOct	None
St. Mary's Hospital, Racine		G. A. Walker, M.D.	2 yrs.	12	2	Varies	$50
WYOMING							
Memorial Hospital, Cheyenne	University of Wyoming [b]	S. S. Zuckerman, M.D.	2 yrs.	12	6	AprSept	$175
PUERTO RICO							
School of Tropical Medicine, University of Puerto Rico, San Juan [a]	University of Puerto Rico [b]	O. C. Mandry, M.D.	Degree	12	20	August	$150B

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a. Male students are admitted.

b. College credit received during hospital training.

1. Students enrolled in twenty-month course leading to M.S. degree obtain thirty-six quarter hours credit; entrance requirements—B.S. degree; tuition, $100. Students enrolled in twelve-month course are allowed six quarter hours credit and receive a certificate.

2. College credit allowed by each of the following affiliations: Albion College, Central Michigan College of Education, Michigan College of Mining and Technology, Michigan State College, University of Michigan, and Western Michigan College of Education.

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SATURDAY, AUGUST 14, 1948

EDITORIAL ANNOUNCEMENT

The compositors returned to work on Monday, June 28. This issue of The Journal has been prepared in part by the use of Vari-Typer machines.

HOSPITAL SERVICE IN THE UNITED STATES

Elsewhere in this issue is the 1947 hospital report of the Council on Medical Education and Hospitals which reveals an increase in hospital service during the past year in spite of a decrease in total bed capacity. For all registered hospitals the bed capacity decreased in 1947 to 1,425,222 from 1,468,714 in 1946; the average daily census also decreased from 1,239,454 to 1,217,229 during the same period. However, the number of patients admitted increased from 15,153,452 in 1946 to 15,829,514 in 1947. This apparent discrepancy is clarified when the average length of stay per patient in general hospitals is considered. In 1946 the average patient remained 12.9 days in a general hospital; in 1947 he was discharged after 11.4 days, a gain to the patient of a day and a half. The decrease in total bed capacity is accounted for entirely in the governmental group, federal hospitals alone reporting 51,282 beds less than last year. Nongovernmental hospitals, on the other hand, increased their number of beds by 9,037. With admissions to the governmental hospitals decreasing by nearly 394,000, admissions to civilian hospitals increased by over 1,000,000 for the second consecutive year. Births in hospitals registered by the American Medical Association passed the two million mark for the first time in 1946; during the current reporting period, births in these hospitals reached the still higher figure of 2,837,139.

The increase in the number of admissions was noted in all types of hospitals, with the exception of tuberculosis hospitals, convalescent hospitals and those classified as "institutions." Admissions to tuberculosis sanatoriums remained quite constant, with 99,741 admitted in 1946 and 99,080 in 1947. General hospitals contributed the largest share of the increased admissions, adding more than 600,000 to the previous year's figures; furthermore, 97 per cent of the births reported occurred in general hospitals.

Hospitals for nervous and mental diseases still account for more than half of the number of patients occupying hospital beds; in 1947, of an average census of 1,217,229 patients, 53.5 per cent were in hospitals of this type. General hospitals contributed 37.5 per cent of the total, while all other hospitals and related institutions made up the remaining 9 per cent. Beds in neuropsychiatric hospitals increased by about 6,000, while the capacity in general hospitals decreased by about 50,000.

It could perhaps have been anticipated that the percentage of beds occupied would rise; a slight increase, 1 per cent, was reported for all types. In the general hospital group, however, to which 92 per cent of patients was admitted, an actual decrease occurred, from 80.6 per cent in 1946 to 78.9 per cent in 1947. The over-all figure of 85.4 per cent occupancy for all hospitals represents an upper limit beyond which efficient administration would seem improbable. A safety factor of 15 per cent vacancy is considered minimal for expeditious handling of the patient load; a lower margin would undoubtedly mean protracted delays and lessened efficiency in admissions and patient control.

While the primary purpose of the modern hospital is to provide adequate facilities for the care and treatment of the sick, an increasingly important function is the hospital's role as an educational institution. The magnitude of the teaching program is evident in the number of hospitals offering training; 807 hospitals, primarily general, have approved intern programs, and 1,102 are approved for residency training. Nursing schools now number 1,212, with an additional 193 offering affiliating courses only. There are currently 12 technical schools approved for training medical record librarians, 25 schools for training technicians in physical therapy, 25 for technicians in occupational therapy, 211 schools for x-ray technicians and 337 engaged in training medical technologists. The conduct of these programs for training physicians, nurses and technical personnel involves a considerable expenditure of funds and a great many hours of time and effort from the hospitals participating. Nevertheless, the continued cooperation of these hospitals is essential in providing trained personnel to meet the ever increasing demand for more and better professional service.

INTERNSHIPS AND RESIDENCIES

Data published in the Internship and Residency Number of The Journal, May 1, make it apparent that the point is being reached in graduate training beyond which further expansion of facilities is probably not desirable. In hospitals approved for intern training, the number of positions available already exceed the number of applicants by 30 per cent. More than 12 per cent of approved hospitals were unable to fill any of their positions during the past year, with an additional 13 per cent having less than half the number of interns desired. Hospitals now approved for residency training are well able to accommodate future graduates, in most, if not all, of the specialties. While the number of approved residencies has increased threefold since prewar years, the number of applicants apparently is gradually decreasing. The majority of physicians who sought residencies after their release from military service have completed their training or will do so during the next year. Furthermore, the interest in specialty training among medical students is believed to be lessening. Can it then be assumed that the saturation point in training facilities of this type has been reached and that a further increase will probably result in the same problems now confronting hospitals approved for intern training?

The Council on Medical Education and Hospitals believes that approval should be extended to any hospital able to meet its educational requirements without any attempt to limit the number so designated; however, the responsibility of the Council to graduate physicians accepting appointments in approved hospitals requires critical evaluation in approving new hospitals and in reviewing those previously approved. Reevaluation of these programs has been accomplished in several of the specialties, in collaboration with the American Boards, and at an early date it will be done with the other specialties as well as in the intern field. Some hospitals where the survey revealed that the type of training had fallen below the required standard have completely reorganized their teaching programs; some have affiliated with other hospitals offering a more complete plan of training, and some programs have been discontinued. Similar changes probably will be made in the other residency fields and in hospitals approved for intern training.

Under the exigencies of the war period, ideal standards could not be maintained. However, those mitigating circumstances no longer exist and hospitals should have been able, by this time, to develop educational programs in accordance with acceptable standards. Those which fail to meet such requirements will not be able to attract their quota of interns or residents and will require reevaluation. Adequacy of supervision, qualifications of the house staff, adequacy of clinical material and sufficient necropsy material are basic criteria and cannot be overlooked in considering a hospital's ability to carry out an intern or residency program.

At this point, hospitals expecting to attract applicants and maintain an approved status must have reconverted to justify continued participation in training the future physician.

Current Comment

TECHNICAL PERSONNEL

The need for more technical personnel in hospitals, clinics and physicians' offices continues and in some quarters has been termed "critical." The relation between the number of admissions to hospitals and the requirement for full time trained technicians has been demonstrated by statistical comparison. Most hospitals, and many with greatly increased facilities through new construction, are operating at capacity. The present general tendency toward shorter periods of convalescence in hospitals has permitted a greater turnover of patients than in the past. Progressive advances in therapy, new methods of treatment and rehabilitation have created new demands for technical personnel. These demands have been further augmented by the increased needs of government hospitals, particularly those of the Veterans Administration. Federal agencies that are interested in maintaining adequate standards in the training of technical personnel share the general concern over the shortages and are actively engaged in measures designed to increase enrolment and encourage the development of new schools. The number of technical schools approved by the Council on Medical Education and Hospitals and the number of graduates from these schools have increased each year, but are still insufficient to meet current needs. The present lists of approved technical schools include seven new schools of occupational therapy, forty-four schools for clinical laboratory technicians and fifty new schools for x-ray technicians. Schools for physical therapists and for medical record librarians have not increased proportionately. The solution of the problem lies in increasing enrolment in presently approved schools to acceptable capacity and in the development of new schools by those universities, colleges and hospitals that can provide adequate facilities and qualified teaching personnel. These should be developed in accordance with the essentials for approval as outlined by the Council on Medical Education and Hospitals.

AGAIN THOSE SELECTIVE SERVICE STATISTICS

The report of the Brookings Institution on compulsory health insurance concludes that ". . . [Selective Service statistics] are unreliable as a measure of the health of the nation and cannot be used to show the extent of the medical needs of the country as a whole." This conclusion is based on certain characteristics of the draft data previously noted by Dr. Maurice H. Friedman in his testimony before the Senate Committee on Labor and Public Welfare. The arguments presented in the Brookings report are undeniably valid when applied to rejection rates; possibly data on the prevalence of recorded defects may be of some value as a guide to improvement if used with caution. In the May 1948 issue of the *Connecticut Health Bulletin,* William Haenszel and Edwin T. Tracy of the Bureau of Vital Statistics use Selective Service prevalence rates as a basis for estimating the incidence of certain defects in Connecticut. The Selective Service medical statistics bulletins do not contain data on prevalence of recorded defects by states; consequently, the prevalence rates for Connecticut were calculated by adjusting the national prevalence by the ratio of rejections reported for the nation and the state. The validity of this procedure rests on the assumption that the national rejection-prevalence index holds for the state, which would not be true if standards or the application of standards varied in different areas. National-state rejection ratios were computed for the period April 1942-December 1943; national prevalence rates for the same period were used except in the case of minor defects which were more completely recorded from November 1940 to September 1941. In 2 cases the resulting estimates of the incidence of defects among white men aged 20 to 34 in Connecticut could be checked against corresponding data from other sources. The method used in the article yielded a rate of 6.6 per thousand for syphilis as compared to 6.1 reported by the United States Public Health Service, while the estimated tuberculosis rate of 10.5 was in close agreement with the results of studies by the Tuberculosis Commission. Connecticut draftees were apparently above the national averages as to eyes, teeth and tuberculosis but inferior specimens of young manhood as to mental diseases and possibly ear defects. Although the apparent accuracy of two estimates does not establish the validity of their method, Haenszel and Tracy recommend their tables for use by public health workers in Connecticut pending the publication of more precise data. They suggest that the utility of selective service material could be increased by the inclusion of data on the incidence of defects by states, the revision of figures to relate to individuals rather than to examinations and an exposition of changes in procedures and standards and their effects on rejection and prevalence rates. If these suggestions were followed and if the data were used with an awareness of their limitations, Selective Service statistics might yet prove to be of practical as well as propaganda value.

CALCIUM-ENRICHED MEAT

McQuarrie and associates[1] of the University of Minnesota, compared the nutritional value of calcium-enriched ground beef with that of milk from the point of view of utilization of calcium, phosphorus and protein. By various additions the two diets were adjusted to contain the same quantities of protein, fat, carbohydrate, water, calcium, phosphorus and vitamins. Young litter-mate rats about 35 days of age were divided into two dietary groups, one receiving milk, the other cooked lean meat enriched with calcium gluconate and phosphates. The animals were maintained on these diets for six weeks. At the end of this period the animals were decapitated twenty-four hours after all food had been removed from their cages. Pooled blood samples were analyzed for calcium, phosphorus and serum protein. The femurs of half of the rats were weighed and analyzed. The entire carcass of each of the remaining rats was analyzed for calcium, phosphorus and total fat-free dry weight. The serum protein, calcium and phosphorus levels at the end of the experiment did not show significant differences attributable to differences in diet. All values were well within normal range. The data thus indicate clearly that the calcium-supplemented meat diet to supply calcium, phosphorus and protein was as good as milk. This conclusion was confirmed on 2 hospital patients, aged 12 and 14 years, who were placed on a milk-containing diet for fifteen days followed by a calcium-enriched meat diet for a similar period of time.

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[1] McQuarrie, I.; Ziegler, M., and Moore, I. H.: Proc. Soc. Exper. Biol. & Med. **65**: 120, 1947.

RAW VERSUS AUTOCLAVED SOY BEAN PROTEIN

In 1917 Osborne and Mendel[1] noted that rats fed raw soy bean flour grew more slowly than control rats fed the same flour after autoclaving. Subsequently, Ham and Sandstedt[2] offered an explanation for this nutritional difference, in their isolation of a trypsin-inhibiting substance from unheated soy bean flour. They found that this trypsin inhibitor had a retarding effect on the normal growth of chicks, presumably by reducing proteolytic activity in the small intestines. Bowman[3] demonstrated its in vitro inhibition on tryptic digestion of casein: Kunitz[4] afterward succeeded in isolating the soy bean tryptic inhibitor in crystalline form. Because of the widespread use of soy bean flour as human food, Lewis and Taylor[5] of the department of medicine, Harvard University, have compared the utilization of raw and autoclaved soy bean flours in man. Two cooperative and well-nourished patients were selected. Both were allowed unrestricted activity about the wards. Their caloric requirements were estimated at 2,500 calories. A basic diet was therefore planned to afford 2,500 calories daily. This diet provided a low protein intake of 25 Gm. from mixed sources.

After an initial period of eight days during which the subjects received only the basic diet, 188 Gm. of raw soy bean flour containing 75 Gm. of protein was substituted for an equal caloric value of carbohydrate in the basic diet. After a nine day period on raw soy bean flour the subjects were returned to the basic diet for six days. This was followed by another nine day period during which the subjects received 188 Gm. of soy bean flour previously autoclaved for one hour at 15 pounds pressure. Nitrogen balance and body weights were followed throughout the study. The average daily nitrogen retention of the 2 patients was 5.4 Gm. on the raw soy bean flour and 6.95 Gm. on the autoclaved flour. This indicates a 20 per cent nutritional superiority for the autoclaved material. The 2 patients showed an average daily stool nitrogen of 1.45 Gm. during both periods. The difference in the nutritional value of the raw and autoclaved material is therefore apparently not due to a difference in tryptic digestibility (trypsin inhibitor), but is presumably due to a difference in the metabolic availability of the resulting digestive products.

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[1] Osborne, T. B., and Mendel, L. B.: J. Biol. Chem. **32**: 369, 1917.
[2] Ham, W. E., and Sandstedt, R. M.: J. Biol. Chem. **154**: 505, 1944.
[3] Bowman, D. E.: Proc. Soc. Exper. Biol. & Med. **57**: 139, 1944.
[4] Kunitz, M.: J. Gen. Physiol. **29**: 149, 1946.
[5] Lewis, J. H., and Taylor, T. H. L.: Proc. Soc. Exper. Biol. & Med. **64**: 85, 1947.

ORGANIZATION SECTION

Official Notes

NOTES ON THE SIXTH SEMIANNUAL MEETING OF THE MIDDLE ATLANTIC STATES REGIONAL CONFERENCE ON MEDICAL SERVICE

Organized about three years ago as a permanent unit in the conference program of the Council on Medical Service of the American Medical Association, the Middle Atlantic states group has met twice each year. The officers are: Dr. Francis F. Borzell, chairman, Philadelphia; Dr. Frederic J. Quigley, vice chairman, Union City, N. J.; and Dr. William Bates, secretary-treasurer, Philadelphia.

The sixth session was devoted primarily to the discussion of two topics: (1) the relationship between medical care plans and the Blue Cross and (2) the problem of developing county health units. In addition, Dr. James C. Sargent, of Milwaukee, spoke on the subject of National Emergency Medical Service, and Dr. Joseph S. Lawrence, Director of the Council on Medical Service, Washington Office, talked on the "Washington Horoscope."

The relationship between medical care plans and Blue Cross was presented by L. Howard Schriver, M.D., president, Associated Medical Care Plans, and E. A. Van Steenwyk, executive director of the Hospital Service of Philadelphia. Dr. Elmer Hess, member of the American Medical Association Council on Medical Service and president of the Medical Society of the State of Pennsylvania, led the discussion. Dr. Schriver outlined the creation of Associated Medical Care Plans and its functions and the recent developments in the field of joint cooperation between this organization and the Blue Cross. He presented the following common problems that exist for both groups and which should be one of the functions of any agency or national association evolving from this cooperation: (1) public relations, (2) advertising, (3) actuarial services, (4) enrolment, (*a*) reciprocity of contract coverage to subscribers, (*b*) transfer technic, (*c*) uniformity of basic contract features and (*d*) national employer enrolment and (5) assistance to member plans in any other capacity.

Mr. Van Steenwyk spoke of the teamwork necessary to satisfy the public and emphasized the need for bringing both medical and hospital programs together. In regard to developing team play, he suggested: (1) a single rate to employers for employees wherever employed, (2) standard administrative regulations, (3) a device which will provide similar coverage everywhere, (4) the need for a single agency through which employers may transact all business, (5) a device for providing standard benefits and (6) uniformity of public relations activities.

In opening the discussion, Dr. Hess pointed out that the first duty is to the American people and the second duty is to provide adequate medical care at a price that they can afford. Without the medical profession no adequate medical program is possible. He further pointed out that any general basic changes in policy covering medical care plans should have the approval of the American Medical Association Council on Medical Service before they are adopted.

A representative from each state was then called on to present his ideas on the subject.

Dr. Erval Coffey, medical director of the United States Public Health Service, opened the discussion on developing county health units. He stressed the idea that if local health units were properly organized the federal government would have no reason for many of its public health activities. Five basic reasons were given for the slow progress in developing county health units: (1) lack of medical personnel, (2) lack of qualified auxiliary personnel, (3) lack of incentive in this type of work, (4) lack of encouragement by medical schools and (5) lack of legislation.

Dr. James C. Sargent told of the activities of the American Medical Association Council on National Emergency Medical Service and the problems with which the Council must cope. He outlined the arguments against the drafting of physicians and urged state and county medical societies to activate at once a program for the civilian population to operate in the event of disaster.

In presenting the "Washington Horoscope," Dr. Lawrence selected a number of bills of interest to the medical profession and told of their present status.

Washington Letter

(From a Special Correspondent)

Aug. 11, 1948.

Report on Physiologic Studies

The Office of the Air Surgeon, U. S. Air Force, has received a report on the first nine months' operation of a special mission sent to Alaska last September to conduct studies on effects of cold weather on physiologic function. Colonel Jack Bollerud, who headed the expedition, based near Fairbanks, presented the report. Twenty-two enlisted men and seven officers, four of whom were physicians or allied scientists, made up the expedition. One of the group's findings was that during January the cold pressor response to immersion of the hand in ice water is reduced to only a slight blood pressure elevation, while in May it returns to two thirds of the elevation experienced at subtropical Randolph Field. Normal heat loss of the hand through conduction and radiation, as measured by a hand calorimeter, decreases appreciably in winter, it was found.

Civil Service Issues New Call for Physicians

The U. S. Civil Service Commission has broadcast a new call for medical officers, who are needed to fill positions in all sections of the United States. Vacancies exist in the Panama Canal Service, Indian Service, Department of the Army, Public Health Service, Veterans Administration, Civil Aeronautics Administration, Railroad Retirement Board, Children's Bureau and miscellaneous federal agencies. Entering salaries range from $4,479 to $6,235 per annum. Application forms are obtainable at first and second class postoffices and regional offices of the Civil Service Commission, as well as at Commission headquarters in Washington.

Certification of Specialists in Preventive Medicine

Medical officers of the Army, Navy and Public Health Service who believe that they can qualify as specialists in preventive medicine are now being invited to submit their applications to Dr. E. L. Stebbins, chairman, Interim Board of Preventive Medicine, % Division of Research Grants and Fellowships, National Institutes of Health, Bethesda, Md. The Interim Board is a step toward what the three services hope will be ultimate establishment of an American Board of Preventive Medicine.

Army Medical Department Marks 173rd Birthday

Professional and economic attractions of a military medical career are greater today than ever before, Army Surgeon General Raymond W. Bliss asserted on the occasion of the Army Medical Department's one hundred and seventy-third birthday anniversary July 27. Its burden increased by reenactment of Selective Service, the department will require 3,900 more volunteer medical officers by June 30, 1949, said Gen. Bliss. Foremost among professional inducements, he declared, are the opportunities now offered to Army physicians to take graduate training toward specialty certification.

Dr. Walter Bauer in Charge of Rheumatic Disease Survey

Dr. Walter Bauer, of Boston, has been appointed head of a committee which will undertake to survey research which is being conducted in arthritis and other rheumatic diseases. The announcement was made by Dr. Lewis Weed, chairman of the National Research Council's Division of Medical Sciences, which was asked by the American Rheumatism Association to sponsor the survey.

GOVERNMENT SERVICES

SECRETARY OF DEFENSE

INTEGRATION OF PANAMA CANAL ZONE HOSPITAL SERVICES

On recommendation of the Committee on Medical and Hospital Services of the Armed Forces, Secretary of Defense James Forrestal has approved integration of National Military Establishment hospital and medical services in the Panama Canal Zone area. By this action, hospitalization of the personnel of all three services on the Atlantic side of the Canal Zone is assigned to the Navy, while on the Pacific side hospitalization for all three services is assigned to the Army. One of the two hospitals heretofore maintained by the Army for its military personnel will be closed, together with one of three now caring for civilians employed on the Canal. Better common use of the medical staffs of the three services also will be made by establishing a Panama Area Joint Medical Advisory Committee composed of representatives of the three armed forces and of the Panama Canal Administration Medical Service. The chairman will serve as medical director on the staff of the Commander-in-Chief, Caribbean Command. Under the plan, use will be made of medical experts of any service for special duty in any medical activity where their skills are needed temporarily.

The two hospitals to be closed are the Fort Gulick (Army) and the Margarita (Panama Canal Administration) hospitals, both on the Atlantic side. The Fort Gulick Hospital will be used solely as a dispensary. The Margarita Hospital will be closed and retained in a maintenance status.

The Gorgas Hospital at Balboa will continue to be operated by the Panama Canal Administration to hospitalize and provide outpatient service on the Pacific side for civilian employees of the Panama Canal and the Panama Railroad, and other civilians for whom medical treatment is authorized by law, regulation or treaty. About 70,000 civilian workers other than employees of the military establishment, together with their dependents, are entitled by contract to medical services and hospitalization. In addition, treaty obligations admit citizens of certain South and Central American countries to the Gorgas Hospital, which will continue to provide specialized clinical pathology and central laboratory facilities and services beyond the scope of the other medical installations in the Canal Zone, together with specialized consultative, diagnostic and treatment services for special cases.

The Committee on Medical and Hospital Services, of which Dr. Paul R. Hawley, formerly Chief Medical Officer of the Veterans Administration, is chairman, was appointed by Secretary Forrestal to make a study of these services with recommendations for coordination, efficiency and economy. In addition to Dr. Hawley, the members of the committee are Major General Raymond W. Bliss, Surgeon General of the Army; Rear Admiral Clifford A. Swanson, Surgeon General of the Navy, and Major General Malcolm C. Grow, the Air Surgeon. Rear Admiral Joel T. Boone is executive secretary of the committee.

ARMY

CONSULTANTS ARRIVE IN VIENNA

Headquarters, United States Forces in Austria, report that the sixth group of civilian consultants to the Surgeon General of the Army was scheduled to arrive in Vienna July 10 for a tour of medical installations throughout the European command. The consultants in the group are: Drs. Garfield G. Duncan, Philadelphia (internal medicine); R. A. Stiefel, Battle Creek, Mich. (surgery); A. James French, Kansas City, Mo. (pathology); Thomas N. Leonard, Washington, D. C. (obstetrics and gynecology), and Sydney G. Margolin, New York (neuropsychiatry). Among other places, they were to visit the 110th Station Hospital to examine unusual cases and assist in advanced training of the younger medical officers. They were scheduled to leave Salzburg July 13 to continue the tour.

RETIREMENT PROVISION FOR RESERVE OFFICERS

The 80th Congress passed a law, which was signed by the President, providing that reserve officers of any of the armed forces who have completed twenty or more years of acceptable membership may retire with benefits after they reach the age of 60 years, the retirement pay being computed at 2½ per cent of base pay for the highest rank held multiplied by the number of years on active duty, plus 0.5 per cent of the same base pay multiplied by the number of years on inactive status. These provisions may amount to as much as 75 per cent of the highest active duty pay drawn by the person receiving the allowances.

MEDICAL MEETING IN KOREA

At the regular monthly meeting of Army medical officers in Korea June 25 at the 382d Station Hospital, Lieut. Merrit F. Garland read a paper on anesthesia in emergency surgery and Lieut. Douglas MacInnis read a paper on "Acute Injuries of the Knee." Captain Mary Murphy of the Army Nurse Corps discussed the graduate courses recently given Korean nurses, and Chaplain Richard W. Jungfer discussed the role of the hospital chaplain in present day hospital care. During the afternoon the seventy-five Medical Department officers and twenty civilian doctors and nurses present held departmental conferences and made ward rounds discussing cases and diagnostic problems. A buffet supper and social meeting was held at the Officers' Club.

SELECTED FOR POSTGRADUATE TRAINING

The Surgeon General announces that the University of California Medical School has accepted Col. Lawrence C. Ball for a course in anatomy starting August 1 and that Capt. Irvin C. Plough has been accepted as a resident in internal medicine at the Goldwater Memorial Hospital, Welfare Island, New York. The following medical officers have been selected to pursue a course of training in orthoptics at George Washington University Medical School, Washington, D. C.: Cols. W. F. Cook, John B. Coates Jr. and Austin Lowrey Jr.; Lieut. Cols. Forrest E. Hull and Robert Lehman; Majors Francis W. Lanard and John J. Maloney; Capt. Joseph J. G. Gulyach, and First Lieuts. Stephen S. Eganbati, Harry W. Gray, Henry F. Jacobius, John B. Marley, Allen G. Thomas and Arnold Topilow.

ALLOCATE ARMY HOSPITAL BEDS FOR VETERANS

The Surgeon General has announced that 3,305 beds in Army hospitals throughout the United States have been allocated at the request of the Veterans Administration for the treatment of veterans, 325 of which were set aside specifically for cases of tuberculosis at Fitzsimmons General Hospital in Denver.

NAVY

OFFICERS APPROVED FOR POSTGRADUATE TRAINING

The Advisory Board of the Bureau of Medicine and Surgery has nominated the following medical officers for postgraduate training:

Comdr. Harry B. Eisberg: One year additional training in Orthopedic Surgery, Naval Hospital, Bethesda, Md.

Comdr. Rodney R. Gleysteen: Course in Public Health (Tropical Medicine), Johns Hopkins University School of Hygiene and Public Health.

Comdr. Leo W. Olechowski: Fellowship in Surgery, Northwestern University (Cook County Hospital).

Lieut. William W. Miller Jr.: Residency in Urology, Naval Hospital, Bethesda, Md.

Lieut. Donald R. Davis: Residency in Obstetrics and Gynecology, Naval Hospital, Oakland, Calif.

Lieut. (jg) Paul K. Hamilton: Residency in Pathology, Naval Hospital, San Diego, Calif.

Lieut. (jg) Robert L. Hill: Residency in Internal Medicine, Naval Hospital, Long Beach, Calif.

Lieut. (jg) Robert C. Kessler: Residency in General Practice, Naval Hospital, Portsmouth, Va.

Lieut. (jg) George J. Taylor, III: Residency in Obstetrics and Gynecology, Naval Hospital, San Diego, Calif.

NEW REGULAR OFFICERS

Lieutenants (jg) William F. Bennett Jr., of Columbus, Ga., George M. Rugtiv of Estherville, Iowa, and William K. Woodard of Hollis, N. H., have transferred to the Regular Corps of the Navy from an active reserve status. All three were graduates of the Navy V-12 training program.

Lieutenants (jg) Robert H. Lanfersieck of Sidney, Ohio, and John P. Rynd of Westfield, N. Y., have reported for active duty in the Medical Corps Reserve.

Commander Berger Thomas of Columbus, Ohio, and Lieutenant (jg) Frank D. Fuller of Reno, Nev., have reported for active duty from an inactive reserve status.

Commander Marcos A. Godinez and Lieut. Commander John R. Bierley, both of Puerto Rico, have joined the Medical Corps of the Regular Navy and been ordered to the Naval Station at San Juan for duty.

NEW NAVY INTERNS

The following men are newly accepted interns in the grade of lieutenant (jg) in the Medical Corps of the Navy: Walter J. Berger Jr., Madison, Wis.; George V. Branigan Jr., Glen Rock, N. J.; Carl A. Broaddus Jr., Newton, Va.; Louis F. Brignac Jr., Bogalusa, La.; Richard J. Broggi, Chelsea, Mass.; Kendall W. Caldwell, Philadelphia; Harry H. Dinsmore, Barnesboro, Pa.; George F. Elsasser Jr., Portsmouth, Va.; Warren C. Evans, Norfolk, Va.; Andrew W. Gibbons, Syracuse, N. Y.; George S. Haas, Los Angeles; Richard W. Heffner, Beaver Dam, Wis.; Philip P. James, Hampton, Va.; Erwin M. Janzen, Louisville, Ky.; J. W. Johnson, Ridgefarm, Ill.; Hoyt Kirkpatrick, Arlington, Va.; Robert N. Maurer, Teaneck, N. J.; John P. McNally, Philadephia; Norman K. Noordhoff, Chico, Calif.; Donald J. Perry, Houston, Texas; Maurie D. Pressman, Philadelphia; Don C. Rudeen, Los Angeles; William R. Stackable, Chicago; Benjamin C. Stigall, Louisville, Ky.; Charles C. Strong, Chehalis, Wash.; William E. Taylor, Pomeroy, Iowa, and Samuel E. Trueblood, Oswego, Ore.

ASSIGNMENT OF RESIDENTS

The following medical officers have been nominated for the residency training as indicated:

Comdr. John W. Albrittain, LaPlata, Md., dermatology and syphilology, at Naval Hospital, St. Albans, N. Y.

Comdr. Clement D. Burroughs, Little Rock, Ark., ophthalmology, Naval Hospital, San Diego, Calif.

Comdr. Henry J. Hunter, Oil City, Pa., obstertics and gynecology, Boston Lying-in Hospital and the Free Hospital for Women, Brookline, Mass.

Lieut. Chester M. Lessenden Jr., Lawrence, Kan., dermatology and syphilelogy, Naval Hospital, St. Albans, N. Y.

Lieut. (jg) Leland C. Brannon, Piedmont, Calif., surgery, Naval Hospital, Long Beach, Calif.

Lieut. (jg) Byron T. Eberly, Lancaster, Pa., otolaryngology, Naval Hospital, Philadelphia.

Lieut. (jg) Robert J. Fleischaker, Pittsburg, Kan., surgery, Naval Hospital, Chelsea, Mass.

Lieut. (jg) Carl N. Haggard, Oakdale, La., pediatrics, Naval Hospital, Philadelphia.

Lieut. (jg) Paul K. Hamilton Jr., Birmingham, Ala., pathology, Naval Medical Center, Bethesda, Md.

Lieut. (jg) Andrew M. Margileth, Cincinnati, Ohio, pediatrics, Naval Hospital, Chelsea, Mass.

Lieut. (jg) Robert E. Walsh, Elmira, N. Y., anesthesia, Naval Hospital, St. Albans, N. Y.

Lieut. (jg) Alan D. Watson, Kent, Conn., dermatology and syphilology, Naval Hospital, St. Albans, N. Y.

Lieut. (jg) Robert G. Williams Jr., Wenonah, N. J., internal medicine, Naval Medical Center, Bethesda, Md.

VETERANS ADMINISTRATION

FOLLOW-UP PROGRAM FOR TUBERCULOSIS CASES

The Veterans Administration has established a comprehensive follow-up program to prolong the effects of hospital treatment of veterans suffering from tuberculosis, of whom there are now more than 13,000 under the care of Veterans Administration, while a total of 80,763 veterans are receiving compensation or pensions for tuberculosis. The new follow-up program is designed to discover early any relapses among the tuberculous patients so that further treatment may be started promptly. Each veteran-patient before discharge from the hospital will be advised what to do to assist in keeping the disease under control, and he will be urged to report at regular intervals for sputum examinations and roentgen or other necessary studies. While veterans with service-connected tuberculosis can be handled in the outpatient departments of Veterans Administration offices or hospitals, they may obtain the services of qualified physicians or recognized institutions near their homes for this follow-up care if authorized to do so beforehand by the Veterans Administration.

PERSONAL

Dr. C. B. Spruit of the headquarters office in Washington was recently awarded the honorary degree as doctor of science by Illinois College, Jacksonville, Ill., where he was graduated; he later went to Harvard University Medical School. During World War II Dr. Spruit was deputy to the chief surgeon of the European Theater of Operations, Major General Paul R. Hawley. He was retired from the Army Medical Corps with the rank of brigadier general in 1946 after thirty years of service.

Dr. Karl Menninger has resigned as manager of the Veterans Administration hospital at Topeka to become chairman of the dean's committee and senior consultant to the hospital. His successor is Dr. Frank Casey, who has been chief of professional services at the Topeka hospital since 1946.

Dr. Glenn Drewyer, formerly of Bay City, Mich., has joined the staff of the Veterans Administration hospital at St. Petersburg, Fla. Dr. Drewyer served four years in the Navy in World War II and formerly was medical director of the Glenwood Hot Springs Clinic, Glenwood Springs, Colo.

NEW STAFF MEMBERS AT ROCHESTER

The following nine physicians recently joined the staff at the recently enlarged Veterans Administration Clinic in Rochester, N. Y.: Harry S. Wieder, Louis N. Kerstein, Hans Neuberg, Louis Singer, James J. Clements, William Libertson, Robert A. Wise, William R. Webster and Jacob Sirkin. Dr. Stephen Mayka resigned from the staff of the clinic June 30 to accept a fellowship at the Strong Memorial Hospital, Rochester.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

DISTRICT OF COLUMBIA

Grant to Aid Patients With Intractable Asthma.—The George Washington University Hospital has received a grant from the Marcelle Fleischmann Foundation, Baltimore, for $1,000 to hospitalize patients with intractable asthma. Persons suffering from this type of asthma may apply to the George Washington University Hospital, Department of Surgery.

Cancer Research.—The American Cancer Society has granted $50,000 to George Washington University for cancer research through the Warwick Memorial. The Warwick Memorial earlier this year established a cancer detection clinic at the new George Washington University Hospital and research facilities. The $50,000 gift will be used to augment research activities.

ILLINOIS

Short Courses on Poliomyelitis.—The Illinois State Department of Public Health announces that physicians, nurses and physical therapists of Illinois are eligible for admission to the short courses in poliomyelitis being offered at the City Hospital in Cleveland during August and September. These courses, which are sponsored by the National Foundation for Infantile Paralysis, consist of lectures, demonstrations, conferences, discussions and practical applications. Two ten day courses are open for physicians; one began August 2, and another will start August 30. The courses for nurses and physical therapists, which are of two weeks' duration, open August 3 and September 13. There is no fee for the courses. Applications should be addressed to Dr. John A. Toomey, Department of Contagious Diseases, City Hospital, Cleveland, or to the National Foundation for Infantile Paralysis, 120 Broadway, New York.

X-Ray Unit Available at State Fairs.—A mobile x-ray unit from the state department of public health will be available at a number of county fairs in Illinois this summer and at the state fair in Springfield, August 13-22. The unit will be at the following county fairs: Adams County, Mendon, August 9-12; Brown County, Mt. Sterling, August 3-6; Oblong, Crawford County, September 6-10; Augusta Community Fair, August 31-September 3; Henderson County, Stronghurst, August 17-20; Knox County, Knoxville, August 10-13. Any person attending the fair may receive a roentgenogram of the chest. This service is part of the tuberculosis case-finding program conducted by the division of tuberculosis control in its effort to detect tuberculosis in its early stages. The film is later developed, interpreted, and the results sent in a confidential report to the person and his physician. Dr. Clifton F. Hall, Springfield, chief of the division of tuberculosis control, points out that tuberculosis remains one of the leading causes of death in Illinois.

Chicago

Dr. Knisely Awarded Alvarenga Prize.—In recognition of his studies on "Sludged Blood" the College of Physicians of Philadelphia on July 14 awarded the Alvarenga Prize for 1948 to Melvin H. Knisely, Ph.D., associate professor of anatomy, University of Chicago School of Medicine. The Alvarenga Prize was established by the will of Pedro Francisco da Costa Alvarenga of Lisbon, Portugal, an associate fellow of the College of Physicians of Philadelphia. The college invites the recipient to deliver the Alvarenga Lecture. Dr. Knisely became head of the department of anatomy at the Medical College of the State of South Carolina, Charleston, July 1.

Society News.—At the annual meeting of the Chicago Society of Internal Medicine May 24, Dr. George H. Coleman was elected president and Dr. Ernest G. McEwen, Evanston, secretary-treasurer.——At the annual meeting of the Chicago Gynecological Society, Dr. Herbert E. Schmitz was installed as president and Dr. Eugene A. Edwards was chosen president-elect; Dr. Edward M. Dorr was elected secretary, and Dr. Fred O. Priest was elected treasurer.

The Capps Prize in Medicine.—The Institute of Medicine of Chicago offers a prize of $400 for the most meritorious investigation in medicine or in the specialties of medicine. The investigation may be also in the fundamental sciences, provided the work has a definite bearing on a medical problem. Competition is open to graduates of Chicago medical schools who completed their internship or one year of laboratory work in 1946 or thereafter. Manuscripts must be submitted to the secretary of the Institute of Medicine of Chicago, 86 East Randolph Street, Chicago 1, not later than Dec. 31, 1948. The manuscript of the prize paper is to become the property of the Institute of Medicine of Chicago. If no paper presented is deemed worthy of the prize, the award may be withheld at the discretion of the Board of Governors.

INDIANA

State Health Officer Honored.—Dr. Leroy E. Burney, Indianapolis, who has served three years as state health commissioner, was awarded a plaque and a certificate by the Indiana Chamber of Commerce in recognition of his work for the state department. The award is known as the Good Governmental Award.

University Expansion Projects.—Two major construction projects have been approved for the Indiana University Medical Center, Indianapolis, including expansion of the department of radiology and erection of a research wing to the James Whitcomb Riley Hospital for Children. The addition to the department of radiology will add 5,600 square feet of floor space. The research wing, for which the state has allocated funds, will provide laboratories for research into children's diseases. The Riley Memorial Association has approved a grant of $250,000 in support of research over a period of five years.

MICHIGAN

Rabies Control.—A total of 163 new cases of rabies and 1 human death this year shows the urgent need for local rabies control measures. To aid in the control of rabies, the Michigan Department of Health and the Michigan Department of Agriculture have prepared a pamphlet "Protect Yourself, Your Family and Your Dog Against Rabies." Local rabies control committees are being organized in several counties; ten counties are under dog quarantine, and five counties require vaccination of dogs before licensing. Similar protection is needed in all the thirty-four Southern Michigan counties in the rabies danger area. The pamphlet is available without charge from the local health departments or the Michigan Department of Health, Lansing 4.

NEW YORK

Cardiac Research.—The U. S. Public Health Service has granted Harold C. Wiggers, Ph.D., professor of physiology and pharmacology, Albany Medical College, $7,600 for one year's research on the heart and the circulation of blood. He will be assisted by Drs. Edward Sharkey and G. Rehmi Denton, and Harold Goldberg, M.S.

Postgraduate Instruction.—The Medical Society of the State of New York, with the cooperation of the New York State Department of Health, has arranged postgraduate instruction for a joint meeting of the Syracuse and Utica Academies of Medicine, September 16, 8 p. m., at the Rome Country Club, Rome. Dr. Floyd S. Winslow, Rochester, will speak on "The Doctor on the Witness Stand."

New York City

University Appointment.—Dr. H. Houston Merritt, chief, division of neuropsychiatry at Montefiore Hospital, has been appointed professor of neurology and executive officer of the department at Columbia University College of Physicians and Surgeons, and director of the neurologic service of the Neurological Institute of Presbyterian Hospital. Dr. Merritt is a graduate of Johns Hopkins University School of Medicine, Baltimore.

New Director of Vanderbilt Clinic.—The Board of Trustees of Presbyterian Hospital has named Dr. Joseph Earl Snyder director of Vanderbilt Clinic. Caring for over 300,000 patients a year, the clinic is the outpatient department for the voluntary hospitals of the Columbia-Presbyterian Medical Center. Dr. Snyder was graduated from the University of Pennsylvania School of Medicine, Philadelphia, 1943, and after an internship became chief resident in pathology and administrative assistant at the Hospital of the University of Pennsylvania. During World War II he served as a radiologist at the separation center, Camp McCoy, Wis., and as chief of laboratory and pathologist to the 6th Service Command at Gardiner General Hospital, Chicago. After the war Dr. Snyder returned to the Graduate Hospital of the University of Pennsylvania, where he has been assistant director under Dr. Robin C. Buerki.

OHIO

Personal.—The 1948 Lower Fellowship Thesis Prize was awarded on June 15 to Dr. Alys H. Lipscomb, Cleveland, for her paper, "Incidence of Various Types of Essential Hypertension as Related to Evaluation of Successful Therapy."

Appoint Head of Ophthalmology Department.—Dr. Roscoe J. Kennedy has been appointed head of the department of ophthalmology at the Cleveland Clinic. Dr. Kennedy joined the clinic staff in 1937. He was graduated from the State University of Iowa College of Medicine, Iowa City, 1931. During World War II he served four years with the medical corps of the U. S. Navy in the Southwest Pacific.

SOUTH DAKOTA

Appoint Superintendent of State Board.—Dr. Gerald J. Van Heuvelen, Pierre, was appointed to succeed Dr. Gilbert Cottam, Pierre, retired, as superintendent of the South Dakota State Board of Health, effective July 1. Dr. Van Heuvelen received his M.D. degree from Rush Medical College, Chicago, in 1932.

Course for Medical Technicians.—Facilities for training students in medical technology have been expanded at the University of South Dakota School of Medical Sciences, Vermillion. Sacred Heart Hospital and Sioux Valley Hospital, Sioux Falls, are also cooperating with the medical school in this training. The medical school is developing plans also to establish a curriculum in x-ray technology in cooperation with the aforementioned hospitals. This course will be open for the first time this fall to students wishing to prepare themselves for a career in x-ray technology.

TEXAS

State Medical Election.—Officers of the State Medical Association of Texas for the coming year are Dr. Tate Miller, Dallas, president; Dr. George V. Brindley, Temple, president-elect; Dr. Thomas H. Thomason, Fort Worth, treasurer, and Dr. Harold M. Williams, Fort Worth, secretary-editor.

Workshop for Cardiac Patients.—The Galveston County chapter of the Texas Heart Association has planned for hospital patients with cardiac disease a workshop designed to give training in various handcrafts which might lead to employment for persons whose heart conditions prevent them from returning to previous jobs.

Dr. Kemp Comes to Baylor University.—Dr. Hardy A. Kemp, dean of Wayne University College of Medicine, Detroit, has been named professor of preventive medicine and chairman of the department of public health and preventive medicine at Baylor University College of Medicine, Houston. He will assume these duties in September. Dr. Kemp served on the faculty at Baylor from 1928 until 1939, when he became dean and professor of preventive medicine at the University of Vermont College of Medicine, Burlington, Vt. During World War II he was a colonel in the army medical corps. He has been dean of the school of medicine at Wayne University since 1945.

WEST VIRGINIA

New Hospital License Law.—Applications for license under the new state hospital licensing law have been received by the state health department from one hundred and nine of the one hundred and fifty-two known institutions caring for the sick and injured. The deadline for submission of applications expired July 1. The report compiled by the health department showed that applications have not been filed by nine general hospitals, six doctors maintaining offices with five or more beds, two osteopathic hospitals and twenty-five nursing and alcoholic homes.

Dr. Gaydosh Honored.—Dr. Michael Gaydosh, Wheeling, has been chosen by Slovak V. Amerike as the American Slovak Father for 1948. Dr. Gaydosh was advised of his selection, in part, as follows: "This special honor was bestowed for your unselfish work for humanity performed as one of the oldest American doctors of Slovak descent. Your sacrifices and endeavors in the field of medicine and fraternalism merit special recognition." Dr. Gaydosh came to this country from Czechoslovakia. After working his way, he received his M.D. degree from the University College of Medicine, Richmond, Va. He opened offices in Wheeling in 1905 and has continued to practice there. Dr. Gaydosh has served as supreme medical examiner for the First Slovak Catholic Union for the past thirty years. He is also a member of the executive board of the Slovak League of America.

Resume Motherhood Correspondence Course.—Resumption of the "Motherhood Correspondence Course" is about to be undertaken by the state health department, and letters concerning the availability of this service to all practitioners and health departments are being mailed to component societies of the state medical association. The purpose is to help physicians reduce the heavy loss in unborn and newly born babies, which finds West Virginia fourth from the bottom in infant mortality among all states and territories. The course before World War II was used by mothers on recommendation of their family doctors. Over 12,000 West Virginia women took advantage of the service in 1943, the last year that it was in operation. Statistics show that 69 per cent of all infant deaths in West Virginia during the past three years have been due to prenatal, natal and immediately postnatal causes. Within the past five years the increase of these deaths has totaled nearly 10 per cent. A recent study made by the state health department discloses not more than twenty-five full time obstetricians in this state, mostly in the larger cities.

WISCONSIN

The Godfrey Scholarship.—A trust fund, to be known as the Dr. Rush C. Godfrey Medical Scholarship Fund, has been established by Mrs. Rush C. Godfrey of Lancaster in honor of her late husband, who died April 14, 1947. Interest from the fund will be used for the education of a boy or girl in the practice of medicine.

Symposium on Steroid Hormones.—A symposium on steroid hormones will be held at the University of Wisconsin Medical School, Madison, September 6-8, as a part of the centennial celebration of the Wisconsin State University. Scientists from many universities and medical schools throughout this country, England and Canada are on the program. This symposium will be open to the public and physicians, chemists and scientists from other fields are invited to participate. No registration fee is to be charged. Reservations for board and room, available in Elizabeth Waters Hall on the Wisconsin campus at $16.25 for the three day period, may be made with Dr. Henry A. Lardy, Department of Biochemistry, University of Wisconsin, Madison 6.

GENERAL

Personal.—Dr. Charles S. Cameron, medical director of the American Cancer Society, announces the appointment of Dr. Thomas F. Nealon Jr., Jessup, Pa., as assistant director of the service division of the society. Dr. Nealon received his M.D. degree from Jefferson Medical College of Philadelphia, 1944, under the U. S. Naval Reserve program. Following separation from the Navy, he engaged in general practice at Olyphant, Pa.

Award of Remington Medal.—Andrew G. DuMez, Ph.D., Baltimore, dean, University of Maryland School of Pharmacy, will receive the Remington Medal this fall. This gold medal commemorates Joseph P. Remington, pharmacist, who was chairman of the U. S. P. Revision Committee for several decades. Since the establishment of the American Council on Pharmaceutical Education in 1932, Dr. DuMez has served as secretary-treasurer, being primarily responsible for painstaking analysis of records of performance by all colleges of pharmacy, supervision of inspection schedules, formal rating of colleges and the task of dealing with educational authorities.

American Association of Blood Banks.—The first annual meeting of this organization will be held at the Hotel Statler, Buffalo, August 26-28, under the presidency of D. Albin Matson, Ph.D., Salt Lake City. Among the speakers will be: Harry Wallerstein, New York, Substitution Transfusion in Erythroblastosis Fetalis: Indications and Techniques; John D. Stewart, Buffalo, Blood Volume in Relation to Surgery; John Elliott, Sc.D., Miami, Fla., Red Cell Suspension Transfusions; Sidney C. Levinson, Chicago, Ultraviolet Irradiation of Plasma; Philip Levine, Newark, N. J., Routine Rh Tests for a Transfusion Service; Paul I. Hoxworth, Cincinnati, Blood Bank Organization, and Lloyd R. Newhouser, Washington, D. C., Blood Bank Procedures in Atomic Catastrophe.

International Congress on Industrial Medicine.—The Ninth International Congress on Industrial Medicine will be held in London, September 13-17, at the Caxton Hall, Westminster. Sections and the chairmen are as follows: social aspects, Professor Thomas Ferguson, Glasgow; environment, Professor Edward C. Dodds, London; nursing, Miss F. Clare Sykes, London; clinical, Professor Ronald E. Lane, Manchester; practice, Arthur J. Amor, London; special section, Dr. Edward R. A. Merewether, London. The official languages of the congress are French and English. The fee is 3 pounds (English money), payable to the treasurer, Dr. Margaret L. Dobbie-Bateman. Information may be obtained from Room 501, Garden Court Wing, B.M.A. House, Tavistock Square, London, W.C. 1.

Impostor.—Any one knowing the whereabouts of a person using the name of Samuel P. Hall and representing himself to be a physician should communicate with the prosecuting attorney at Manistique, Michigan. The person has been described as a white man, 30 years of age, 5 feet 11 inches tall, weighing about 160 pounds, with black hair, brown eyes and a small mustache, and as being a "classy dresser." He has apparently been posing as Samuel Pike Hall, who is a reputable physician at Oakland, Calif. He is not, of course, to be confused with Samuel Parks Hall Jr., of Scottsboro, Ala. Dr. Samuel Pike Hall recently advised us that he found the name of Samuel Pike Hall on a drug house mailing list. The address given in early 1948 was at a hospital in West Virginia, but the person using that name left after a short stay, without leaving a forwarding address.

Society Elections.—The American Urological Association, at its annual meeting May 19, installed Dr. Charles C. Higgins, Cleveland, president, and elected Dr. Carl F. Rusche, Los Angeles, president-elect. Dr. Thomas D. Moore, Memphis, Tenn., was reelected secretary and Dr. George C. Prather, Brookline, Mass., was reelected treasurer. The next annual meeting will be held at the Hotel Biltmore, Los Angeles, May 16-19, 1949.—At the annual meeting of the North Pacific Society of Neurology and Psychiatry held at Vancouver, B. C., April 2-3, Dr. Herman A. Dickel, Portland, Ore., was elected president; Dr. H. Ryle Lewis, Spokane, Wash., president-elect, and Dr. Gerhard B. Haugen, Portland, Ore., secretary-treasurer. The 1949 meeting of the society will be held in Portland, Ore.—The Association for Research in Nervous and Mental Diseases has elected Dr. Henry W. Woltman, Rochester, Minn., president.

Grants and Fellowships in Cancer Research.—The committee on growth of the National Research Council, acting for the American Cancer Society, will entertain applications for grants and fellowships. Applications for extension of existing grants in cancer research will be received until October 1, applications for new grants until November 1. Decision on applications submitted during this period will be made in most cases soon after February 1. Grants approved at this time ordinarily will become effective July 1, 1949. Fellowship applications may be submitted at any time. Those received prior to November 1 will be acted on by the Committee on Growth in December. Those received between November 1 and March 1 will be acted on in April. Fellowships ordinarily will begin July 1, though this date may be varied at the request of the applicant. During the past year the American Cancer Society, Inc., on recommendation of the Committee on Growth, has approved research grants and fellowships totaling over $2,000,000. Communications regarding grants and fellowships should be addressed to Executive Secretary, Committee on Growth, National Research Council, 2101 Constitution Avenue, N.W., Washington 25, D. C.

International Union Against Venereal Disease.—The General Assembly of the International Union Against Venereal Diseases will be held in Copenhagen, Denmark, September 6-10, at the invitation of the Danish Government and the Danish Society Against Venereal Disease. The agenda will include: (1) plans for the international venereal disease control program; (2) consideration of cooperation with the United Nations, the World Health Organization and UNESCO; (3) consideration of biologic, physiologic and psychologic aspects of human behavior in relation to control of venereal diseases; (4) treatment of syphilis; (5) the international inquiry concerning transmission of venereal diseases in the Rhine River district. The United States delegation to Copenhagen is expected to include, besides Dr. William F. Snow, Dr. and Mrs. Robert H. Bishop Jr., Cleveland; Major Louis N. Altshuler, M.C., U. S. Department of the Army, Dr. John R. Heller Jr., former venereal disease chief, U. S. Public Health Service, and Mrs. Josephine V. Tuller, assistant director of the union's regional office for the Americas. Information may be obtained from Miss Marguerite Troué, Administrative Secretary, at the international headquarters, Institut Fournier, 25, Boulevard Saint-Jacques, Paris XIV, France, or of Miss Jean B. Pinney, Director, Regional Office for the Americas, 1790 Broadway, New York 19.

National Board Elects New Members.—At the annual meeting of the National Board of Medical Examiners the following new members were elected: Dr. Russell L. Haden, Cleveland, who was nominated by the Council on Medical Education of the American Medical Association to succeed Major General Merritte W. Ireland, Washington, D. C.; Dr. Paul B. Magnusen, Chicago, medical director of the Veterans Administration; Dr. Eugene A. Gillis, Washington, D. C., who was nominated by Surgeon General Leonard A. Scheele, Washington, D. C., to succeed Major General Warren F. Draper, Washington, D. C., as a second representative from the U. S. Public Health Service; Dr. Winfred Overholser, superintendent of St. Elizabeth's Hospital and professor of psychiatry at George Washington University School of Medicine, Washington, D. C.; Dr. Hugh Rodman Leavell, Harvard University School of Public Health, and Dr. James V. Warren, professor of physiology, Emory University School of Medicine, Atlanta, Ga. The present officers were elected for another year as follows: Dr. Borden S. Veeder, St. Louis, president; Mr. Everett S. Elwood, executive secretary and treasurer, Philadelphia; and Dr. J. Stewart Rodman, Philadelphia, medical secretary. In addition to the officers the members of the executive committee for the ensuing year are: Dr. Roy B. Harrison, New Orleans, La.; Rear Admiral H. Lamont Pugh, Washington, D. C.; Dr. Robert W. Keeton, Chicago; and Dr. W. Barclay Parsons, New York. It is expected that the next annual meeting will be held at the time of the annual meeting of the American Medical Association at Atlantic City.

CANADA

Society News.—At the annual meeting of the Newfoundland Medical Association, St. Johns, Newfoundland, July 6-10, Dr. Robert J. Booher, assistant attending surgeon, Memorial Hospital for Cancer and Allied Diseases, and surgeon to the Pack Medical Group, spoke on "The Diagnosis and Surgical Management of Gastric Tumors" and "The Diagnosis and Management of Tumors of Soft Somatic Tissues."

Courses in Clinical Cytology.—McGill University Faculty of Medicine, Montreal, will present two courses in the diagnosis of uterine cancer this fall. One, from September 6 to October 5, is for physicians interested in cytologic technics, staining methods and interpretation. September 6-10, another course of general lecturers and demonstrations will take up the practical application of the vaginal smear and the "surface-biopsy" to every day practice. Tuition for the last course will be $25.

PUERTO RICO

Puerto Rico Medical Association Meeting.—At a special meeting of the Puerto Rico Medical Association in Ponce, July 23-25, Dr. Harry Gold, professor of clinical pharmacology, Cornell University Medical College, New York, delivered several lectures. A round table discussion on tuberculosis was held under the direction of Dr. Juan A. Pons, San Juan, commissioner of health of Puerto Rico. On July 25 a memorial plaque in honor of the late Dr. Bailey K. Ashford was unveiled on the same building in Ponce where this U. S Army medical officer determined the cause (hookworm) of anemia of the agricultural class of Puerto Rico in 1899.

Public Health Meeting.—The Puerto Rico Public Health Association elected the following board of directors for 1948 at its annual meeting held in San Juan: Drs. Juan A. Pons, president; Americo Pomales, vice-president, and Nelson Biaggi, secretary. The association recommended the creation of a mental hygiene bureau in the Insular Department of Health. The papers read at this meeting will be integrated in a single document to be presented before the Mental Hygiene Congress next August at London, England. Records were taken of the most important Spanish lectures, which are to be reproduced in Latin American countries. Among the American doctors who were guests of honor were Charles E. A. Winslow, Dr. P.H., New Haven, Conn.; William W. Peter, of the Inter-American Affairs Institute, Washington, D. C.; Harold W. Brown, Columbia University, New York; Robert S. Freed, New York Agricultural Experiment Station; E. J. Herringer, sanitary engineer, U. S. Public Health Service, and Reginald M. Atwater, Dr. P.H., executive secretary, American Public Health Association.

CORRECTIONS

Cesarean Hysterectomy.—In the paper on this subject in THE JOURNAL, July 17, page 1017, bibliographic reference no. 3 at the bottom of the page should read as follows: Baldwin, J. F.: Tr. Am. A. Obs., Gynecol. and Abd. Surgeons **42:**98, 1929.

Roentgenologic Treatment of Lymph Nodes and Spleen.—In the article by Dr. Sidney Rubenfeld in THE JOURNAL, July 3, 1948 "(fig. 2)," should be deleted from line eight in the second column on page 849. In the legend of figure 4, the second word in the second line should be "identified." On page 850, line 2 "(figs. 3 and 4)," should be "(figs. 2 and 3)." On page 850, column one, lines six and seven, "fig. 4" should be added to "(figs. 5, 6 and 7)."

Deaths

Robert Bruce Preble ⊕ Chicago, professor of medicine at Northwestern University Medical School, died at St. Luke's Hospital July 26, aged 82, of myocardial infarction, diabetes mellitus and third degree burns. Dr. Preble was born in Chicago, March 14, 1866. He was graduated from the University of Michigan in Ann Arbor in 1889 and received his medical degree from Northwestern University Medical School, Chicago, in 1891. Later he interned at the Cook County Hospital, where he served on the staff, and in 1894 studied at the University of Vienna. The following year he joined Northwestern as professor of medicine. Dr. Preble was secretary of the Section on Practice of Medicine of the American Medical Association in 1901-1902, and was past president of the Chicago Medical Society and the Chicago Heart Association. He was a member of the Association of American Physicians and a specialist certified by the American Board of Internal Medicine. In April 1917 he was commissioned a major in the medical reserve corps; he served as chief of the hospital center at Mars Sur Alliers, France, and on Jan. 31, 1919, was discharged with the rank of lieutenant colonel. Dr. Preble received an American citation and the French Legion of Honor. He was attending physician at St. Luke's and Wesley Memorial hospitals, and was the author of a book on "*Pneumonia and Pneumococcus Infections*" written in 1905.

Edward Speidel, Louisville, Ky.; born in Philadelphia, Nov. 12, 1859; University of Louisville Medical Department, 1895; also a graduate in pharmacy; professor emeritus of obstetrics at his alma mater; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; past president of the Jefferson County Medical Society and the Louisville Society of Obstetricians; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons and the American Medical Association; fellow of the American College of Surgeons; served on the staffs of the City, Jewish, St. Anthony's and Kentucky Baptist hospitals and the Norton Memorial Infirmary; died April 13, aged 88.

Murray Nathan Fowler, Mansfield, Ohio; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1923; member of the American Medical Association and of the American Psychiatric Association; during World War II served as chief psychiatrist for the disciplinary training center of the Mediterranean theater of operations and was discharged with rank of major; formerly on the staff of the Athens (Ohio) State Hospital and superintendent of the Institution for Feeble-Minded at Apple Creek; psychiatrist at the Ohio State Reformatory; died in the Mansfield General Hospital April 29, aged 49.

Carmelo Baldini, New York; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1912; member of the American Medical Association; major in the medical corps of the Italian Army during World War I; died March 2, aged 61, of carcinoma, following roentgen ray burns.

Edward Hagop Bedrossian ⊕ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1912; Army School of Aviation Medicine, San Antonio, Texas, in 1927; lieutenant colonel, air force reserve flight surgeon; formerly demonstrator in ophthalmology at the Temple University School of Medicine; chief of department in ophthalmology at Delaware County Hospital in Drexel Hill, Pa.; died in Clifton Forge, Va., April 17, aged 61, of coronary thrombosis.

David P. Bowman, Crimora, Va.; University of Pennsylvania Department of Medicine, Philadelphia, 1887; died in the King's Daughters' Hospital, Staunton, April 14, aged 90.

Lawrence Bernard Boylan, Paterson, N. J.; Maryland Medical College, Baltimore, 1913, member of the American Medical Association; formerly supervisor of school hygiene and county physician; city physician; served during World War I; affiliated with St. Joseph's and Paterson General hospitals; died April 14, aged 59, of chronic myocarditis.

Bernard Eugene Britt, Nashville, Tenn.; University of Nashville Medical Department, 1905; died April 29, aged 72.

Anna Frances S. Lee Brown, Denver; the Hahnemann Medical College and Hospital, Chicago, 1893; at one time health officer of Telluride, Colo.; died April 8, aged 80, of pneumonia.

Leo Greenleaf Bruce, Durham, N. C.; Meharry Medical College, Nashville, Tenn., 1926; member of the board of directors of the Durham County Tuberculosis Association and of the Durham Chapter of the American Cancer Society; affiliated with the Lincoln Hospital; died April 7, aged 49, of carcinoma of the lung.

Robert Finley Campbell, Phoenix, Ariz.; University of Kansas School of Medicine, Kansas City, 1921; died April 19, aged 54, of perinephritic abscess.

Frederick S. Casto, Charleston, W. Va.; University of Louisville (Ky.) Medical Department, 1893; formerly justice of the peace in Kenna and for many years president of the board of pension examiners of Jackson County; died April 19, aged 81, of heart disease.

Ernest Johnson Colberg, Alameda, Calif.; University of Minnesota Medical School, Minneapolis, 1924; died April 17, aged 60.

William Gregory Cole ⊕ Pittsfield, Mass.; Columbia University College of Physicians and Surgeons, New York, 1928; specialist certified by the American Board of Radiology, Inc.; member of the Radiological Society of North America, Inc.; on the staffs of the House of Mercy and Hillcrest hospitals in Pittsfield and Fairview Hospital in Great Barrington; formerly on the staff of St. Agnes Hospital in White Plains, N. Y.; died in Bermuda April 15, aged 46, of coronary thrombosis.

Charles Chapman Collester ⊕ Spencer, Iowa; Jefferson Medical College of Philadelphia, 1909; fellow of the American College of Surgeons; affiliated with the Spencer Municipal Hospital; died April 11, aged 62, of carcinoma of the prostate.

Donald Grey Colp, Robbinsdale, Minn.; Minneapolis College of Physicians and Surgeons, 1908; at one time a minister; died in Northwestern Hospital, Minneapolis, April 14, aged 78, of carcinoma of the lung with general metastases.

Augustus Eugene Conter, Apalachicola, Fla.; Atlanta College of Physicians and Surgeons, 1902; member of the American Medical Association; veteran of the Spanish-American War; at one time secretary-treasurer of the Jefferson County Medical Society; died April 12, aged 76, of coronary occlusion.

Howard L. Corbus, Harrisburg, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1892; served on the staff of the Harrisburg State Hospital; died April 6, aged 79, of coronary thrombosis.

Walter Louis Cottingham ⊕ Seattle; the Hahnemann Medical College and Hospital, Chicago, 1913; served as president of the Ford County (Ill.) Medical Society; on the staff of the Columbus Hospital; died April 14, aged 66, of angina pectoris.

William Thomas Cox, Gentry, Ark. (licensed in Arkansas in 1903); died April 3, aged 81, of acute dilatation of the heart.

Carl J. Cramm ⊕ Russell, Kan.; University of Louisville (Ky.) Medical Department, 1897; for many years county health officer; president of the staff of Russell City Hospital; died in Ellsworth (Kan.) Hospital April 14, aged 72, of carcinoma of the rectum.

Charles Balfour Darling, Waban, Mass.; Harvard Medical School, Boston, 1894; member of the American Medical Association; for many years on the faculty of Tufts College Medical School, Boston; served during World War I; charter member of the staff of the Free Hospital for Women in Jamaica Plain; died in the New England Baptist Hospital, Boston, April 19, aged 78, of duodenal ulcer.

David J. Evans ⊕ Bethesda, Md.; Rush Medical College, Chicago, 1898; member of the Illinois State Medical Society; fellow of the American College of Surgeons; for many years practiced in Aurora, Ill., where he served on the staffs of the St. Joseph Mercy, St. Charles and Copley hospitals; died in the Suburban Hospital April 7, aged 75, of coronary thrombosis.

John Henry Fager Jr. ⊕ Harrisburg, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1904; past president of the Harrisburg Academy of Medicine; affiliated with the Harrisburg Hospital; died April 14, aged 70, of cerebral thrombosis.

Charles Wood Fassett, Burlingame, Calif.; Ensworth Medical College, St. Joseph, Mo., 1900; member of the American Medical Association; member and past president of the Missouri State Medical Association; served as secretary of the Buchanan County (Mo.) Medical Society and of the Missouri Valley Medical Society; died April 14, aged 86.

Charles W. Gardiner, Batavia, N. Y.; University of Vermont College of Medicine, Burlington, 1891; died April 30, aged 82, of coronary sclerosis.

George Franklin Garland, Winthrop, Mass.; Baltimore Medical College, 1898; died March 28, aged 81, of chronic myocarditis.

Clara Hyde Gillard, Cleveland; the Hahnemann Medical College and Hospital, Chicago, 1889; died in Port Clinton April 8, aged 86, of acute myocardial failure.

William George Gordon ⊕ Birmingham, Mich.; University of Michigan Medical School, Ann Arbor, 1935; member of the Kansas State Medical Society; fellow of the American College of Surgeons; served an internship and residency at the University Hospital in Ann Arbor; formerly associate professor of surgery at the University of Kansas School of Medicine, Kansas City, Kan.; died April 21, aged 36, of asphyxia.

James Allen Green ⊕ Clayton, Ga.; Atlanta College of Physicians and Surgeons, 1908; served as mayor and councilman of Clayton; for many years a trustee of the local school; died in the Emory Hospital, Atlanta, March 23, aged 65, of hypertensive cardiovascular disease.

William Edwin Herring, Ida, La.; College of Physicians and Surgeons, Baltimore, 1891; died April 19, aged 86.

Stanley Vincent Hodge ⊕ Minneapolis; Northwestern University Medical School, Chicago, 1910; served during World War I; died in the Swedish Hospital April 27, aged 67, of acute cardiac failure.

Jennie Hraba, Boston; Middlesex College of Medicine and Surgery, Cambridge, Mass., 1921; died March 5, aged 71, of cerebral hemorrhage.

Allan Pettit Hughes, Auburn, Wash.; the Hahnemann Medical College and Hospital, Chicago, 1907; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1909; member of the American Medical Association; served during World War I; died in Auburn General Hospital April 3, aged 67, of complications following a cerebral hemorrhage.

William Jennings Irby, Benton, Kan.; Kansas City (Mo.) College of Medicine and Surgery, 1917; member of the American Medical Association; president of the Butler County Medical Society; served during World War I; affiliated with the Allen Memorial Hospital, El Dorado, Bethel Hospital, Newton, Wichita Hospital, St. Joseph's Hospital, St. Francis Hospital and Wesley Hospital in Wichita and the Bell Memorial Hospital in Kansas City; died near Strong City, April 8, aged 55, of injuries received in an automobile accident.

Fred Anderson Jones, Paducah, Ky.; Vanderbilt University School of Medicine, Nashville, 1914; member of the American Medical Association; past president of the McCracken County Medical Society; on the staffs of Riverside Hospital and Illinois Central Hospital, where he died April 16, aged 68, of cirrhosis of the liver and carcinoma of the sigmoid.

Joseph Adelard Laurion, Somerville, Mass.; Albany (N. Y.) Medical College, 1895; died March 20, aged 77, of myocardial failure.

Lester Benjamin Lougee, Marilla, N. Y.; Physio-Medical College of Indiana, Indianapolis, 1896; member of the American Medical Association; served as health officer; founder and president of the Marilla Library; on the staff of the Deaconess Hospital in Buffalo, where he died April 11, aged 76, of heart disease, following an operation.

James Straine Louthan, Beaver Falls, Pa.; Western Reserve University Medical Department, Cleveland, 1882; member of the American Medical Association; physician for the Pittsburgh and Lake Erie Railroad; died April 12, aged 93.

Joseph Wooding Love, Springfield, Mo.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1890; member of the American Medical Association; past president of the Missouri State Medical Society; for many years secretary and past president of the Greene County Medical Society; past president of the Southwest Clinical Society; died in the Veterans Administration Hospital, Little Rock, May 3, aged 81, of bronchopneumonia and cerebral arteriosclerosis.

Norris C. Magraw, Cadiz, Ky.; University of Louisville Medical Department, 1894; member of the American Medical Association; died in the Jennie Stuart Hospital in Hopkinsville, April 19, aged 75, of complications as the result of a fractured hip received in a fall on an icy pavement in February.

Paul John Mateicka, Milwaukee; University of Wisconsin Medical School, Madison, 1942; member of the American Medical Association; interned at the Indiana University Medical Center in Indianapolis; on the staff of the Sacred Heart Sanitarium and an instructor at the school of nursing; died April 13, aged 32.

Daniel Bradford McCann, Los Angeles; Rush Medical College, Chicago, 1890; died April 10, aged 89, of myocarditis.

William Emmett McClain, Seattle; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1905; member of the American Medical Association; on the staffs of the Ballard General and Columbus hospitals; died April 10, aged 70, of coronary occlusion.

Charles Ellsworth McCune ⊕ West Springfield, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1897; died in Erie April 7, aged 85, of pulmonary tuberculosis.

William Henry McKinney, Athena, Ore.; Gate City Medical College, Dallas, 1908; Eclectic Medical University, Kansas City, 1917; died in Pendleton March 2, aged 65.

Aaron Moore ⊕ Central Islip, N. Y.; Tulane University of Louisiana School of Medicine, New Orleans, 1924; member of the American Psychiatric Association; served on the staff of the Central Islip State Hospital; died April 3, aged 49, of coronary occlusion.

David Cowee Pierpont ⊕ Ironwood, Mich.; Columbia University College of Physicians and Surgeons, New York, 1903; on the staff of the Newport Hospital; died April 15, aged 69, of coronary occlusion.

Clyde E. Purcell ⊕ Paducah, Ky.; Hospital College of Medicine, Louisville, 1903; died in the Riverside Hospital April 23, aged 75, of cerebral hemorrhage.

Charles Duncan Rankin, Flippin, Ark.; St. Louis College of Physicians and Surgeons, 1922; Kansas City (Mo.) College of Medicine and Surgery, 1923; died in Gassville April 30, aged 72, of heart disease.

Ida Virginia Reel, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1882; died April 28, aged 91, of coronary thrombosis.

Franklin Ward Renfrew, Goshen, Conn.; Cornell University *Medical College, New York, 1919; member of the* American Medical Association; served during World War I; during World War II was connected with the U. S. Public Health Service; formerly on the staffs of the Beekman-Downtown and City hospitals in New York; died April 29, aged 55, of cerebral hemorrhage.

Francis M. Reynolds, *Montpelier, Ind.; Medical College* of Indiana, Indianapolis, 1897; served as mayor; died April 16, aged 78, of coronary disease.

Schuyler Parshall Richmond, Syracuse, N. Y.; Syracuse University College of Medicine, 1903; member of the American Medical Association; associate clinical professor of medicine and dermatology at his alma mater; affiliated with the Memorial, University and St. Joseph's hospitals; died April 8, aged 67, of transverse myelitis.

Harvey Hamilton Roberts ⊕ Georgetown, Ky.; Medical College of Ohio, Cincinnati, 1890; past president of the Scott County Medical Society; served on the staff of the Good Samaritan Hospital, Lexington; died in St. Joseph's Hospital, Lexington, April 19, aged 82, of coronary heart disease.

Maurice Rosier, St. Petersburg, Fla.; University of the South Medical Department, Sewanee, Tenn., 1899; served in the U. S. Navy during World War I; died April 30, aged 73.

Philip Edward Rossiter, Avon, N. Y.; Long Island College Hospital, Brooklyn, 1902; member of the American Medical Association; served during World War I; later an officer in the regular army; formerly affiliated with the U. S. Veterans Bureau; died in the Strong Memorial Hospital, Rochester, April 30, aged 71, of bronchopneumonia.

Frederick Schwartz, Philadelphia; Jefferson Medical College of Philadelphia, 1888; died in Sea Isle City, N. J., April 19, aged 85, of carcinoma of the pancreas.

Cornelius James Seay, Scarsdale, N. Y.; University College of Medicine, Richmond, 1898; member of the American Medical Association and the American Urological Association; died in White Plains (N. Y.) Hospital April 24, aged 74, of carcinoma.

Edmund Spicer, Waterbury, Conn.; Yale University School of Medicine, New Haven, 1905; member of the American Medical Association; fellow of the American College of Surgeons; for many years on the staff of the Waterbury Hospital; died April 12, aged 66, of ruptured aneurysm of the aorta.

Joseph Blankinship Thigpen, Bay Springs, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1905; member of the American Medical Association; served as county health officer; president of the Bay Springs Bank; died April 27, aged 66, of tuberculosis.

Charles Sherman Van Ness, Peterson, Iowa; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1904; died April 26, aged 74, of cerebral hemorrhage.

William H. Winningham, Trenton, Mo.; Marion-Sims College of Medicine, St. Louis, 1893; member of the American Medical Association; on the staff of the Wright Memorial Hospital, where he died April 30, aged 80, of myocarditis.

Beverly Thomas Young, Glennville, Calif.; University of Texas School of Medicine, Galveston, 1907; died in a hospital at Bakersfield April 8, aged 64.

Foreign Letters

LONDON

(*From Our Regular Correspondent*)

July 4, 1948.

Annual Meeting of British Medical Association

The first normal postwar annual meeting of the British Medical Association was held at Cambridge and was well attended, in spite of the difficulties of travel by car, food rationing, shortage of accommodation and other obstacles arising from the abnormal condition of the country which still persists after the war. At the meeting of representatives it was announced that the previous week 65,000 copies of the *British Medical Journal* had been posted, which was a record, and over 3,000,000 copies had been printed in the last year. The increase in circulation was partly due to increased membership of the association and also to increased subscriptions from nonmembers. From the business point of view, last year was extremely profitable. The excess of receipts over expenditure amounted to $124,000. A new quarterly, the *Journal of Clinical Pathology*, had been added to the publications of the association. The two abstracting journals, the *Abstract of World Medicine* and the *Abstract of World Surgery*, had been well received, and the circulation had reached the estimated figure by the end of the first year of publication. The total income of the association was $676,000.

Waste of Physician's Time Under Medical Socialism

In their enthusiasm for medical socialism its advocates entirely overlook its drawbacks. In a letter to the *Times* a physician who has had much experience of it in the panel system shows how much time is wasted. At least one third of his panel patients come for no medical purpose at all. They come for certificates of a great variety or for the repeat of a prescription. Here lies the main difference between panel and private practice and the main reason for so much unnecessary work which clutters up the office and prevents good work for those needing a physician's care. The private patient, having seen his doctor, can get his prescription repeated as often as necessary by simply going to the pharmacist, but the panel prescription can be dispensed only once. For every fresh bottle the panel patient must visit the physician to obtain a fresh prescription, wasting his own time and the physician's time. It may be asked: "Why not make a new regulation abolishing the difference?" The answer reveals another drawback of medical socialism. The panel patient gets his medicine free, and, with the universal craving for bottles of medicine of the hypochondriacs of the English masses, the waste which exists under the panel system would be multiplied. This point entirely escaped the Minister of Health when he claimed that when the cash relationship between doctor and patients disappeared the doctors would devote their time to patients who really needed them, instead of to wealthy hypochondriacs. What his service will do is to render general, because free, indulgence in hypochondria.

Gerontologic Conference

A conference of the British Society for Research on Aging will be held at the Royal Society of Medicine, London, on July 7 from 10 a. m. to 6:30 p. m. Papers on the result of their gerontologic researches will be read by Sir Frederick Bartlett, F. R. S., Prof. E. C. Dodds, F. R. S., F. Bourliere (Paris), L. Cosin, F. A. Denz, E. Geiringer, V. Korenchevsky, O. Olbrich, H. Brown and M. H. Ferguson, and Professor Beltran-Baguena (Valencia University).

British Surgeon Visits Australia

Early this year the first Sims Commonwealth Professor of the Royal College of Surgeons, Sir Hugh Cairns, visited Australia and New Zealand, where he delivered many lectures, conducted clinics and attended conferences. He has presented a report to the College. Perhaps the most important result is his suggestion that the time has come to found medical fellowships for graduates in Britain to do postgraduate work in Australia and New Zealand, where there are experts well known all over the world. It is hoped that in time medical teachers and research workers will be freely exchanged between all parts of the Commonwealth.

ITALY

(*From Our Regular Correspondent*)

Florence, June 19, 1948.

Surgical Treatment of Pulmonary Tuberculosis

At the National Congress, the Italian Surgical Association gave extensive consideration to the surgical treatment of pulmonary tuberculosis. The first speaker, Prof. N. Di Paola, discussed intrapleural pneumonolysis and surgical intervention on the phrenic nerve. The cutting of adhesions, or pneumonolysis, is clinically important because their presence favors recurrence of the lesions which were stabilized after treatment by pneumothorax; its performance seems advisable also in those cases in which pneumothorax is ineffective. Depending on the type of adhesion (simple or complex), the indications may be those of necessity, of urgency or of security; it is the author's definite concept that all types of adhesions should be cut. He stated that the pressure of the pneumothorax should be graduated so that the adhesions appear well delineated before the intervention. The instrument should be one with a handle and independent optics. The postoperative management is of great importance for the Jacobaeus operation. Failures and complications may be caused by defects of technic and by incongruous pneumothoracic treatment in the immediate postoperative period. Among 1,460 cases in which the operation was performed, 84 per cent were without any complication; in 13 per cent there occurred a temporary circumscribed pleurisy; chronic tuberculous empyema occurred in about 1 per cent, and emphysema was manifested in 0.6 per cent.

In discussing surgical intervention on the phrenic nerve, the speaker demonstrated that the results correspond to the topography and to the anatomicopathologic type of the lesions. For apical lesions it is wrong to depend on the autonomous phrenicoexeresis; it is much better to perform at once a thoracoplasty or an extrapleural pneumothorax. On the contrary, the parahilar lesions present a good indication. The basal lesions do not constitute any indication of choice. Some satisfactory results have been obtained by combining phrenicoexeresis with unilateral pneumothorax and phrenicoexeresis with pneumoperitoneum. The speaker condemned the prethoracoplastic phrenicoexeresis and considered it favorable to cut the phrenic nerve after the thoracoplasty in cases of apicocaudal bronchopneumonic aspiration. He was not enthusiastic about phrenicoexeresis as a satisfactory treatment by itself. He considered it safe to assume that in a few, well determined circumstances, a small number of permanent good results may be obtained by surgical intervention on the phrenic nerve.

Professor Biancalana discussed scaleniotomy, pneumonolysis and surgical extrapleural pneumothorax. Scaleniotomy has been abandoned as a surgical treatment by itself, but represents one stage of upper thoracoplasty. Pneumonolysis with plumbage has been abandoned completely since the advent of modern thoracoplasty; only pneumonolysis combined with the filling of collapsed lung cavities with paraffin has survived, and this finds its indications in persons of a certain age and as a preparatory treatment for thoracoplasty in patients with large cavities with considerable secretion, or as a supplementary treatment to thoracoplasty in patients with residual cavities. The combination of apicolysis with thoracoplasty may be employed to obtain better release of the apex of the lungs and, consequently, a much higher percentage of closure of cavities.

In surgical extrapleural pneumothorax the extensive detachment of the parietal pleura provokes collapse of the lung, which may be maintained by supplying more air. The intervention is fairly easy and well tolerated by the patients, but at first many failures and complications occurred The results were improved by perfecting the operative technic and postoperative management and by a better selection of cases. One characteristic of the intervention is the reversibility of the collapse; reexpansion of the lung may be obtained after three or more years when the extrapleural pneumothorax is discontinued.

Professor Ruggieri reported on thoracoplasty, lobectomy and pneumonectomy. The principal types of thoracoplasty are simple partial upper thoracoplasty; partial upper thoracoplasty with complementary apicolysis, total and subtotal thoracoplasty and anterolateral thoracoplasty according to Monaldi. In criticizing each type of intervention, the speaker said that there is no standard operation which may be adopted independently of the infinite variety of tuberculous lesions; on the contrary, the intervention must be adapted to the morbid process in each case. In deciding to do a lobectomy or pneumonectomy it is absolutely necessary to use much caution; however, these procedures should have a definite place in the surgical therapy of pulmonary tuberculosis, since their usefulness is beyond doubt in some forms of the disease.

The last report on the subject was presented by Professor Omodei Zorini of the University of Rome. His personal experience gives evidence of the possibility of total reexpansion of the lung after the extrapleural pneumothorax has been discontinued, and of the usefulness of combining it with treatment with penicillin and streptomycin, to avoid suppurative complications. The extrapleural pneumothorax may be considered a satisfactory accomplishment by modern phthisiology.

The speaker is opposed to thoracoplasty even if the pleura is left untouched. He considers preventive phrenicoexeresis as harmful in many cases of upper cavities and of bilateral lesions, in which it is necessary to spare the function of the diaphragm.

With Bottari and Di Paola, Professor Zorini presented 7 cases of large cavities with much secretion, in which recovery was obtained from treatment by collapse of the lobe. This method suggested by Bottari consists of the combined endocavitary aspiration and administration of streptomycin into the cavity and also parenterally before and after an apicoaxillary and posterior thoracoplasty. By this procedure one may be successful in obtaining a rapid and complete collapse of the entire diseased lobe of the lung.

OSLO

(From Our Regular Correspondent)

July 8, 1948.

Health Passports

It would be helpful for all concerned if everyone had a written health record to show the last physician consulted. In 1946, Dr. Evang, head of the Norwegian Public Health Service, appointed a committee to inquire into the problem of health passports. A year later this committee issued its recommendations. At the school-leaving age, but not earlier, everyone should be supplied with a booklet in which every fact of major importance concerning the owner's health should be entered. Finding that the health passports already in tentative use in Norway do not satisfy requirements, the committee drafted a 16 page health passport of its own.

A copy of this booklet has been issued with every number of the *Journal of the Norwegian Medical Association* for May 1, 1948. In the same issue Dr. Evang gives a brief account of health passports in general. He concludes: "Before the plan of introducing health passports is promoted, it would be desirable to have comments on the present draft from as many as possible of the country's doctors." In subsequent issues of the same journal several physicians have taken Dr. Evang at his word and aired their not always favorable opinion of his infant. As was to be expected, the chief stumbling block concerns the diseases one prefers to keep to himself, notably the venereal diseases. But there are other diseases, such as tuberculosis, the presence of which one does not wish to publish from the housetops. Yet the advantages of a health passport are so great that it is hoped that Dr. Evang will succeed, so that even the most captious critic will hail it as an essential feature of the campaign for better health.

The Costly and Wasteful M.D. Degree

Few physicians in Norway are entitled to the degree of Doctor of Medicine. This is so because one must be endowed with ample means, brains, ambition, leisure, vitality and other more or less essential equipment for the long march which may or may not ultimately give one the much coveted degree. Is it worth while? If it is, ought not something radical be done to improve this institution? To be sure, a special committee is at present engaged on the "reform of the M.D.," but it is not known when its recommendations will be published.

The faults of the present system were recently exposed with blunt candor by Dr. Thjøtta, Professor of Bacteriology at the University of Oslo, on the occasion of a graduation ceremony for the M.D. degree. These were his points: The printing alone of an M.D. thesis recently cost its author Kr. 16,000 (over $3,000). M.D. theses are apt to be stuffed with quotations dragged in to demonstrate the author's erudition. The valuable time of the experts who have to pass judgment on one such *magnum opus* after another every year is frittered away, and their own research work is handicapped. As Professor Thjøtta remarked: "Everyone will see that one cannot expect much scientific work from the Norwegian Professors of Medicine in these circumstances."

But what was, perhaps, Professor Thjøtta's most important point was that the present system for attaining the M.D. degree is a real check on scientific team work in Norway. For the prospective Doctor of Medicine must work out a problem all by himself, although it would have been much better dealt with by a team composed of, say, a pathologist, a clinician, a bacteriologist and others. The one horse show is today an anachronism.

Prevention of Tuberculosis in the Fighting Services

On paper at any rate, the machinary for keeping tuberculosis out of the Norwegian fighting services is almost fool proof. Every new recruit is subjected to a searching medical examination, including tuberculin tests and a radiologic examination of the lungs. At intervals of three months, the radiologic examination is repeated and negative reactors to tuberculin are tested anew. When, in spite of these precautions, a member of the fighting services is found to be tuberculous, all who have recently been in contact with him are examined. Recruits found to have negative reactions to tuberculin are recommended for BCG vaccination which, voluntary in the past, can now be enforced.

Professor Axel Ström, who is the highest authority on the subject in Norway and largely responsible for the health of the fighting services, has given an account of an outbreak of tuberculosis in the Norwegian navy. A recruit suffering from cavernous pulmonary tuberculosis and with tubercle bacilli in his sputum was not recognized as having tuberculosis until he had infected several of his companions, 65 of whom reacted in some way or other to the infection. Twenty-five of them merely became tuberculin-positive; another 25 became tuberculin-positive and also presented hilar adenitis. In 3 erythema nodosum developed; pleurisy developed in 5, pulmonary infiltration in 6 and pulmonary infiltration with cavity formation in 1. Professor Ström refers to many other similar incidents, some of which also assumed epidemic proportions. The weakest link in the chain is the fact that the tuberculin-negative recruit who is vaccinated with BCG on joining does not become allergic to tuberculin until several weeks later, and in the meantime he may contract tuberculosis. The remedy Professor Ström proposes in this connection is the tuberculin test and BCG vaccination of negative reactors before they are called up. Now that BCG vaccination is compulsory in Norway, it ought to be possible to give effect to this proposal.

Council on Medical Education and Hospitals

AMENDED INTERN PLACEMENT PLAN

Paragraphs three and four of the Uniform Intern Placement Plan, as published in The Journal, March 6, 1948, have been amended for clarification by the joint action of the Council on Medical Education and Hospitals of the American Medical Association, the Association of American Medical Colleges, the American Hospital Association, the Protestant Hospital Association and the Catholic Hospital Association. The following is the full text of the amended plan:

PLAN FOR THE YEAR 1948-1949 FOR INTERNSHIPS BEGINNING JULY 1, 1949

1. Applications and credentials to be submitted only through the dean's office to hospitals, with the date for filing applications and release of credentials by the medical schools set at Oct. 15, 1948. Credentials ordinarily will consist of an executed application blank and a letter from the dean but do not preclude such letters from members of the faculty as they may wish to write, unsolicited by the candidate.
2. Applicants may visit hospitals and be interviewed by hospital intern committees, but the hospital administration shall not commit the hospital or obligate the applicant, or potential applicants, before Nov. 15, 1948.
3. No intern appointments shall be tendered prior to Nov. 15, 1948 to applicants who are members of the senior class in medical schools. Notice by telegram is preferable. Hospitals may decline an applicant at any time.
4. Applicants shall send acceptances or rejections of appointments so that they are received at the hospital by midnight of Nov. 18, 1948; but commitments by applicants shall not be required prior to that time.
5. These regulations shall apply only to undergraduate medical students who have not completed the fourth year of their medical course.

The previous wording of the amended paragraphs was as follows:

3. No intern appointments shall be made prior to Nov. 15, 1948, from applicants who are members of the senior class in medical school. Hospitals may decline an applicant at any time.
4. Applicants shall accept or reject hospital appointments before midnight of Nov. 18, 1948.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: *Written.* Various Centers, Jan. 21, 1949. Final date for filing application is Oct. 1. *Oral,* Philadelphia, Oct. 10. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

American Board of Internal Medicine: *Written.* Oct. 18. Asst. Sec., Dr. W. A. Werrell, 1 W. Main St., Madison 3, Wis.

American Board of Neurological Surgery: *Oral.* Chicago, June 1949. Final date for filing application is Jan. 1949. Sec., Dr. W. J. German, 310 Cedar Street, New Haven, Conn.

American Board of Obstetrics and Gynecology: *Part I.* Various Centers, Feb. 4, 1949. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 1.

American Board of Ophthalmology: *Oral.* Chicago, Oct. 6. *Written.* Various Centers, January 1949. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

American Board of Orthopedic Surgery: *Part II.* Chicago, January 1949. Final date for filing application is August 15. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

American Board of Otolaryngology: *Oral.* Chicago, Oct. 5-8. New York City, Spring, 1949. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

American Board of Pathology: Chicago, Oct. 8-9. Final date for filing application is Oct. 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

American Board of Pediatrics: *Oral.* Seattle, Sept. 10-12. Atlantic City, Nov. 17-19. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines, Iowa.

American Board of Plastic Surgery: Examinations are given in June and November of each year in the hometown of applicants. Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

American Board of Radiology: Nov. Final date for filing application is Sept. 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W. Rochester, Minn.

American Board of Surgery: *Written.* Various Centers, March 1949. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman 225 S. 15th St., Philadelphia.

American Board of Urology: Chicago, Feb. 12-16, 1949. Final date for filing application is Sept. 1. Sec., Dr. Harry Culver, Route #13, Sunnyside Rd., Minneapolis 4.

BOARDS OF MEDICAL EXAMINERS

Alabama: *Examination.* Montgomery, June 28-30, 1949. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

Alaska: * *Examination.* Juneau, Sept. 7. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

Arkansas: *Eclectic Examination.* Little Rock, Nov. 4. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

California: *Oral.* Los Angeles, Nov. 20-21. *Written.* Sacramento, Oct. 18-21. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

Connecticut: * *Examination.* Hartford, Nov. 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven.

District of Columbia: * *Reciprocity.* Washington, Sept. 13. Sec., Commission on Licensure, Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.

Georgia: *Examination.* Atlanta, Oct. 12-13. *Endorsement.* Atlanta, Oct. 14. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

Illinois: Chicago, Oct. 5-7. Supt., Dept. of Registration and Education, Mr. Fred W. Ruegg, Capitol Bldg., Springfield.

Indiana: *Examination.* Indianapolis, June 1949. Sec., Board of Medical Registration & Examination, 416 K. of P. Bldg., Indianapolis.

Iowa: * *Examination.* Des Moines, Dec. 6-8. *Endorsement.* Des Moines, Oct. 4. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

Kansas: Topeka, Dec. 15-16. Sec., Board of Medical Registration & Examination, 905 N. 7th St., Kansas City.

Maine: Portland, Nov. 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

Maryland: *Examination.* Baltimore, Dec. 14-17. *Endorsement.* At the discretion of the Board. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore.

Minnesota: Minneapolis, Oct. 19-21. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

Montana: Helena, Oct. 4-6. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

Nevada: Carson City, Nov. 1. Sec., Dr. G. H. Ross, Industrial Bldg., Carson City.

New Hampshire: Concord, Sept. 9. Sec., Board of Registration in Medicine, Dr. J. S. Wheeler, Room 107, State House, Concord.

New Jersey: *Examination.* Trenton, Oct. 19-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New Mexico: * Santa Fe, Oct. 11-12. Sec., Dr. V. E. Berchtold, 141 Palace Ave., Santa Fe.

New York: *Examination.* Various Centers, Sept. 27-30. Sec., Dr. J. L. Lochner, Jr., 23 South Pearl St., Albany 7.

Ohio: *Examination.* Columbus, Dec. *Endorsement.* Columbus, Oct. 5. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

Pennsylvania: *Examination.* Philadelphia, Jan., 1949. Act. Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

Puerto Rico: *Examination.* Santurce, Sept. 7-11. Sec., Mr. Luis Cueto Coll, 22 Purada, Box 3717, Santurce.

Rhode Island: * *Examination.* Providence, Oct. 7-8. Chief, Div. of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

South Carolina: *Endorsement.* Sept. 6. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

Texas: Fort Worth, Nov. 4-6. Sec.-Treas., Dr. M. H. Crabb, 1305 Amicable Bldg., Waco.

Virginia: *Examination.* Richmond, Dec. 3-4. *Endorsement.* Dec. 2. Sec., Dr. K. D. Graves, 30½ Franklin Road, Roanoke.

West Virginia: Charleston, Oct. 4-6. Comm., Public Health Council, Dr. N. H. Dyer, State Dept. of Health, Charleston.

Wisconsin. * Madison, Jan. 11-13, 1949. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls, Wis.

Wyoming: *Examination.* Cheyenne, Oct. 4. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

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* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: Juneau. Last week in Aug. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

Arizona: *Examination.* Tucson, Sept. 21. Sec., Mr. Francis A. Roy, Univ. of Arizona, Tucson.

Colorado: *Examination.* Denver, Sept. 15-16. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 3.

Connecticut: *Examination.* Oct. 9. Exec. Asst., Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

District of Columbia: *Examination.* Washington, Oct. 18-19. Sec., Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.

Florida: *Examination.* Gainesville, Nov. 6. Final date for filing application is Oct. 25. Mr. M. W. Emmel, University of Florida, Gainesville.

Iowa: Des Moines, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

Michigan: *Examination.* Ann Arbor and Detroit, Oct. 8-9. Sec., Miss Eloise LeBeau, 1510 West Allegan St., Lansing.

Minnesota: *Examination.* Oct. 5-6. Sec.-Treas., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

Nebraska: *Examination.* Omaha, Oct. 5-6. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009 State Capitol Bldg., Lincoln.

Oklahoma: Spring of 1949. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Oregon: *Examination.* Portland, Sept. 4. Sec., Basic Science Examining Committee, Dr. C. D. Byrne, Univ. of Oregon, Eugene.

South Dakota: *Examination.* Vermillion, Dec. 3-4. Sec., Dr. G. M. Evans, Yankton.

Tennessee: *Examination.* Memphis & Nashville, Sept. 20-21. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

Wisconsin: *Examination.* Madison, Sept. 25. Final date for filing application is Sept. 18. Sec., Prof. W. H. Barber, Scott & Watson Sts., Ripon.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Abandonment of Patient Without Notice.—The plaintiffs, father and son, sued the defendant physician for damages for alleged malpractice resulting in the loss of the son's leg. From judgments for both plaintiffs, the defendant appealed to the Supreme Court of Appeals of Virginia.

The son fractured his leg in a football game on Oct. 19, 1944, and was taken to the Norfolk General Hospital. It was a simple fracture with slight comminution or splintering. The boy's father engaged the services of the defendant physician, who reduced the fracture and set the leg in a plaster of paris cast in the customary way, with the padding and gauze between the leg and the cast. The next day, when the defendant saw the boy, he was told that the son was suffering excruciating pain in the injured leg and that he had no feeling in his toes. The defendant, according to the plaintiffs' evidence, made no examination of the cast and did nothing about it, however. On October 20 both father and son made a similar complaint. The pain in the ankle had become continuous and unendurable, and the physician was told that there was a throbbing sensation in the patient's ankle, that it felt as though a tight band were around it and that he had no feeling in his toes. The father suggested that the cast was too tight, but the defendant, in very emphatic language, said that it was not. However, he made no examination of the cast or leg and did nothing to alleviate the pain. On October 22, which was Sunday, the defendant left the city for a week, without advising either the patient or his parents of his intention to leave. He did not make any provision for the patient during his absence and did not communicate with him or leave any instructions for any other physician to take care of the case while he was away.

On October 21, the day of the defendant's last visit before leaving town the patient's temperature was 101 F.; at 8 a. m. it was 100.8 F. His temperature had been normal at midnight on October 19, but rose to 101.6 F. at 4 p. m. on October 20; four hours later it was 100.8 F. These temperatures were noted on the chart of the patient. The chart discloses that on October 21 the white blood cell count was 16,000 and the neutrophil count 77 per cent. For twenty-four hours prior to the defendant's last visit to his patient on October 21 the patient had been given morphine on five separate occasions for the alleviation of the pain. On the night of October 21 the son's temperature varied from normal to 102 F., and during the next four days it fluctuated, sometimes being subnormal and at other times up to 103 F. The pain in the ankle was not alleviated by the administration of morphine. On October 30, when the defendant returned, he was again requested to examine the cast and leg, but declined to do so and on the same day discharged the patient from the hospital. The patient was carried to his home at Virginia Beach on October 31 and confined to his bed. The rise in temperature persisted, and he continued to endure extreme pain in his ankle. The father called the defendant on November 7, informed him of the condition of the patient and requested him to see him. The physician refused and told the father that there was nothing wrong with the boy's leg. While the defendant was away, and following his later refusal to see the patient, the patient was treated by Dr. Simpson, another orthopedic surgeon. He testified that the cast was completely bivalved on November 7, for the purpose of relieving all pressure, and that the necrosis was caused by pressure on the nerves, created by the cast. He stated that the possibility of swelling, with the result that the cast might become too tight, even though it were originally properly applied, should be anticipated by a physician and that any unyielding cast applied to a broken limb ought to be viewed with suspicion and examined to see whether it had become too tight. The cast was subsequently removed, on November 27. From that time until July 1946, when it was finally amputated, the leg became progressively worse, and the plaintiff was at no time able to use it.

There was medical testimony that the patient was not in proper condition to have been discharged from the hospital on Oct. 21, 1944, at which time the defendant authorized the discharge. There was medical testimony to the effect that on October 21, the last day on which the defendant saw his patient before leaving on his trip, there was an indication that an infection existed and that a physician with an average degree of learning and skill, practicing in the community, should have attempted to ascertain the cause of the infection and especially should have examined the injured leg and the cast. There was medical testimony to the effect that if a physician intends to leave a case it is his duty to notify the patient, or his parents in this case, of his intention to leave and that he should make some provision to put his patient in charge of some reputable physician. Finally, there was medical testimony to the effect that the amputation of the patient's leg was due to a continuation of the same conditions as were brought about by the swelling of the leg and the failure of the defendant promptly to relieve the pressure by removing or cutting the cast.

The defendant contended that there was no evidence to sustain the verdicts of the jury and that they were founded only on sympathy for the unfortunate boy who lost his leg and for the father who had incurred large expenses. He argued that when he left on October 22 the boy was in the hospital receiving good treatment from the interns and nurses and on October 24 was directly under the supervision and care of Dr. Simpson, an orthopedic surgeon of high standing, and insisted that if he, the defendant, had been in attendance he could have done no more for the patient than was done. He further contended that the fracture was properly reduced and the cast properly applied. The plaintiffs do not claim, said the court, that the fracture was not properly reduced or that the cast was improperly applied. The plaintiffs' contention is that after the application of the cast the defendant neglected to pay heed to certain conditions that arose in a very short time after the cast was applied and, without giving the patient or his father any notice and without securing another physician for the boy, left the city and did not return for eight or nine days, during which time the condition of the patient grew progressively worse.

In cases of this nature, said the Supreme Court, there is no difficulty about the law. It is simple and well settled, although not always easy of application. A physician is not a warrantor or insurer of a cure. His contract is to treat the patient with reasonable diligence and skill. After a physician has accepted employment in a case it is his duty to continue his services as long as they are necessary. He cannot voluntarily abandon his patient. Even if personal attention is no longer necessary in the treatment of an injured limb, the physician, if the case calls for it, must furnish the patient with instructions as to care, and his failure to do so might become actionable negligence.

From the evidence, the Supreme Court continued, the jury reasonably could have found the defendant guilty of actionable negligence in several respects. It could have concluded that on October 20 and 21 the physician should have rendered some kind of treatment when he was notified by the father and the boy of the great pressure of the cast and of the excruciating pain. Failure or refusal to see the patient from October 21 to 30, which was a very critical period, could have been found by the jury to be negligence which proximately contributed to the patient's great pain and suffering and the eventual loss of his leg. The failure or refusal of the defendant to render any treatment after he had been advised of the serious condition of the patient and then sending him home without making any future provision or giving any directions for his care and treatment might have afforded reasonable grounds for the jury to have found negligence on the physician's part in those respects. Finally, on November 7, the defendant failed to respond to the call for medical assistance made by the father for the boy when the physician, by his own admission, had not released the case nor had he been discharged from the obligations he assumed when he took the case. At that time it was his duty to continue attending and treating the patient. His failure in this respect might have been found to have been negligence. We are of the opinion, concluded the Supreme Court of Appeals, that the evidence sufficiently supports the verdicts. Accordingly the judgments in favor of both plaintiffs were affirmed. *Vann v. Harden (two cases), 47 S. E. (2d) 314 (Va., 1948).*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below

American J. Digestive Diseases, Fort Wayne, Ind.

15:73-108 (March) 1948

Psychosomatic Aspects of Peptic Ulcer. H. Gauss. -p. 73.
Effect of Salicylate Medication upon Urinary Excretion of Vitamin C. J. M. Spitzer and S. Shapiro. -p. 80.
Leiomyosarcoma of Stomach with Particular Reference to Gastroscopic Picture. E. D. Palmer. -p. 84.
Diagnostic Technics in Diarrhea. A. J. Cantor. -p. 88.
Observations on Acute Allergic Gastritis. T. C. Afendoulis. -p. 90.
*Increased Sugar Tolerance as Factor in Production of Symptom Complex Simulating Peptic Ulcer, Neuro-Circulatory Asthenia, and Psychoneurosis. A. R. Peskin. -p. 92.

Increased Sugar Tolerance in a Syndrome Simulating Peptic Ulcer.—Peskin reports 4 cases in which vague symptoms of a bizarre character were experienced by the patients for several years. Some had a family history of similar complaints. The symptoms were: nervousness, palpitation apprehension, weakness in the legs, tremors, excessive perspiration, mental dulness and hunger pains relieved by food. The symptoms were aggravated or precipitated by physical effort and were prevented or relieved by eating and rest. A study of sugar tolerance suggested itself from the similarity of these symptoms to those of hypoglycemia. Confirmation of the observation that these symptoms were due to relative hypoglycemia was obtained by reproduction of the same symptoms with insulin and exercise. At a relatively high blood sugar level (88 mg. per hundred cubic centimeters) patient began to have such symptoms as tremor, air hunger and discomfort in the pit of his abdomen. More severe symptoms were evident at 74 mg. of blood sugar. A disappearance of symptoms took place with the administration of orange juice. For the prevention and relief of this disturbance the author recommends a high fat and high protein diet. He stresses the practical value of the search for this entity in such obscure diseases as neurocirculatory asthenia, psychoneurosis and peptic ulcer syndrome without positive roentgenologic observations. The role of the liver and thyroid efficiency in the maintenance of a so-called normal sugar tolerance is mentioned. These patients disclosed mild dysfunction of liver and thyroid.

American Journal of Physiology, Baltimore

152:1-218 (Jan.) 1948. Partial Index

Protection Against Acceleratory Forces by Carbon Dioxide Inhalation. L. Van Middlesworth and R. F. Kline. -p. 22.
Volume Measurement of Islets of Langerhans and Effects of Age and Fasting. R. E. Haist and E. J. Pugh. -p. 36.
Arterio-Venous Anastomoses in Liver, Spleen and Lungs. M. Prinzmetal, E. M. Ornitz Jr., B. Simkin and H. C. Bergman. -p. 48.
Some Actions of Potassium Chloride at Neuromuscular Junction. M. Altamirano and F. Huidobro. -p. 53.
Effects of Isotonic Solutions and of Sulfates and Phosphates on Distribution of Water and Electrolytes in Human Blood. P. M. Hald, A. J. Heinsen and J. P. Peters. -p. 77.
Effect of Acetylcholine, Caffeine and Alkaloids on Activity of Muscle Adenosinetriphosphatase. Clara Torda and H. G. Wolff. -p. 86.
Measurement of Alveolar Pressure in Human Subjects. A. B. Otis and D. F. Proctor. -p. 106.
Causes of Skin Cooling in Pressure Breathing, Deep Inspiration and Deep Expiration. V. De Lalla Jr. -p. 122.
Cardiovascular Response to Posture and Problem of Faintness and Syncope in Semi-Starved Individual. H. L. Taylor, A. Henschel and A. Keys. -p. 141.
Pulse Rate Responses to Acceleration Under Reduced Barometric Pressure. L. Van Middlesworth. -p. 157.
Physiologic Studies of Effects of Intermittent Positive Pressure Breathing on Cardiac Output in Man. A. Cournand, H. L. Motley, L. Werko and D. W. Richards Jr. -p. 162.
Effect of Xanthopterin on Cell Proliferation in Bone Marrow Cultures. E. R. Norris and J. J. Majnarich. -p. 175.
Maintenance of Vasodilatation of Extremities of Normal Individuals for Prolonged Period by Ingestion of Two to Four Substantial Meals in Close Succession. Grace M. Roth and C. Sheard. -p. 183.
Distribution of Estradiol Between Serum and Red Cells. F. Bischoff and R. E. Katherman. -p. 189.
Hereditary Obesity and Temperature Regulation. Margaret L. Turner. -p. 197.
Physiologic Icterus of Newborn. A. Loewy and L. W. Freeman. -p. 205.
Production of Ketosis by Growth and Adrenocorticotropic Hormones. L. L. Bennett, Ruth E. Kreiss, C. H. Li and H. M. Evans. -p. 210.
Effect of Inorganic Phosphate on Glycolysis of Human Blood. A. J. Heinsen. -p. 216.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

32:99-202 (March) 1948. Partial Index

*Treatment of Gonococcal Infection with Micronized Penicillin by Inhalation. G.V. Taplin and H.T. Thompson. -p. 124.
Ambulatory Treatment of Gonorrhea with Penicillin Preparations: Experiences with Various Preparations and Technics. A. Jacoby, A. Ollswang, J. Freund and T. Rosenthal. -p. 133.
Comparison of Twenty-Four-Hour and Forty-Eight-Hour Readings of Routine Gonococcus Cultures. Adelaide M. Mueller and E. Ellen Nell. -p. 139.
*Bacteriologic Follow-Up of Penicillin-Treated Gonorrhea in Women. Nell Hirschberg. -p. 141.
Cultural and Serologic Studies on Granuloma Inguinale. W. Dunham and G. Rake. -p. 145.
Antigenic Relationships of Donovania Granulomatis (Anderson) and Significance of This Organism in Granuloma Inguinale. G. Rake. -p. 150.
*Treatment of Granuloma Inguinale with Streptomycin. H.L. Hirsh and S.R. Taggart. -p. 159.

Inhalation of Micronized Penicillin for Gonococcal Infections.—Taplin and Thompson say that inhalation of micronized penicillin-glucose or penicillin-plasma mixtures have produced therapeutic concentrations in the blood and urine for more than twenty hours following single inhalations of 200,000 to 300,000 units. Aerosol penicillin inhalations give results similar to intramuscular administration with penicillin-saline solutions. The authors show the apparatus that is used for the administration of micronized penicillin by inhalation and say that 18 of 25 patients with acute gonorrhea who have been treated with inhalation of penicillin were cured clinically and bacteriologically and 3 others were cured clinically, but complete bacteriologic follow-up beyond the first forty-eight or seventy-two hour determinations was impossible to obtain. There were 4 so-called mechanical failures; i.e., patients did not receive the total dosage because of inability to use the large apparatus properly. Retreatments of these 4 failures resulted in three cures and 1 failure. The authors think that this method could cure all but the most stubborn infections.

Penicillin Therapy of Gonorrhea in Women.—Hirschberg made follow-up studies for one to fourteen weeks on 54 women with gonorrhea who were treated with 150,000 units of penicillin in beeswax and peanut oil. There were failures of penicillin treatment in 2 patients. The first of these showed a positive culture seven weeks after receiving 150,000 units of penicillin, the second three weeks after 150,000 units and two weeks after a second treatment of 150,000 units of penicillin. Cultures remained negative after a third dose of 300,000 units. This indicates the importance of follow-up cultures as a criterion of cure.

Streptomycin in Granuloma Inguinale.—Hirsch and Taggart employed streptomycin in 21 patients with granuloma inguinale. The total daily dose was 1 Gm. given intramuscularly in equally divided doses at four hour intervals for periods ranging from six to forty-seven days. Administration of the antibiotic was continued until there was evidence of complete healing of the lesions. The rapidity with which the lesions healed was dependent on their extent and on whether there were moist, ulcerative lesions which were apposed or bathed by vaginal discharge. The Donovan bodies were found to have disappeared from the lesions between the seventh and fourteenth day of therapy. There have been no relapses in the patients followed for up to fourteen weeks. Streptomycin appears to be the drug of choice in the treatment of granuloma inguinale.

American Journal of Tropical Medicine, Baltimore

28:175-348 (March) 1948. Partial Index

Inquiry into Ectopic Lesions in Schistosomiasis. E. C. Faust. -p. 175.
Control of Phlebotomus in Peru with DDT. M. Hertig and G. B. Fairchild. -p. 207.
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Dengue Vector on New Caledonia, New Hebrides, and Solomon Islands. W. J. Perry. -p. 253.
Isospora Infections in Man. A. A. Liebow, N. T. Milliken and Clair A. Hannum. -p. 261.
Pathology of Kala-Azar: Report of Case. J. M. Lubitz. -p. 275.
New Reaction for Diagnosis of Kala-Azar: Preliminary Report. C. Trincão. -p. 287.
Strongyloides Fülleborni Infection in Man. F. G. Wallace, R. D. Mooney and A. Sanders. -p. 299.
Infectivity of Native Malarias in South Carolina to Anopheles Quadrimaculatus. M. D. Young, N. F. Hardman, R. W. Burgess and others. -p. 303.
Outbreak of Typhus of Murine Type: First Report from Isthmus of Panama. C. Calero -p. 313.
Mass Destruction of Adult Anophelines by DDT as Suggested Malaria Control Measure: Preliminary Report. O. K. Fletcher Jr. and J. B. Krause II. -p. 323.

Bulletin of Johns Hopkins Hospital, Baltimore

82:357-428 (March) 1948

Relation of Dosage Schedule to Therapeutic Efficiency of Streptomycin in Treatment of K. Pneumoniae Infections in Mice. C. G. Zubrod. -p. 357.
Studies on Schistosomiasis Japonica in Philippine Islands: Clinical Study of 72 Cases Treated with Tartar Emetic. D. Carroll and A. V. Hunninen. -p. 366.
*Clinical Use of Penicillin in Oil and Beeswax in Pediatric Practice. F. M. Adams and Elizabeth G. Fisher. -p. 373.
Sedimentation Rate in Asthma in Children. S. Livingston. -p. 385.
*Hitherto Unrecognized Tendency to Development of Widespread Pulmonary Vascular Obstruction in Patients with Congenital Pulmonary Stenosis (Tetralogy of Fallot). A. R. Rich. -p. 389.
Dosage Schedule of Penicillin in Bacterial Infections. E. K. Marshall Jr. -p. 403.

Penicillin in Oil and Beeswax in Pediatric Practice.—Adams and Fischer treated 180 children with various acute infections with penicillin suspended in a mixture of peanut oil and beeswax. For the most part, these children were treated as ambulatory patients, necessitating daily visits to the clinic for their injections and follow-up care. Hospitalization was carried out only in cases of severe pneumonia. Once the diagnosis of pneumonia was made, nasopharyngeal and throat cultures were taken. Crystalline sodium penicillin suspended in peanut oil with 4.8 per cent bleached beeswax was used. This was supplied in 10 vials containing 300,000 units per cubic centimeter. All patients received 5,000 units per unit of weight at each injection. There were 100 cases of pneumonia, 32 of which occurred in infants under 12 months of age. The results achieved were satisfactory, with 92 good responses, 4 poor responses and 4 failures. Twenty-nine cases of suppurative otitis media, 9 of which proved to be sulfadiazine-resistant, were also treated. There was only 1 failure in this group. The penicillin blood levels obtained by this method of injection were extremely variable. Two instances of mild local inflammatory reaction at the site of injection were encountered. Both cleared spontaneously without formation of abscess. There were no allergic reactions.

Pulmonary Vascular Obstruction in Tetralogy of Fallot.—Rich shows that widespread and progressive thrombosis of pulmonary vessels of microscopic size is a frequent occurrence in patients with congenital pulmonary stenosis (tetralogy of Fallot type). This condition was present in all but 2 of 21 consecutive cases studied at necropsy. It is suggested that the predisposing factors are the increased viscosity of the blood, resulting from the compensatory polycythemia, and the reduced rate of flow in the pulmonary vessels, resulting from the greatly diminished amount of blood delivered to the pulmonary vascular system.

Diseases of Chest, Chicago

14:161-316 (March-April) 1948

Changing Concepts in Bed Rest Treatment of Tuberculosis. R. S. Anderson. -p. 167.
Tuberculous Disease of Trachea and Bronchi. A. R. Judd. -p. 180.
Tuberculosis Control in Army. E. R. Long. -p. 190.
Pulmonary Cysts. B. Gordon. -p. 193.
Early Clinical Features of Bronchogenic Carcinoma: Illustrative Cases. C. M. Norris. -p. 198.
Pulmonary Abscess Secondary to Bland Pulmonary Infarction. L. Levin, J. W. Kernohan and H. J. Moersch. -p. 218.
Pneumoperitoneum. A. Calix and S. Jacobs. -p. 233.
Progress in Tuberculosis Control in United States. F. J. Weber. -p. 243.
Experiences in Air Transportation of Patients with War Wounds of Chest. L. D. Carson. -p. 254.
Eradicating Tuberculosis in Rural Minnesota. L. S. Jordan. -p. 261.

Journal of Allergy, St. Louis

19:71-150 (March) 1948

Hypersensitivity and Immunity in Light of "Unitarian" Hypothesis. J. Bronfenbrenner. -p. 71.
Histamine Antagonists: XI. Aerosolized Antihistamine Drugs in Prevention of Histamine Bronchospasm in

Guinea Pigs. S. M. Feinberg, B. Norén and R. H. Feinberg. -p, 90.
Measurement of Changes in Vital Capacity as Means of Detecting Pulmonary Reactions to Inhaled Aerosolized Allergenic Extracts in Asthmatic Subjects. F. C. Lowell and I. W. Schiller. -p. 100.
Quantitative Studies in Skin Testing. E. L. Becker. -p. 108.
Reactions to Antipneumococcal Rabbit Serum. O. Swineford Jr., E. F. Hodges and K. G. Nelson. -p. 122.
Clinical Effects of Epinephrine by Inhalation, a Survey. R. L. Benson and F. Perlman. -p. 129.
Clinical Investigation of Beta-Morpholino-Ethyl Benzhydryl Ether Hydrochloride (Linadryl) as Antihistamine Agent. T. H. McGavack, P. M. Schulman and L. J. Boyd. -p. 141.

Journal of Lab. and Clinical Medicine, St. Louis

33:257-396 (March) 1948. Partial Index

Dynamics of Protein Metabolism. E. P. Benditt, Eleanor M. Humphreys, R. W. Wissler and others. -p. 257.
Determination of Nitrogen Balance Index of New Lyophilized Amino Acid Preparation in Protein-Deficient Patients. W. S. Hoffman, D. D. Kozoll, W. T. Mok and others. -p. 280.
Cytochrome C.: Intravenous Administration in Man. R. Rabinovitch, K. A. C. Elliot and D. McEachern. -p. 294.
Caronamide: Plasma Concentrations, Urinary Recoveries, and Dosage. W. P. Borger, A. Kathrine Miller, Elizabeth K. Tillson and Grace A. Shaner. -p. 297.
Isolation and Identification of Influenza Viruses During Epidemic of December, 1945. Mildred W. Barnes, H. R. Morgan and M. Finland. -p. 309.
Histamine Antagonists. X. New Antihistaminic Drug, 2-[alpha-(2-Dimethylaminoethoxy)-alpha-Methyl-Benzyl]-Pyridine Succinate (Decapryn Succinate): Experimental and Clinical Results. S. M. Feinberg and T. B. Bernstein. -p. 319.
Effects of Adrenalin in Normal and Hypertensive Patients in Relation to Mechanism of Sustained Pressure Elevations. D. M. Green, A. D. Johnson, A. Lobb and G. Cusick. -p. 332.
Effect of Operation and Illness on Clot Retraction: Description of New Method. J. S. Hirschboeck. -p. 347.

Journal of Pediatrics, St. Louis

32: 227-332 (March) 1948

Respiratory Acidosis and Alkalosis in Children. S. Spector and C. F. McKhann. -p. 227.
Hematologic Studies on Children of Rh-Negative Women Compared to Those of Rh-Positive Women. Edith L. Potter and H. E. Bernstein. -p. 246.
Bacterial Flora in Eyes of Newborn Infants During First Forty Hours of Life. After Single Instillation of Penicillin and Silver Nitrate. H. C. Franklin. -p. 251.
Use of Serum Gamma Globulin Antibodies to Control Chicken Pox in Convalescent Hospital for Children. W. L. Funkhouser. -p. 257.
*Does Pertussis Activate Tuberculosis? J. A. Toomey, J. C. Berno and H. Agustsson. -p. 260.
Food Allergy. IV. Function and Clinical Application of Rotary Diversified Diet. H. J. Rinkel. -p. 266.
Physical Growth of Chinese Infants. S. Gin. -p. 275.
Subluxation of Head of Radius "Nursemaid's Elbow" D. P. Boyette and A. H. London Jr. -p. 278.
Blood Chemical and Immunologic Effects of Adrenal Cortical Extract in Children. V. C. Kelley and J.M. Adams. -p. 282.
*Congenital Hemolytic Icterus, Four Generations. C. Hageage and J. Horgan. -p. 288.
Unusual Eruptive Fever Involving Skin and Mucous Membranes: Its Relation to and Status of So-Called Stevens-Johnson Disease. P. A. Bradlow and R. A. Schless. -p. 293.
Congenital Hypertrophic Stenosis of Duodenum. E. F. Patton. -p. 301.

Does Pertussis Activate Tuberculosis?—Toomey and his co-workers reviewed all cases of pertussis admitted to the Contagious Disease Hospital of Cleveland from 1938 to 1947. There were 1,747 patients admitted with pertussis. In 38 patients there was some connection with tuberculosis, and these constituted the basis for the investigation. Twenty-three had positive reactions to the tuberculin test; 3 older children with positive reactions had negative roentgenologic observations, while 19 actually had tuberculosis. With the exception of 1 case no evidence could be found on which to base the conclusion that the tuberculosis was activated by the pertussis. It cannot be said that pertussis does not possibly activate this disease, but all evidence is to the contrary. Reactivation of tuberculosis following pertussis occurs so infrequently that it is probably a coincidence. The authors recommend, however, that every patient ill with whooping cough, especially Negro children, should have a tuberculin test at the onset of the pertussis. Every patient ill with whooping cough who coughs longer than a month should have another tuberculin test, for if he does not have bronchiectasis he may have tuberculosis. In the presence of acute whooping cough or measles, a roentgenologic diagnosis of miliary tuberculosis can never be made if the reaction to the tuberculin test is not known, for the roentgenologic features of the lungs of a patient ill with whooping cough, or measles at the height of the rash, often cannot be differentiated from those produced by miliary tuberculosis.

Congenital Hemolytic Icterus.—Hageage and Horgan present histories of 2 girls, cousins, who had familial hemolytic anemia or acholuric jaundice. Evidence that heredity plays a part in this disease was provided by the fact that the disease appeared in two first cousins (splenectomy), their aunt (splenectomy), their grandmother (icterus-anemia) and their great grandmother (icterus-anemia), all maternal, representing four generations of the same family. If this condition is diagnosed in a patient the blood of all members of his family should be examined. Blood transfusions give no sustained improvement and are palliative. Early splenectomy, followed by transfusions, promotes convalescense and sustained improvement.

Kansas Medical Society Journal, Topeka

49: 93-136 (March) 1948

Cancer of Larynx and Hypopharynx. G. M. Tice and C. M. White. -p. 93.
*Treatment of Leukemia and Allied Disorders with Urethane (Ethyl Carbamate). S. J. Wilson, G. W. Wise Jr. and J. W. Campbell. -p. 97.
Epidermoid Carcinoma of Hand. P. J. Clark and T. M. Johnson. -p. 100.
*Neurogenic Bladder of Poliomyelitis. W.L. Valk. -p. 102.

Urethane in Leukemia.—Wilson and his associates report on the preliminary results of urethane therapy in 27 patients with leukemia or allied conditions. The best results were obtained in 7 patients with chronic myelogenous leukemia. On the whole, urethane produces about the same clinical hematologic results as standard roentgen therapy. The therapeutic response of chronic lymphatic leukemia is less satisfactory and more variable than that observed in chronic myelogenous leukemia. The clinical course of the acute leukemias is not affected by urethane. Polycythemia vera responds only partially to the drug. One case of reticuloendotheliosis and 1 of multiple myeloma were treated, and the clinical course of the disease was not affected in either instance. Nausea and anorexia are frequent when the drug is given orally. Other toxic effects have been noticed. Further investigations are necessary to establish the proper procedure, dosage, toxic levels and modes of action of urethane.

Neurogenic Bladder of Poliomyelitis.—Involvement of the urinary bladder and colon occurs in 10 to 20 per cent of the cases of acute poliomyelitis. Temporary paralysis of the bladder occurred in 8 per cent of the cases of poliomyelitis seen at the University of Kansas Medical Center during the 1946 epidemic. Cystometric studies on patients with poliomyelitis convinced the author that this type of neurogenic bladder is produced by poliomyelitis. This is the first description of cystometric aspects of the neurogenic bladder of poliomyelitis. He suggests that the term motor neurogenic bladder of poliomyelitis be applied to this condition. Generally the bladder dysfunction, like the atony of the colon, is of short duration and can be relieved by intermittent catheterization or use of an indwelling catheter for a few days. The author, however, observed a case of permanent paralysis of the bladder in a boy aged 16. Cystometric examination on numerous occasions revealed an atonic neurogenic bladder In spite of many attempts at voiding, this patient was never able to elicit a voiding contracture. Resection of the internal sphincter likewise was futile. One year after the onset of the disease he was still on catheter drainage and had shown no appreciable improvement in the extensive paralysis of his lower extremities. There was complete motor paralysis of both legs, thighs and hips without sensory loss. Vesical calculi were crushed transurethrally on three occasions.

Michigan State Medical Society Journal, Lansing

47: 123-232 (Feb.) 1948 Partial Index

Early Diagnosis of Pancreatic and Ampullary Growths Evaluation of Their Surgical Treatment. A. O. Whipple. -p. 169.
Carcinoma of Rectum and Lower Part of Sigmoid Flexure: Present-Day Management. C. F. Dixon. -p. 172.
Rocky Mountain Spotted Fever Appears in Michigan G. N. Rein. -p. 182.

47:233-360 (March) 1948

Michigan's Rheumatic Fever Program. P. C. Angove. -p. 231.
Early and Late Ectopic Pregnancy. F. E. Whitacre and H. D. Lynn. p. 285.
Changing Trends in Cesarean Section. Analysis of Cesarean Sections Performed in Detroit in 1925, 1930 and 1945. H. C. Mack and R. S. Siddall. -p. 288.
Comparative Morbidity in Cesarean Section. V. J. Turcotte and H. F. Jarvis. -p. 294.
Doctor in Court. F. R. Allaben. -p. 296.

New Orleans Medical and Surgical Journal

100: 397-444 (March) 1948

Diagnosis and Treatment of Acute Malignant Obstruction of Large Bowel. M. L. Michel. -p. 397.
Epidemiology and Recent Developments in Poliomyelitis. J. G. Molner. -p. 408.
Dicoumarin-Medical Aspects. T. Findley. -p. 413.
Review of Certain Aspects of Pathologic Physiology of Heart Disease. R. C. Webb. p. 418.
The Wolff-Parkinson-White Syndrome (Bundle of Kent Syndrome; False Bundle Branch Block). A. Silverman. -p. 428.

New York State Journal of Medicine, New York

48:339-448 (Feb. 15) 1948

Transplantation of Extensor Carpi Ulnaris to Give Abduction of Thumb. M. Burman. -p. 383.
Neuro-Allergy in Childhood. T. W. Clarke. -p. 393.
Diagnostic Experience with Hepatic Specimens Obtained by Needle Puncture. S. Sanes, W. H. C. Chapple, Victoria A. Onorato and Eileen Marchant. -p. 398.
Carcinoma of Ovary Arising in Endometrial Cyst. L. D. Moss and A. L. Runals. -p. 401.
Differential Diagnosis of Congenital Heart Disease. M. M. Maliner. -p. 407.
Microbiologic Aspects of Salmonellosis in Children. E. Neter. -p. 412.
Neurologic Procedures in Pediatric Practice. B. Crothers. -p. 416.
Routine Examination of Cerebrospinal Fluid. A. H. Harris and C. Lange. -p. 418.

48: 449-560 (March 1) 1948

County Health Departments. E. S. Godfrey Jr. -p. 491.
*Wilms' Tumors. H. R. Sauer. -p. 497.
Endemic Features of Rickettsialpox. M. Greenberg. -p. 502.
County Tuberculosis Hospitals. R. E. Plunkett. -p. 507.
Tumor Clinics in New York State. L. C. Kress. -p. 511.
Penicillin in Gonorrhea: Experiences with Various Preparations and Technics. A. Jacoby, A. Ollswang, J. Freund and T. Rosenthal. -p. 517.
Chronic Benign Pneumonitis: Its Discovery in Older Individuals with Diminished or Absent Gag Reflex. L. Schneider. -p. 520.
Role of Choline Chloride in Treatment of Certain Cases of Diabetes Mellitus: Studies of Liver Dysfunction. L. Pelner B. Davidson, S. Waldman and R. Margolis. p 523.

Wilms' Tumors.—Sauer believes that with a few exceptions kidney tumors of children, described as sarcomas or carcinomas, belong to the Wilms type of malignant new growth. The complexity of the histologic picture accounts for the confusing terminology which includes terms like adenosarcoma, embryonal sarcoma, teratoma, myochondrosarcoma and rhabdosarcoma, or myxosarcoma. Although Wilms' tumors comprise approximately 20 per cent of all malignant neoplasms in children, only 16 children with this type of tumor were admitted to the Roswell Park Memorial Institute during a thirty year period. This represents an incidence of only 1 case in about 3,500 admissions. Pathogenesis, clinical course, symptoms and diagnosis of the disease are discussed. The prognosis is poor, with an ultimate mortality rate of close to 90 per cent. The duration of life averages less than one year after the diagnosis is made. Removal or complete destruction of the tumor before development of metastases is imperative. Prompt surgical treatment followed by postoperative irradiation is advocated in small, movable tumors. Preoperative irradiation is advisable in fairly large or apparently inoperable lesions, in an attempt to attain sufficient shrinkage to make the tumor operable. Removal of the tumor in such cases should be followed by supplementary postoperative irradiation. Inoperable tumors should be treated by radiation alone. Favorable results and even cures may be accomplished by irradiation in certain radiosensitive tumors of this type. The author reports the case of a white girl, aged 2 years, in whom an inoperable Wilms' tumor was cured following irradiation therapy exclusively. The last series of roentgenologic treatments terminated in October 1939, and the girl has been in good health since that time.

Pennsylvania Medical Journal, Harrisburgh

51: 593-704 (March) 1948

Studies on Renal Function in Childhood. M. I Rubin. -p. 617.
Fundamentals of Psychiatry for General Practitioner. J. H. Wall. -p. 622.
Carcinoma of Cervix Treated by Combined Radiation and Surgery. J. R. Babcock. -p. 626.
Patch Test: Its Use and Abuse. R. Friedman. -p. 629.
Present Status of Treatment of Thrombosis and Embolism in Surgical Patients. C. K. Kirby and J. E. Rhoads. -p. 638.
Further Neonatal Salvage. Elizabeth K. Rose, Jean Gowing, Harriet L. Hartley and Amy D. Swift. -p. 645.
Nephrosis--Survey. W. W. Briant Jr., R. R. MacDonald and I. A. Solow. -p. 649.

Proc. Soc. Exper. Biol. & Med., Utica, N. Y.

67: 1-124 (Jan.) 1948. Partial Index

- •Cultivation of Toxoplasma in Developing Chick Embryo. J. O. MacFarlane and I. Ruchman. -p. 1.
- Microbiologic Determination of Apparent Free Methionine in Blood of Children. H. K. Silver. -p. 31.
- •*Effect of Muscular Fatigue on Histamine-Provoked Ulcer* with Observations on Gastric Secretion. C. W. Lillehei and O. H. Wangensteen. -p. 49.
- Activation of Hypertensin and Tyrosine by Subthreshold Amounts of Epinephrine. E. Mylon and J. H. Heller. -p. 62.
- •Cultivation of Toxoplasma in Embryonated Egg: Antigen Derived from Chorioallantoic Membrane. J. Warren and Sudie B. Russ. -p. 85.

Cultivation of Toxoplasma in Chick Embryo.—McFarlane and Ruchman used the R.H. strain of toxoplasma, which had been isolated by Sabin from a fatal human case of encephalitis. It had been maintained by continuous intracerebral passages in mice. Material from passages 304 to 344 was used for initiating the cultures in embryonated eggs. Injection of toxoplasma-infected mouse brain suspensions into the yolk sac of embryonated eggs on at least six different occasions led to multiplication of the parasites with resulting death of the embryo in four to ten days after inoculation. Smears of the chorioallantoic membrane and the yolk sac stained with Wright's stain revealed numerous toxoplasma both free and intracellular.

Muscular Fatigue and Histamine-Provoked Ulcer.—Lillehei and Wangensteen say that complete physical rest is frequently mentioned by internists as a valuable adjunct in the medical management of peptic ulceration. This precept has been derived primarily from clinical observation. The authors report observations on the effect of moderately severe muscular fatigue on the incidence of the histamine-provoked ulcer and on gastric secretion in dogs. The animals were run from three to four hours consecutively each day on five to six successive days on an electrically driven endless belt treadmill. The dogs were allowed a ten minute rest period each hour and as much water as they wanted. The results indicated that moderately severe muscular fatigue abets the histamine-provoked ulcer quite appreciably, while at the same time depressing the output of hydrochloric acid. These seemingly paradoxical observations would suggest that the ulcer-abetting effect of muscular fatigue is an effect on the mucosa itself (most probably on its blood supply) which renders it more vulnerable to the digestive action of the acid-pepsin mixture.

Antigen Derived from cultivation of Toxoplasma in Egg.—Warren and Russ found that inoculation of embryonated eggs with toxoplasma resulted in a generalized parasitic disease of this host with a fatal termination. The agent could be maintained by serial passage of embryo brain. Chorioallantoic membranes from infected eggs contained a stable, specific soluble antigen which fixed complement with toxoplasma-immune animal serum. Human serums from cases of toxoplasmosis which were known to contain neutralizing antibody against the parasite also fixed complement with chorioallantoic membrane antigen.

Psychosomatic Medicine, Baltimore

10: 1-68 (Jan.-Feb.) 1948

- Psychodynamics in Parkinsonism. G. Booth. -p. 1.
- Instincts and Homoeostasis. L. S. Kubie. -p. 15.
- "Experimental Neurosis" Resulting from Semistarvation in Man. B. C. Schiele and J. Brozek. -p. 31.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

23: 185-308 (Dec.) 1947

- Balantidial Dysentery: Report of 4 Cases with Postmortem Study. E. Koppisch and Virginia N. Wilking. -p. 185.
- •*Splenectomy in Schistosomiasis: Preliminary Report.* J. Noya Benítez. -p. 247.
- Cutaneous Arachnoidism Experimentally Produced with Glandular Poison of Loxosceles Laeta. A. Macchiavello. -p. 266.

Splenectomy in Schistosomiasis.—Noya Benítez has performed splenectomies on 20 patients who were in the preascitic stage of Banti's syndrome due to schistosomiasis. All patients manifested improvement in general health and well-being, their blood counts, hemoglobin level and platelet counts having gone up to nearly normal limits and their liver function tests showing considerable improvement. Three patients had postoperative hematemesis, but all recovered under conservative treatment. There were no deaths in this series. The results obtained in this series and observations made in other clinics show that splenectomy is indicated and is the treatment of choice in cases of Banti's syndrome due to schistosomiasis.

Quarterly J. of Studies on Alcohol, New Haven, Conn.

8: 553-694 (March) 1948

- Failure of Pyruvate and Arsenite to Alter Alcohol *Metabolism*. H. R. Hulpieu, Versa V. Cole and B. Smolenski. -p. 553.
- Constructive Teamwork in Treatment of Alcoholism. J. Thimann. -p. 569.
- Abstract Archive of Alchol Literature. E. M. Jellinek, Vera Efron and M. Keller. -p. 580.
- Instruction on Alcohol Problems in Public Schools. R. G. McCarthy and E. M. Douglass. -p. 609.
- Survey of Local Church Activities and Pastoral Opinions Relating to Problems of Alcohol. B. Y. Landis. -p. 636.

Review of Gastroenterology, New York

15: 181-260 (March) 1948

- Early Diagnosis of Carcinoma of Colon and Rectum. L. C. Sanders. -p. 193.
- Surgery of Peptic Ulcer in Prison. V. G. Burden. -p. 208.
- Gastroenterologic Comparison of White and Colored Soldiers. A. A. Kirchner. -p. 218.
- Observations on Treatment of Chronic Hypertrophic Gastritis with Shortwave Diathermy. E. D. Palmer. -p. 233.
- Constipation. H. A. Monat. -p. 242.

South Carolina Medical Assn. Journal, Florence

44: 37-72 (Feb.) 1948

- Phlebothrombosis Occurring in Absence of Trauma or Bed Rest. G. T. McCutchen and W. C. Cantey. -p. 37.
- Lame Back With or Without Sciatica. A. T. Moore and W. C. Cook. -p. 41.
- •Rabies. J. C. Moore. -p. 43.

44: 73-112 (March) 1948

- Tetanus: Incidence and Treatment. H. C. Robertson Jr. -p. 73.
- Human Pyramidal Tact. A. M. Lassek. -p. 78.

Rabies.—In dogs as in human beings there occur two types of symptoms, the furious and the dumb. The incubation period varies between four weeks and ten months. It is generally accepted that paralytic rabies is more likely to develop after a minor and insignificant bite. In untreated patients with severe bites typical furious symptoms usually develop. Paralytic rabies runs its course in between seven and one half and twelve days, while in furious types the average course is three days. The treatment of rabies comprises two phases, local therapy and prophylactic immunization. Local treatment consists of cleaning the wound and cauterizing it. In the prophylactic treatment against rabies, known as the Pasteur treatment, vaccines are used which consist of emulsions of rabbit brain or spinal cord containing either living or killed fixed virus. The Semple method of phenol-killed vaccine is most commonly employed. This vaccine consists of a four per cent emulsion of nervous tissue in physiologic saline containing phenol in 0.5 per cent concentration. The methods of administration will vary somewhat, but with the Semple vaccine it is recommended that 2 cc. be given subcutaneously daily for a total of eighteen to twenty-five injections. Patients bitten on the extremity or trunk receive eighteen injections, while those bitten on the head, face or neck receive up to twenty-five injections. Pasteur's treatment is indicated in any person who has been bitten or scratched by a rabid animal or in whom the saliva of such an animal has reached an open wound. Any one bitten or scratched by a stray dog in which the presence of rabies cannot be excluded should also be treated. After commenting on the use of ultraviolet irradiation in the production of potent inactivated vaccine, the author stresses that, since dogs represent the main disseminating factor of rabies virus, interruption of the cycle involves the control of the disease in dogs. It is impossible to depend alone on vaccination of dogs. Hobel, who found wide variability in the protective action of commercial vaccines, developed the Hobel test of potency of vaccines, which has been generally adopted as a prerequisite before offering any commercial vaccine for sale in the United States. Since stray, homeless dogs do not receive vaccination, they should be destroyed. Sentimental and ignorant pet owners have created some public opinion against the fulfilment of strict control of pets, but they should not be permitted to jeopardize the health of others.

Southern Medical Journal, Birmingham, Ala.

41: 187-284 (March) 1948

Foreign Bodies in Duodenum. M. Equen. -p. 187.
Cataract Surgery: Recent Advances. E. G. Gill. -p. 191.
Report of 425 Fenestration Operations for Clinical Oto-Sclerosis. J. M. Smith. -p. 198.
Bone Reconstruction in Surgery of Hand. G. G. Gill. -p. 209.
*Repair of Ventral Hernias with Tantalum Mesh: Preliminary Report. A. R. Koontz. -p. 214.
Anaplastic Cervical Epithelium: Relationship to Cervical Carcinoma. C. T. Ashworth and A. W. Diddle. -p. 217.
Impressions of Vaginal Smear Technic in Diagnosis of Cervical Cancer. L. C. Posey and J. A. Cunningham. -p. 221.
Maternal Mortality in South: Analysis of 175 Deaths. F. R. Lock. -p. 228.
Cancer Program of United States Public Health Service. L. A. Scheele. p. 237.
Brief Stimulus Therapy. R. F. Gayle Jr. and D. Josephs. -p. 245.
Use of Furmethide (Furfuryltrimethylammonium Iodide) for Paralysis of Bladder from Poliomyelitis. R. B. Lawson. -p. 251.
Proper Role of Subtotal Gastrectomy in Treatment of Chronic Gastric and Duodenal Ulcer. L. Grove and E. Rasmussen. -p. 255.
Differential Diagnosis of Jaundice by Laboratory Methods. O. B. Hunter Jr. -p. 262.
Recent Advances, Etiology and Therapy of Cirrhosis of Liver. H. B. Mulholland and T. S. Edwards. -p. 269.
*Effects of New Trivalent Antimony Compound upon Granuloma Inguinale. G. G. Allison. -p. 276.

Tantalum Mesh in Repair of Ventral Hernias.—According to Koontz, the repair of large ventral hernias has always taxed the ingenuity of the surgeon. This is true not only when the defect is large but when the fascial structures surrounding a smaller defect are weak. Most of these defects occur in extremely obese persons. The fascia surrounding the defect is often weakened by the infiltration of fat, and this militates against a successful repair by any of the ordinary methods. In experiments on dogs 3 to 6 inches (7.6 to 15 cm.) of the rectus muscle on each side was resected, and the defect immediately repaired by suturing a piece of tantalum gauze to the edges of the fascia surrounding the defect. These animals were killed from four and one-half to nine and one-half months after operation. In each instance the defect was completely closed by the mesh, which had become covered by a thick and tough envelope of fibrous tissue. The fibrous tissue had grown through the meshes of the gauze everywhere and could not be separated from the gauze except by sharp dissection. Subsequently the author used the tantalum mesh in 5 obese patients with exceedingly large hernias. The results have made the author enthusiastic about this material. He mentions other surgeons who have used it and concludes that tantalum mesh will prove a most valuable material in the repair of large and difficult ventral hernias.

New Trivalent Antimony Compound in Granuloma Inguinale.—The new trivalent antimony compound which Allison used in the treatment of 65 Negro patients (32 women and 33 men) with granuloma inguinale is lithium stibiothiomalate. The drug was administered by intramuscular injections in dosages of 3 cc., equivalent to 30 mg. of antimony, twice weekly. Injections in the buttock were painless and gave no more local tissue reaction than that from "fuadin." The largest number of injections administered was forty-two; the smallest was five. The majority of patients received approximately twenty injections. Reactions do occur. Once a patient becomes intolerant of one trivalent antimony compound, he usually becomes intolerant of other forms. A few patients tolerate one antimony compound better than another. Adequate food, vitamins and iron intake, a daily cleansing bath and bowel evacuation are as necessary as drug therapy.

Southern Surgeon, Atlanta

14: 170-224 (March) 1948

*Testosterone in Far Advanced Breast Cancer: Preliminary Report. T. C. Davison and A. H. Letton. -p. 170.
Surgical Treatment of Essential Hypertension. H. Wilson. -p. 185.
Multiple Pelvic Malignancies. W. H. Hill and W. R. Glenn. -p. 192.
Sterility. R. M. Brannon. -p. 195.
Gunshot Wounds of Abdomen. K. D. Grace. -p. 202.
Control of Trigeminal Neuralgia Pain (Bee Venom). R. Bayne. -p. 209.
Open Reduction and Fixation of Fractures of Facial Bones. J. T. Ellis and S. W. Windham. -p. 211.

Testosterone in Advanced Stage of Cancer of the Breast.—Davison and Letton administered androgen in the form of "oreton" to women with cancer of the breast. They began with 50 mg. per day, reducing this dose later to 50 mg. three times per week. They have watched the blood chemistry of the patients, the estrogen level as judged by vaginal smears and the change in the metastases by roentgenograms as well as by biopsies. Seven of 8 patients obtained some degree of relief of pain and gained some weight on this therapy. Four of these 8 "hopeless" patients have returned to their regular occupations after taking large doses of testosterone. One patient with soft tissue metastases only had excellent results persisting for over fifteen months. Apparently the treatment is of temporary value only. If omitted there is a return of activity of the cancer. Biopsy shows that the cancer is being "choked" by a proliferation of fibrous tissue and that the cells, although still viable, are pyknotic and of reduced activity. Good results are found in patients with depression of estrogenic activity, poorer results in patients who still show estrogenic activity after receiving testosterone. Masculinizing effects were noted, but the patients did not object when they realized the other beneficial results. The authors believe that any patient with metastatic carcinoma of the breast not only should have the usually accepted treatment of surgery and radiation but should be given the benefit of a trial on large doses of testosterone with careful follow-up.

Surgery, St. Louis

23:321-602 (March) 1948. Partial Index

George J. Heuer's Contributions and His Place in American Surgery. W. D. Andrus. -p. 321.
Experiences with Anastomosis of Common Bile Duct to Duodenum, and Repair of Strictures of Common Bile Duct. M. M. Zinninger. -p. 337.
Lymphosarcoma of Gastrointestinal Tract. D. H. Poer. -p. 354.
Amniotic Hernia. H. G. Hollenberg. -p. 363.
Importance of Accurate Pathologic Classification in Prognosis of Renal Tumors. N. C. Foot and G. A. Humphreys. -p. 359.
Surgical Treatment of Acute Cholecystitis. F. Glenn. -p. 397.
•Further Observations on Treatment of Bleeding Peptic Ulcer. C. W. Holman. -p. 405.
•Role of Glossopharyngeal Nerve in Carotid Sinus Reflex in Man; Relief of Carotid Sinus Syndrome by Intracranial Section of Glossopharyngeal Nerve. B. S. Ray and H. J. Stewart. -p. 411.
End Results in Treatment of Peptic Ulcer by Posterior Gastroenterostomy. W. A. Cooper. -p. 425.
Late Results Following Perforated Peptic Ulcer. S. W. Moore and R. Hendricks. -p. 442.
Neurogenic Tumors of Stomach. J. P. West and G. Knox. -p. 450.
Primary Tumors of Jejunum and Ileum. J. H. Eckel. -p. 467.
Penetrating Wound of Chest with Division of Bronchial Artery: Report of Case. C. M. Brane. -p. 476.
Resection of Rectum with Preservation of Anal Sphincter. W. F. Nickel Jr. and A. J. Chenoweth. -p. 480.
•Radical One-Stage Pancreaticoduodenectomy. C. G. Child III. -p. 492.
Twenty-Seven Years of Prostatic Surgery at Bellevue Hospital. Study of Comparative Mortality Rates. J. W. Draper. -p. 515.

Treatment of Bleeding Peptic Ulcer.—Holman cites the case of a patient who died five days after the onset of bleeding from a peptic ulcer. The sequence of events in this patient is typical of several that were witnessed each year under a conservative therapeutic regimen. A survey was made, which led to the abandonment of conservative treatment in favor of immediate operation for certain groups of patients. The author compares the results under this more radical therapy with the results under the earlier conservative therapy. During the earlier period, patients admitted because of severe hemorrhage from ulcer were treated with complete rest in bed, nothing by mouth, adequate sedation and supportive parenteral fluids until the bleeding had stopped. Those who continued to bleed under this treatment also received repeated blood transfusions. Twenty-one, or 13 per cent, of these patients died. The problem was to recognize those patients who would not benefit from conservative treatment. Critical analysis revealed a poor prognosis for two groups: those who failed to improve within forty-eight hours after they had been placed on a strict medical regimen and those who suffered the first hemorrhage while they were under a medical regimen. Age seemed important. In patients under 30 years of age the mortality was 6 per cent, in contrast to 20 per cent in those 50 years and older. In view of these observations it was decided that any patient who fell into either of the two groups described, particularly if he were over 40 years of age, would be operated on immediately if the condition warranted the risk. A survey of the period from 1940 to 1946 during which the newly instituted treatment regimen was followed showed a fall in the mortality from the previous 13 per cent to 5 per cent. Gastric resection is tolerated surprisingly well if a large amount of blood is given before, during and after the operative intervention. Resection is the ideal procedure to insure both immediate control of bleeding and a satisfactory permanent result. Indirect methods such as gastroenterostomy and plastic procedures on the duodenum have little value. Gastric resection offers the best protection against future hemorrhage

Glossopharyngeal Nerve in Carotid Sinus Reflex.—Ray and Stewart cite evidence pointing to the important role of the glossopharyngeal nerve in the carotid sinus reflex in man, but they show that with insufficient evidence to conclude that this nerve alone comprised the principal afferent pathway in the case of the hypersensitive carotid sinus syndrome, the crucial experiment called for intracranial division of the nerve in a patient with the syndrome. In 1942 Herbert and associates reported their experience with division of the glossopharyngeal nerve in a man aged 64 with a hypersensitive carotid sinus. The carotid sinus reflex previously induced by pressure over the sinus was abolished on the side of the nerve section. The authors report 3 cases in which the glossopharyngeal nerve was divided intracranially on one side for relief of carotid sinus syndrome. They conclude that: (1) the glossopharyngeal nerve transmits the afferent impulses of the carotid sinus reflex induced by pressure on the carotid sinus; (2) intracranial division of the glossopharyngeal nerve permanently abolishes the effects of pressure on the homolateral carotid sinus; (3) the chemically induced part of the carotid sinus reflex probably remains intact after intracranial division of the glossopharyngeal nerve; (4) as an alternative procedure to local denervation of the carotid sinus for relief of the carotid sinus syndrome, intracranial glossopharyngeal nerve section has an advantage in that the former procedure may be followed by regeneration of the nerves and possesses the hazard of damage to the carotid artery, and (5) intracranial division of the glossopharyngeal nerve can be employed in patients in whom the condition of the local tissues about the carotid sinus might make local surgery undesirable or impossible.

Radical One Stage Pancreaticoduodenectomy.—Child says that during the twelve years which have elapsed since Allen O. Whipple and his associates announced their initial success in extirpating the duodenum and the head of the pancreas, the original two stage operation has undergone many modifications. In November 1943 Child reported a one stage procedure which was justly criticized by Whipple not only because drainage of the biliary tract was reestablished by means of the gallbladder but because this anastomosis was placed distal to that between the stomach and the jejunum. The operation was promptly changed to one in which biliary drainage was obtained by way of a choledochojejunostomy placed proximal to the gastroenterostomy. This operation was performed in 22 patients. In this one stage procedure it was found helpful to have clearly in mind a series of steps which, if followed in orderly progression, contribute materially to shortening and facilitating a procedure which is always long and arduous. The initial features of this operation are the maneuvers directed toward determining, if possible, whether or not the superior mesenteric vein is compromised by the tumor. It can be hoped that eventually some successful method of avoiding the necessity of preserving this structure may be devised, for it is certainly the weakest point as well as the most frustrating in the entire operative attack on pancreatic cancers. Indication that it may be sacrificed is to be found in a case reported by Brunschwig and in a patient in this series in whom postmortem examination five days following division of the superior mesenteric vein failed to reveal any significant venous engorgement of the small bowel.

Texas State Journal of Medicine, Fort Worth

43: 609-670 (Feb.) 1948

Relationship of pathologist to Tumor Clinic Program. C. Phillips. -p. 617.
Examination of Body Fluids for Diagnosis of Malignancy. P. M. Marcuse and W. W. Coulter Sr. -p. 623.
Primary Carcinoma of Lung: Report of 48 Cases. D. W. Quick Jr. and P. Brindley. -p. 627.
Melanoma: Experience with a Series Over a Period of Years. M. Winsett. -p. 631.
Improvement of Advanced Carcinoma of Breast Following Oral Administration of Estrogenic Hormone. W. L. Mann and J. P. Martin. -p. 636.
Problem of Early Diagnosis of Cancer of Stomach. A. W. Hartman. -p. 637.
Factors Influencing Operability of 337 Carcinomas of Colon and Rectum. J. W. Hendrick and T. R. Adams. -p. 641.

United States Naval Med. Bulletin, Washington, D. C.

48:153-352 (March-April) 1948. Partial Index

*Intramedullary Fixation of Fractures of Femur. H. E. Wiggins and G. B. Lewis.—p. 161.
Specific Therapy in Osteomyelitis *J. W. Metcalfe.*—p. 175.
Hodgkin's Disease. J. R Connelly, J. T. Smith and J. M. Straughan.—p. 180.
Review of *Present* Methods in Early *Diagnosis* of Bronchogenic Carcinoma. H. E. Reitz.—p. 198
Aphorisms on Peptic Ulcer Seen in Naval Service. L. Gunther.—p. 207.
Use of Plasma in Treatment of Combat Fatigue. P. Solomon—p. 226.
Interesting Notes on Bipartite Patellae. J. J. Callahan—p. 229.
Study of Effect of Breathing Oxygen or Normal Air After Exposure to Atmosphere Having High Concentration of Carbon Dioxide. R. Hayter and G. J. Duffner.—p. 234.
Dysentery Outbreak Aboard Cruiser in Apra Harbor, Guam, Marianas Islands. R. A. Mount and T. M. *Floyd.*—*p.* 240.
Treatment of Acute Sacrococcygeal Cyst Teratoma. J F. Adams.—p. 250.
Hemorrhage Associated with Gastritis: Review of Literature and Report of 2 Cases I. L. Chipman Jr.—p. 253.

Intramedullary Fixation in Fractures of Femur.—Wiggins and Lewis found internal fixation of fracture by means of the intramedullary nail after the method of Kuntscher useful in the treatment of certain fractures of the femur; they report 6 cases of fractures of the femur treated by intramedullary fixation. Internal fixation by means of the intramedullary nail may be substituted for other methods of *fixation* when open reduction is necessary. Intramedullary fixation is indicated in femoral fractures when closed reduction has failed, or in those which for other reasons must be openly reduced. The method has been useful in handling several femoral fracture problems; e. g., acute fractures of the upper third of the shaft, old unreduced fractures, old nonunions and shaft fractures in paraplegic persons. The *advantage* over other *methods of* internal fixation are: a technically easier operative procedure; a shortened operative time; a lowered operative and postoperative morbidity; obviation of plaster immobilization, and a shortened healing *time* with earlier ambulation. *Two serious* complications have been seen, refracture and bending of the nail. The refracture occurred in the paraplegic patient when it became necessary to extract the nail after three months. The nail should not be removed before trabeculation is established. In spite of postoperative immobilization there was decided bending of the nail at the fracture site in 1 case It appears that the rolled sheet stainless steel nail available to the authors is not strong enough to provide satisfactory fixation in all persons. The European literature describes the use of a much heavier nail. With the type of nail used *in this series* light skeletal balanced traction, with exercise of the joints, should be maintained until the patient is ready for a brace An ischial weight-bearing caliper should be worn until solid union is present. Eventual extraction of the nail would seem desirable, but the literature does not indicate that it is requisite.

Virginia Medical Monthly, Richmond

75: 107-158 (March) 1948

Virginia Hospital Survey and Construction Program Under Hill-Burton Act. L. J. Roper. -p. 108.
Selection of Cases and Surgical Treatment of Hypertension. C. C. Coleman, J. M. Meredith and C. E. Troland. -p. 119.
Traumatic Appendicitis. S. H. Macht. -p. 122.
Roentgen Manifestations of Intra-Abdominal Abscess. S. Richman. -p. 124.
*Treatment of Laryngeal Tuberculosis with Streptomycin. *F. H. McGovern* and L. R. Broome. -p. 129.
Treatment of Rheumatoid Arthritis. M. M. Pinckney. -p. 131.
Treatment of Migraine. J. W. Thomas. -p. 134.
Cirrhosis of Liver--Some Comments upon Clinical Diagnosis and Medical Management. L. L. Thompson Jr. -p. 137.

Streptomycin in Laryngeal *Tuberculosis.*—In the first of the 2 patients treated by McGovern and Broome, examination of the larynx showed a large ulcerated lesion involving the right arytenoid and right ventricular band. Roentgen examination of the chest showed tuberculous infiltration in the upper part of the left lung. Under local sulfonamide therapy the ulceration increased in size and *depth.* The patient was given 1 Gm. of streptomycin divided in six doses intramuscularly each twenty-four hours for one week, and then 1.5 Gm. daily for nine weeks. The streptomycin was also administered as a laryngeal spray every four hours. At the end of two weeks the ulceration showed improvement and the pain was relieved, and at the end of one month the ulcer had completely healed. Roentgen examination of the chest showed improvement in the left lung. There were no toxic vestibular or other effects of the drug. Examination of the throat of the second patient before the initiation of streptomycin therapy revealed an enormous pale, infiltrated, ulcerated, turban-shaped epiglottis; the interior of the larynx could not be seen. Streptomycin therapy was started as in the first patient. The throat has improved steadily but is not yet normal. Inasmuch as the laryngeal lesion in the first case had become progressively larger up to the time of treatment with streptomycin and then healed so promptly, the authors had little doubt that the streptomycin was the causative *factor.* The striking symptomatic improvement in the second case illustrates the value of this form of treatment in obstinate cases of tuberculosis.

West Virginia Medical Journal, Charleston

44: 25-48 (Feb.) 1948

New Horizons for Old Age. T. G. Klumpp. -p. 25.
School Health. N. H. Dyer. -p. 30.
Tryparsamide Optic Atrophy. A. C. Esposito. -p. 35.
Ocular Affections of Newborn. F. D. Costenbader. -p. 36.

44:49-74 (March) 1948

Diagnosis and Treatment of Ectopic Pregnancy. H. H. Ware Jr. -p. 49.
Cerebral Palsy Clinic. Marguerite E. MacGregor. -p. 53.
Fracture of Greater Multangular Bone: Report of 2 Cases. R. L. Anderson and T. Katz. -p. 55.
Need for Well-Child Conferences and Prenatal Clinics in West Virginia. Hallie I. Morgan. -p. 58.

Western J. Surg., Obst. &Gynecology, Portland, Ore.

56: 127-192 (March) 1948

Prolapse of Vaginal Vault Following Hysterectomy: New Method of Repair. H. N. Shaw. -p. 127.
*Papillary Adenocarcinoma of Thyroid Gland, So-Called Lateral Aberrant Thyroid Tumors. B. M. Black, -p. 134.
*Therapeutic Value of Repetitive Lipiodal Tubal Insufflations. R. N. Rutherford. -p. 145.
Semen Evaluation and Fertility. E. F. Hoffman. -p. 155.
Cystic Disease of Lungs. W. L. Rogers. -p. 157.
Resection of Mandible. D. B. Seabrook. -p. 166.
Pregnancy in Diabetic. L. J. Palmer, J. H. Crampton and R. H. Barnes. -p. 175.

Lateral Aberrant Thyroid Tumors.—Black points out that it is widely believed that the tumors of obvious thyroid origin which are occasionally seen in the lateral cervical regions arise from the lateral thyroid anlagen and, hence, are properly called lateral aberrant thyroid tumors. The early view that these tumors were benign has been modified, and the concept that the lateral cervical tumors are metastatic is of more than theoretic importance. Review of 112 cases of papillary adenocarcinoma of the thyroid gland treated at the Mayo Clinic from 1939 to 1945, inclusive, revealed that the lateral cervical papillary tumors are metastatic lesions from a primary papillary adenocarcinoma of the thyroid gland. The malignant nature of the primary lesion in the thyroid is well illustrated by the number of local recurrences that follow subtotal lobectomy. If the papillary adenocarcinoma is larger than a few millimeters in diameter, and if it is recognized during the operation, a total rather than a subtotal lobectomy should be performed. Although subsequent operations to remove involved cervical lymph nodes were not infrequently necessary, the author believes that the removal of only the involved lymph nodes, generally as a group, is sufficiently radical treatment of the metastatic lesions. Examination at stated intervals after the operation to determine whether unremoved lymph nodes have become palpable is necessary. In addition to the fact that a primary papillary adenocarcinoma was found in every case in the series, the fact that the primary lesion was always present in the corresponding lobe of the thyroid gland is of importance from the point of view of treatment.

Repetitive "Lipiodal" Tubal Insufflations.—Rutherford reports on 417 patients who were studied over a period of five years. They presented themselves with either primary or secondary sterility and were unselected other than by their wish to have a child. They were 19 to 41 years of age. The women were proved to be habitually ovulating; they had no physical defects detectable by the usual methods, and their only cause of infertility was tubal occlusion diagnosed on two failures of air insufflation. The woman was taught to calculate her fertile period. Rubin's test was done between the eighteenth to sixteenth day before the first day of the next calculated period. If air failed to pass at a pressure of 200 mm. of mercury, a repeat Rubin test was done five to seven days later. If, on the second air insufflation, no fall in pressure was obtained, the patient was scheduled for oil insufflation during the following fertile period. Iodized poppyseed oil 40 per cent was introduced by means of a Luer-Loc syringe and two roentgenograms were taken. The uterotubograms were done once monthly until tubal patency was established, or until three consecutive efforts failed to demonstrate continued progress in opening the tubes. Patency was achieved in 71 per cent of the women, and pregnancy resulted in 63 per cent. The dangers of the procedure are outlined, as well as the need for proper selection of cases and for the timing of the procedure.

Wisconsin Medical Journal, Madison

47:181-268 (Feb.) 1948

Trends in Infant Feeding. M. J. E. Senn. -p. 195.
Notes on Treatment of Chronic Hepatic Disease. A. M. Snell. -p. 199.
Management of Allergic Child. H. J. Lee. -p. 204.
Fracture Disabilities. M. L. Jones. -p. 207.
Present Status of Pulmonary Resection for Carcinoma and Inflammatory Diseases of Lung. J. W. Gale and A. R. Curreri. -p. 210.

47:269-360 (March) 1948

Management of Late Hemmorhages of Pregnancy. J. H. Bloomfield. -p. 287.
Some Psychosomatic Aspects of Thyrotoxicosis. M. J. Musser. -p. 291.
*Clinical Management of Edema Based on Five Year Experience with Sodium Control. H. W. Pohle and N. W. McKitterick. -p. 294.
Outline of Procedure for Routine Roentgenologic Gastrointestinal Examinations. C. F. Sherman. -p. 296.
Generalized Scleroderma: Report of Case. A. N. Reis. -p. 299.

Management of Edema.--Pohle and McKitterick stress that rational therapy of congestive heart failure with its attendant edema should consist of rest and digitalis for the failing myocardium, adequate restriction of sodium intake and mobilization and removal of the retained sodium. Simple restriction of water will accomplish nothing but will make the patient thirsty and press cellular dehydration to the danger point. Sodium restriction in order to be effective in the average case must be kept to a daily intake of about 2 Gm. as sodium chloride. If no salt is added in cooking, the salt intake falls to 3 or 4 Gm. per day. Thus a special diet becomes necessary. The one which was first suggested by Newburgh and modified by Schemm combines two desirable features. It not only adequately restricts sodium but combines foods in such a manner that the metabolic result is an excess of acids which combine with sodium and take it to the kidney where some is excreted. This last feature is important because sodium must be kept mobilized if proper water balance is to be maintained. The authors have used this diet during the last five years and have obtained uniformly favorable results with it. They show that the acidifying agents and mercurial diuretics are useful in the initial clearing of edema but become impractical when used over long periods. The low sodium acid ash diet furnishes an efficient practical means of restricting sodium intake and promoting adequate sodium excretion over long periods. During a five year experience with the low sodium acid ash diet it has seldom been necessary to administer further acidifying agents or mercurial diuretics after edema has once been brought under control. Liberal water intake abolishes thirst, protects against azotemia and maintains adequate urinary output to insure optimum excretion of sodium.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted

British Journal of Ophthalmology, London

32:65-128 (Feb.) 1948. Partial Index

Surgical Treatment of Pterygium. A. D'Ombrain. -p. 65.
Origin of Malignant Melanomata. E. Wolff. -p. 72.
Retinal Artery Occlusion. Report Illustrating Pathogenesis of Fundal Appearances and Effect of Acetylcholine. I. C. Michaelson. -p. 111.

British Medical Journal, London

1:379-426 (Feb. 28) 1948

Scepsis Scientifica. G. Jefferson. -p. 379.
Bactericidal Action of Streptomycin. L.P. Garrod. -p. 382.
*Calciferol in Treatment of Cutaneous Tuberculosis. G.D. Powell, P.R. Pearsall and J.E.M. Wigley. -p. 386.
Retroperitoneal Hemorrhage in Pregnancy. J.K. Ogden. -p. 389.
Clinical Value of Some Methods of Estimating Erythrocyte Sedimentation Rate. J.R. Sinton. -p. 391.
Erythrocyte Sedimentation Rate: Effect of Alcohol as Contaminant. W.O. Sykes. -p. 393.

Calciferol in Cutaneous Tuberculosis.—Powell and his associates report observations on 12 patients with cutaneous tuberculosis treated with calciferol. The drug was given by mouth either in doses of 50,000 units three times daily together with calcium or in doses of 600,000 units twice weekly. In some instances first the one and then the other method was used. The 12 patients have been under treatment for nine months or longer. Six were cured, 3 were much improved, 2 showed little improvement and 1 showed no response. Results obtained with calciferol in larger groups by other investigators indicate that about 60 per cent of patients will be cured and an additional percentage will be improved. The authors describe the effects of calciferol on the blood chemistry and suggest that the therapeutic effects are due to the increase in the body's resistance. It does not seem to have any direct toxic effect on the tubercle bacillus. In cerebral tuberculomas and in tuberculous meningitis it was without effect, but in bronchopneumonic phthisis it produced some improvement. Calciferol produced some improvement in the general condition in a patient with pemphigus vulgaris. In a patient with lymphocytoma, in whom a lesion had been improved by roentgen treatment, calciferol was used for a fresh lesion and effected healing in four months. A case of granuloma annulare failed to respond to calciferol, but a case of multiple myelomatosis improved while on calciferol.

Glasgow Medical Journal

29:49-70 (Feb.) 1948

Difficult Case of Stress Incontinence. T.L. Chapman. -p. 49.
*Osteomalacia Associated with Steatorrhoea: Report of Case. D.W. Short. -p. 53.

Osteomalacia Associated with Steatorrhoea.—Short reports a case of osteomalacia in a woman aged 50. Chronic invalidism and severe deformities resulted in a comparatively short period of time. The onset of the disease about six years ago was characterized by asthenia so extreme as to simulate paralysis, and this was followed by progressive skeletal changes. There is no history of tetany, nor was there clinical evidence of it when she was examined later. Since osteomalacia is so frequently associated with and exacerbated by child-bearing, it is interesting that the patient had ten pregnancies within the space of sixteen years without any evidence of the disease. Her diet appears to have been adequate, and the deficiency seems to have been due to defective absorption of calcium from the bowel. She has a persistent steatorrhoea, which may be due to a pancreatic insufficiency. The author has observed 2 other probable cases of osteomalacia in recent months. This disease especially in less gross forms, is not uncommon and should be borne in mind as a possible cause of skeletal dystrophy in adults.

J. Royal Inst. Public Health and Hygiene, London

2: 40-75 (Feb.) 1948

History of State Medicine in England; the Fitzpatrick Lectures, 1947; the Foundations of National Health Services. A. S. MacNalty. -p. 48.

2: 76-113 (March) 1948

Organization of Nervous System: I. Elements of Nervous Activity. E. D. Adrian. -p. 82.
Id.: II. Effects of Sense Organs. E. D. Adrian. -p. 92.
Id.: III. Activity of Brain. E. D. Adrian. -p. 102.

Lancet, London

1:273-312 (Feb. 21) 1948

*Problems in Epidemiology of Poliomyelitis. D. M. Horstmann. -p. 273.
Diphtheritic Polyneuritis in the Far East. A. D. Leigh. -p. 277.
*Tuberculous Cystitis: Transplantation of Remaining Ureter. F. C. Pybus and J. D. T. Jones. -p. 280.
Determination of Hemoglobin: III. Reliability of Clinical and other Methods. R. G. MacFarlane, E. J. King, J. D. P. Wooton and M. Gilchrist. -p. 282.
Crush Syndrome and Traumatic Uremia. J. H. Hicks. -p. 286.
Chronic Bilateral Spontaneous Pneumothorax: Difficulties in Treatment. C. F. Hawkins. -p. 288.

Epidemiology of Poliomyelitis.—Horstmann shows that the epidemiology of poliomyelitis still presents many challenging problems. In spite of all the information collected by many investigators in many lands we still cannot say why poliomyelitis suddenly became epidemic almost sixty years ago, why it is increasing rather than decreasing like other infectious diseases, why it is a summer disease with a preference for certain lands, how it is spread or how it may be prevented. Research on poliomyelitis must be continued.

Tuberculous Cystitis.—In each of the 4 cases reported by Pybus and Jones tuberculous cystitis developed or persisted after removal of a tuberculous kidney and was treated by transplantation of the remaining ureter into the pelvic colon. In none was there evidence, at the time of transplantation, of tuberculosis in either the remaining kidney or its ureter. Three of the 4 patients were alive from three to nearly five years after the transplantation. The fourth patient died fifteen months after operation, the exact cause of death being unknown. The results in these cases seem to justify more frequent use of this operation.

Quarterly Journal of Medicine, Oxford

17:1- 94 (Jan.) 1948

Chronic Hemolytic Anemia with Hemoglobinuria. Marchiafava-Micheli Syndrome. M. D. Hickey and L. K. Malley. -p. 1.
Anomalies of Intestinal Absorption of Fat: II. Hematology of Idiopathic Steatorrhea. W. T. Cooke, A. C. Frazer, A. L. P. Peeney and others. -p. 9.
*Idiopathic Pulmonary Hemosiderosis (Essential Brown Induration of Lungs). W. G. Wyllie, W. Sheldon, M. Bodian and A. Barlow. -p. 25.
*Treatment of Arsenical Dermatitis with Dimercaptopropanol (BAL). A. B. Carleton, R. A. Peters and R. H. S. Thompson. -p. 49.
Remarks Regarding Chronic Jaundice. F. P. Weber. -p. 81.
*Severe Hypertension in Young Persons: Study of 50 Cases. R. Platt. -p. 83.

Idiopathic Pulmonary Hemosiderosis.—Wyllie and his associates regard idiopathic pulmonary hemosiderosis or essential brown induration of the lungs as rare; they were able to find reports of only 17 cases in the literature up to 1947. They review 7 additional cases which were observed between 1938 and 1947. The condition seems to commence usually in early childhood, often in infancy. There appears to be no hereditary predisposition. The clinical signs are periodic attacks of dyspnea and cyanosis, associated with hypochromic anemia with hemolytic features. Hemoptyses, hematemeses and abdominal pain may be present. Physical signs in the chest are insignificant by comparison with radiologic signs. Changes are confined to, or maximal in, the lesser circulation. Myocardial changes, if present, are insufficient to account for the pulmonary lesions. Anemia is secondary, and in some instances there is even a compensatory rise in the red blood cell count when anoxemia with dyspnea and cyanosis supervenes in the final stages of the disease. Increase of reticulin, collagen and muscle, and decrease of elastic fibers in the pulmonary interstitial tissue lead to lack of distensibility of the lungs with consequent peripheral stasis in the capillary bed. This is followed by hemorrhage by diapedesis and deposition of hemosiderin. The onset is insidious. The intermittent periodic course and the increasing severity of the clinical picture are explained by the fact that ever larger portions of the lungs become affected. Anoxemia leads to dyspnea and cyanosis. Hemoptyses and hematemeses may occur. Subpleural hemorrhages, particularly in the region of the diaphragm, may give rise to referred abdominal pain. Hemosiderin deposits, fibrosis and areas of collapse are the pathologic basis of the radiologic appearances. Pulmonary hemosiderosis is not part of a generalized hemosiderosis and has no relation to hemochromatosis, since there is no general disturbance of iron metabolism. The prognosis is bad. Although 5 of the 7 patients whose histories are reviewed are alive, only 1 is in fairly good general condition.

BAL in Arsenical Dermatitis.—Carleton and his associates give an account of 44 cases of arsenical dermatitis treated with 2,3-dimercaptopropanol (BAL); 41 of these infections were of the acute exfoliative type. Three cases ended fatally, and in 4 more it was impossible to assess the progress numerically. In the remaining 37 cases the mean number of days between the first injection of BAL and healing or practically complete healing was 21.5 days. Abscesses at the injection sites developed in 8 cases.

Severe Hypertension in Young Persons.—Platt reports 191 personally observed cases of hypertension, to which have been added 5 cases of latent or chronic nephritis, in which hypertension was present. These cases form a consecutive and unselected series studied during the last thirteen months. Among the 191 cases of severe hypertension 45 occurred in persons under the age of 40 years. Of these, only 13 appeared to be cases of essential hypertension. No case of malignant hypertension in a patient under 34 years was seen. Young persons with the malignant type of hypertension nearly always have secondary hypertension, the underlying cause of which is often pyelonephritis, which may be on the background of a congenital abnormality. When cases of secondary hypertension were excluded, the average ages of patients with malignant and benign hypertension in the present series were 45.2 and 53.2 years, respectively. Taking into account the likelihood that patients with benign hypertension do not complain of symptoms for many years after their disease begins, it seems probable that benign and malignant hypertension have a similar age of onset. It is generally assumed that in persons under the age of 35 years, chronic nephritis is the commonest cause of hypertension. The author's experience is the reverse of this, since only 5 cases of chronic nephritis were observed during the time that these 24 cases of hypertension in patients under 35 years of age were collected. It is possible that many cases of hypertension are wrongly diagnosed as chronic nephritis.

Nordisk Medicin, Gothenburg

37:51-102 (Jan. 9) 1948

Some Problems for Physician Today. H. Berglund. -p. 51.
•Electrocardiographic Signs of Myopathy in Neurasthenia. H. Veflingstad. -p. 55.
•Heart Disease in Thyrotoxicosis. Cases and After-Examination. E. Vogt. -p. 58.
•Myxedema Heart and Other Cardiac Symptoms in Hypothyreosis. S. Aarseth. -p. 62.
Technic in Hypoxemia Test. B. Suopanki. -p. 66.
Effect of Acceleration and Blood Supply to Brain. S. Åkesson. -p. 70.
Endobronchial Treatment of Pulmonary Abscess. J. L. Hansen and C. M. Smidt. -p. 77.
Weltmann Reaction in Hepatic Diseases. J. Schwerin. -p. 79.
Morphine in Diseases of Heart, Indications and Contraindications. A. Schrumpf. -p. 81.
•Ambulant Vitamin E Therapy in Diseases of Heart. N. J. Gram and V. Schmidt. -p. 82.

Electrocardiographic Signs of Myopathy in Neurasthenia.—In 10 of 46 cases of neurasthenia Veflingstad found changes in the coronary part of the electrocardiogram in the form of low or negative T waves on several leads. There were no signs of organic heart disease, and subjective cardiac symptoms were slight The changes are regarded as purely functional and due to a preponderance of sympathicotonic impulses on the coronary circulation.

Heart Disease in Thyrotoxicosis.—Vogt states that of 419 patients with thyrotoxicosis treated in Drammen Hospital from 1935 to 1944 45, or 10.7 per cent, 4 men and 41 women, had cardiac disease with auricular fibrillation, enlargement of the heart or cardiac insufficiency. Thirty-eight patients underwent operative intervention, with subtotal strumectomy in 31 and hemistrumectomy in 7. Follow-up after an average of four years showed that 32 of the 38 patients were living, 5 still had thyrotoxicosis but were considerably improved, while 27 had no thyrotoxicosis. The late prognosis for patients not operated on was poor in most but not all cases. After the usual preoperative treatment strumectomy was tolerated remarkably well even by patients with considerable cardiac insufficiency. There were 3 postoperative deaths; recurrence was observed in 3 cases. Among the 27 patients without thyrotoxicosis cases of cardiac insufficiency were reduced from 9 to 1, cases of continuous fibrillation from 12 to 3, and intermittent fibrillation had disappeared. Improvement in work capacity paralleled the improvement of insufficiency. In most cases no other cause of the heart disease than the thyrotoxicosis was demonstrable; in a minority of cases there was evidence that it depended on hypertension, valvular defect or coronary sclerosis.

Myxedema Heart and Other Cardiac Symptoms in Hypothyreosis.—Hypothyreosis is often accompanied by cardiac symptoms either due to hypothyreosis itself or appearing as a more independent complication. Most important are the so-called myxedema heart and coronary sclerosis; they may appear in combination. Myxedema heart is often associated with myxedema and disappears on specific treatment simultaneously with the other symptoms of myxedema. The electrocardiographic changes in myxedema heart agree with the establishment of fluid in the pericardium, shown by a number of investigators to be the cause of the large heart of myxedema. There are probably also functional changes. The roentgenologic and electrocardiographic changes due to coronary sclerosis, true hypertrophy and fibrosis are irreversible. Ten cases of hypothyreosis are reported in women aged from 37 to 73 who have been treated during the last two years. Four had myxedema, 2 of these with the fully developed myxedema heart, 2 with the early form. In 1 patient with well established myxedema and signs of coronary sclerosis a fatal cardiac infarct occurred during thyroid treatment; 1 patient reacted to the treatment with fibrillation, 1 with postoperative hypothyreosis had paroxysmal tachycardia during treatment, and in 1 of the myxedema patients the supraventricular extrasystole present before treatment disappeared during thyroid medication

Ambulant Vitamin E Therapy in Diseases of Heart.—Gram and Schmidt say that they cannot confirm the Canadian results of this therapy in cardiac disease. "Ephynal" (synthetic vitamin E) gave no improvement in 63 of 80 patients, mainly with arteriosclerotic disease of the heart. Five patients showed definite improvement, and in 12 there was subjective improvement which cannot with certainty be ascribed to the vitamin. The effect observed, if due to vitamin E, must be assumed to depend on improvement in the condition of the blood vessels, especially of the coronary vessels, and must be considered as purely local.

Prensa Médica, Buenos Aires

35:157-182 (Jan. 23, 1948. Partial Index

*Galli Mainini's Test for Pregnancy. R. M. Pinto and H. J. Suer Boero. -p. 165

Galli Mainini's New Test for Diagnosis of Pregnancy.—The male tóad, Bufo arenarum Hensel, is used for the test, which consists of microscopic examination of the toad's urine, obtained from the toad's cloaca, after the animal is given a subcutaneous injection of 10 cc. of the morning urine of the woman suspected of pregnancy. The response is observed in two to three hours. Positive result consists of the appearance in the toad's urine of spermatozoa. Pinto and Suer Boero carried out this test on the urines of 158 pregnant women, 16 women in labor or puerperium and 80 women with gynecologic disease. The test has the advantages of being simple, rapid, specific and economical. False reactions do not occur. It is advisable to use two male toads for each test. The test gives negative results during labor and puerperium and in cases of hydatidiform mole, even when the Friedman reaction in the last mentioned case is positive.

Semaine des Hôpitaux de Paris

24:303-342 (Feb. 10) 1948

*Vagotomy for Ulcers (Dragstedt's Operation). A. Monsaingeon. -p. 303.
Considerations on Ventricular Hydrocephalus. M. Feld. -p. 317.
Some New Points of View Concerning Protein Diet in Course of Infections and Surgical Conditions. J. Trémolieres and G. Péquignot. -p. 320.

Vagotomy for Ulcers.—Monsaingeon discusses Dragstedt's operation on the basis of reports in the literature and of 6 cases in which section of the vagus was performed at Cadenat's Surgical Clinic in Paris. The effect of vagotomy on the secretion of gastric juice is limited to the initial phase of hydrochloric acid secretion (psychic phase). The insulin test is essential to determine the complete or incomplete character of the vagotomy but does not offer a complete picture of the effect of vagotomy on the secretion of gastric juice; the duration and importance of these effects have not yet been fully elucidated. The secretion of the vagotomized stomach may be modified by the administration of urethane of beta-methylcholine or carbaminoylcholine chloride. The latter may partially restore the motility of the stomach without reestablishing the secretion at its preoperative level, for which a triple dose would be required, and without jeopardizing or delaying the cicatrization of the ulcer. Vagotomy does not abolish hunger. No tendency to spasm was observed after vagotomy at the cardiac or pyloric sphincters. Early roentgenographic examination of the gallbladder after a Boyden meal in 2 cases of vagotomy showed that the gallbladder was evacuated within twenty to forty minutes, in 3 cases, six to nine months after the vagotomy, a disturbance of the evacuation of the gallbladder was observed. Diarrhea occurred occasionally either immediately or six to ten months after the operative intervention. Vagotomy is recommended for recurrent duodenal ulcers that are refractory to conservative treatment but not of the bleeding or stenosing type. It will probably be the method of choice for jejunal ulcers occurring after gastrectomy.

Wiener klinische Wochenschrift, Vienna

60:105-120 (Feb. 20) 1948

Actual Problems of Pediatrician. E. Glanzmann. -p. 105.
*Penicillin Treatment for Hematogenic Osteomyelitis. P. Wilflingseder. -p 109.
Vegetative Cardiac Attacks of Jarisch-Bezold-Type. K. Polzer and W. Schober. -p. 114.
One Hundred Retropubic Prostatectomies. R. Uebelhör. -p. 117.

Penicillin in Hematogenous Osteomyelitis.—Wilflingseder treated 24 patients, 22 of whom were less than 15 years of age, 18 with acute hematogenous osteomyelitis and 6 with chronic osteomyelitis, by intramuscular administration of penicillin. In 9 additional cases of acute osteomyelitis, children were treated with sulfonamide drugs, blood transfusions and immobilization. Doses of 1,000,000 to 2,000,000 units of penicillin proved sufficient in children in whom treatment was initiated in the first days of the disease. Three million units and more were required when treatment with penicillin was started only in the second or third week of the disease. Penicillin treatment must be continued until the pus becomes sterile, the temperature has been restored to normal, and pain and swelling of joints and soft tissues have subsided. These results were obtained in a girl aged 6 years only when the daily dose of the drug was increased to 300,000 units. In patients with subperiosteal abscess local application of penicillin was carried out by plombage of the abscess with instillation of 100,000 to 200,000 units of the drug. Within twenty-four hours of the instillation the punctate was sterile and the pus itself exerted a bacteriostatic effect on the Staphylococcus aureus. In 17 of the 18 acute infections complete recovery occurred in the absence of sequestration or formation of fistula. Partial stiffness due to sequestration and involvement of the joint occurred only in 1 case in which the dosage of penicillin was too small (600,000 units). Death occurred in 2 of the 9 patients with acute forms of the disease treated with sulfonamide compounds; 3 patients recovered, and 4 had a chronic course with sequestration and formation of fistula. There was no recurrence for year in 4 of the 6 patients with chronic osteomyelitis treated with penicillin, and fistulas which had remained open for two to five years were closed. There was no improvement in 1 patient, and in another progressive osteomyelitis with sequestration in both lower extremities could not be controlled even with 3,000,000 units of penicillin.

Book Notices

Textbook of Embryology. By Harvey Ernest Jordan, M.A., Ph.D., Sc.D., Professor of Anatomy and Director of the Anatomical Laboratories, University of Virginia, Charlottesville, and James Ernest Kindred, M.A.; Ph.D., Professor of Anatomy, University of Virginia. Fifth edition. Cloth. Price, $7.50. Pp. 613, with 501 illustrations. D. Appleton-Century Co., Inc., 35 W. 32d St., New York 1, 1948.

This work has always been distinguished by its effective use of illustrations and its emphasis on histogenesis. Recent editions have added significant data from experimental embryology and a painstaking documentation. The latter means nothing to the medical student but is of value to the instructor who wishes to judge the evidence for himself.

It grows increasingly difficult to keep successive editions of a textbook up to date without increasing its bulk and adding to the already exorbitant cost to the student. The present work illustrates various such difficulties. Thus in the new discussion of the menstrual cycle the old homology (Aristotle, Heape, etc.) of proestrus bleeding with menstruation is retained, although this interpretation has been disproved by histologic and hormonal studies. The chapter on the age of human embryos is chaotic because of the inadequacy of our present knowledge as to the time of ovulation, its relation to conception and the great variability in the time that may elapse between the death of the embryo and its abortion. In view of our ignorance one wonders what the effect on the student is when he comes on a mathematical formula for determining the age of an embryo from its length, which is by no means constant for any stage of development.

The old germ layer dogma is carried over (page 46) from the first edition, at which time conclusive evidence as to the derivatives of the neural crest (mesectoderm) was already five years old. In this table we also read that the iridial musculature arises " possibly from the ectoderm." Actually the dilator is from its first appearance and throughout life the contractile part of the myoepithelial cells which compose the pars iridica retinae. Any good preparation of a suitable stage shows the sphincter arising from the pigmented retina.

Each new edition of this and other embryologies has more of the splendid illustrations from the Carnegie Contributions to Embryology. The best are all from the pen of James Didusch, checked by G. L. Streeter. It is surprising, then, to encounter the grossly incorrect figure of Dandy's embryo (page 329), together with his naive interpretation of its nervous system. Similarly the old His figures remain, although they were corrected in 1916 by Hochstetter, whose monographs are omitted from the bibliography. Other errors include calling the brachium pontis a " commissure" and stating that the " cervical" flexure marks the junction of brain and cord.

A and *B* of figures 285 and 287 are misleading, as they have been shown to be chance variations rather then evidences of early sex differences in the external genitalia. Another figure that needs to be replaced is the atrocious reproduction of the youngest Hertig-Rock ovum (fig. 61).

In view of the emphasis on hemopoesis one wonders that the Rh factor is not mentioned.

This book is too useful to be handicapped by errors and should have the outdated vestiges of early editions systematically deleted.

Studies on Carbohydrate and Fat Metabolism with Especial Reference to the Pigeon. By Oscar Riddle and Associates, Department of Genetics, Carnegie Institution of Washington. Carnegie Institution of Washington Publication 569. Paper. Price, $1.85. Pp. 128, with 1 illustration. The Institution, 1530 P St., Northwest, Washington 5, D. C., 1947.

The investigations reported in this volume were carried out in an attempt to determine which pituitary hormones regulate carbohydrate and fat metabolism. The immature pigeon was used in most of the experiments. In some cases doves, rabbits and rats were also used. The data are presented in numerous tables showing the influence of the various hypophysial hormones (supplemented at times by other hormones) on carbohydrate and fat metabolism. The influence of ablation of various endocrine glands was also observed. The results of this study support the view that, in pigeons, very few anterior pituitary hormone share significantly in the regulation of blood sugar, muscle and liver glycogen, liver fat and ketosis. Anterior pituitary control of these processes is exerted chiefly through corticotropin, prolactin and thyrotropin. Posterior lobe products exert relatively slight effects. Curves describing the level of blood lipid at all phases of the reproductive cycle were constructed for pigeons and doves.

Incidental to these investigations, the data brought to light certain interesting aspects of the physiology of the pigeon in which there was a decided difference from that of mammals. To quote a few instances Hypophysectomy in the pigeon is followed by an increase of liver glycogen, whereas in mammals it is followed by a decrease Birds survive higher doses of insulin The adult reproducing pigeon shows cyclic glycemias and lipemias associated with egg production, a phenomenon not noted in mammals. As Dr. Riddle states in closing, "Most of these differences can be neither satisfactorily interpreted nor discussed at present; they stand as challenges to further research."

Hearing Aids and Audiometers: Report of the Committee on Electro-Acoustics. W.G. Radley, C.B.E., B.Sc. Ph.D., Chairman. Medical Research Council Special Report Series No. 261. Paper. Price, 1s. 3d. Pp. 71, with 28 illustrations. His Majesty's Stationery Office, York House, Kingsway, London, W. C. 2, 1947.

This pamphlet is a study of hearing in connection with the socialized medical program of the British Ministry of Health, comprised largely of scientific information which is in part a review of the literature of both the United Stated and Britain and in part original work done by the Committee on Electro-Acoustics. The committee has two principal tasks assigned: (1) to determine the practicability of designing a single type of electrically operated hearing aid which would be small, light, reasonably cheap to produce and service, and capable of giving good intelligibility of the spoken word to the majority of persons with deafness of types that can be benefited by mechanical appliances; (2) to determine satisfactory performance specifications for pure tone audiometers for use in the early diagnosis and accurate assessment of deafness of different types. The pamphlet is of major interest to the otologist and gives a good account of what is being done in England to assist those who are hard of hearing.

Applied Medical Bacteriology. By Max S. Marshall, Ph.D. With the collaboration of Janet B. Gunnison, M.A., Alfred S. Lazarus, Ph.D., Elizabeth L. Morrison, M.A., and Marian C. Shevky, A.B., Division of Bacteriology, Medical Center of the University of California, San Francisco. Fakrikoid. Price, $4.50. Pp. 340, with 10 illustrations. Lea & Febiger, 600 S. Washington Square, Philadelphia 6, 1947.

This book includes fourteen chapters. The first five are concerned with microscopy, sterilization and disinfection, glassware, culture mediums and cultivation, isolation and general technic. Other chapters are devoted to the use of laboratory animals, serologic technic, viruses, yeasts and molds, sanitation, biologic products, specimens and classification. Finally, the last chapter, occupying one hundred and sixty pages, is entitled "Diseases." Under this chapter some sixty-seven diseases are discussed, and for each disease a brief clinical description and the causative agent are given followed by a discussion of the specimens to be taken, the laboratory procedures to be followed and the significant laboratory data to be included in reports. The material is well organized and the tables and illustrations are well chosen. This book should prove helpful to clinicians, public health workers and sanitary inspectors as well as students and laboratory technicians in medical bacteriology.

Anatomy and Physiology Laboratory Manual and Study Guide. By Barry Griffith King, Ph.D., Commander H(S), U.S.N.R. Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md., and Helen Maria Roser, B.A., M.A., R.N., Assistant Executive Secretary, American Nurses Association Professional Counselling & Placement Service, Inc. Section on Endocrines rewritten by Erwin P. Vollmer, Ph.D., Lieutenant H(S) U.S.N.R Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md. Third edition. Cloth. Price, $3. Pp. 267, with 61 illustrations by M. Cartwright Baker. W.B. Saunders Co., W. Washington Sq. Philadelphia 5, 1948.

As the name implies, this book is a laboratory manual and syllabus. As such, it is beautifully illustrated with original drawings and tables which are well adapted for the class of students for which the manual was intended. The fact that it has now gone into the third edition indicates a degree of popularity which cannot be disregarded. It is elementary, to be sure, but evidently well suited to the class of students using it. It can be well recommended to any one interested.

Pharmacology and Experimental Therapeutics: A Survey for 1941-1946. By Hamilton H. Anderson, Fumiko Murayama and Benedict E. Abreu. Cloth. Price, $6 50. Pp 368, University of California Press, Berkeley 4, 1947.

The title of this book is somewhat misleading. The subject matter consists of brief abstracts of toxicologic and therapeutic information gleaned from the medical literature published during and subsequent to World War II. The drugs are arranged alphabetically, and only those which were subject to investigation during the period covered by the survey are included. Fortunately many of the older drugs were reinvestigated during the war years, and thus the volume contains information not only on the new synthetic chemicals but on many of the well known older agents.

This book is useful only when consulted in conjunction with other reference works on pharmacology and therapeutics. It may be considered as an appendix to the more extensive standard works, and as such will provide up-to-date information on recent investigations on drugs. The emphasis has been placed on quantitative toxicologic data, although metabolic and pharmacodynamic effects of the various drugs are mentioned. No attempt is made to review in a critical fashion the literature from which the data are derived.

As a supplemental reference work for pharmacologists and scientists in allied fields, this book will have some value. It is too incomplete and restricted in scope to be of interest to the practicing physician.

Caesarean Section: The History and Development of the Operation from Earliest Times. By J.H. Young, M.B., Ch.B., D.T.M. & H. With a foreword by Miles H. Phillips, M.D., B.S., F.R.C.S. Cloth. Price 16s. Pp. 254. H.K. Lewis & Co., Ltd., 136 Gower St., London, W.C.1., 1944.

This monograph on the history and development of the operation of cesarean section was originally written as a thesis for an M.D. degree at the University of Edinburgh. Professor Miles persuaded Dr. Young to enlarge it and to publish the manuscript in book form. The result is a complete story of abdominal delivery beginning in antiquity and extending to the present. A thorough search of the literature failed to discover the exact origin of the operation. The authentic history of cesarean section is divided into three periods; prior to 1500, from 1500 to 1876 and from 1876 to the present time. Prior to 1500 abdominal delivery was seldom performed and then solely for the postmortem delivery of the living child. From 1500 to 1876 sporadic operations were reported, chiefly on the continent of Europe, but recoveries were so few that the procedure was not recognized by the profession at large. The development of cesarean hysterectomy by Porro and its adoption by Sanger heralded the beginning of modern technic. However, abdominal delivery is largely a development of the twentieth century, for its successful use had to await the discoveries of antisepsis, anesthesia and the surgical skills.

The book includes chapters on the historical development of the variations of abdominal delivery as well as the surgical technic and the indications for the operation. The history of postmortem cesarean section is discussed. Finally, a short chapter is devoted to the religious and legal implications of sterilization procedures at abdominal delivery. An exhaustive bibliography is available at the end of each chapter. This historical document of one of the major procedures in obstetrics is interesting reading and will be enjoyed by obstetricians as well as by those who are students of medical history.

Kurze Klinik der Ohren-, Nasen-, und Halskrankheiten. Von Dr. Erhard Lüscher, ordentlicher Professor der Ohren-, Nasen- und Halsheilkunde und Direktor der Universitätsklinik und poliklinik fur Ohren-, Nasen- und Halskranke in Basel, Switzerland. Cloth. Price, 54 Swiss francs. Pp 513, with 201 illustrations. Grune & Stratton, Inc., 381 4th Ave., New York 16; Beno Schwabe & Co., Klosterberg 27, Basel 10, 1948.

A short clinic on diseases of the ear, nose and throat by Erhard Luscher appears to be the first postwar compendium in German. In his attempt to present a practical manual for students and general practitioners the author has unquestionably succeeded. Since the work was not primarily intended for the otolaryngologist, it will have no more than an academic interest to the specialist in this field. The entire subject matter, including bronchoesophagology, is well classified. Beginning with a brief descriptive anatomic review which is well illustrated by two hundred and one partly colored and exceptionally detailed drawings, the author proceeds to give a comprehensive presentation of the physiology of organs in this field.

Following a brief discussion of the instrumentarium required for a thorough otorhinolaryngologic examination, the author devotes considerable space to important clinical pictures and procedures found and utilized in the practice of this specialty. Thus, in his discussion of an ear examination, he stresses the importance of the appearance of the membrana tympani and describes thoroughly the use and importance of the eustachian catheter. For completeness, as is to be expected, he includes a discussion on audiometry. In his presentation of diseases of the middle ear, he explains aero-otitis or barotrauma and discusses thoroughly the problem of early surgical intervention in acute otitis media and acute mastoiditis. It is his opinion that early intervention in such cases is to be condemned and that only absolute indications should prevail

On the diseases of the nose, nasal hemorrhage and fractures receive most of his attention. He proffers many specific prescriptions and methods of treatment but again ascribes considerable importance to anterior and posterior tamponades in cases of nasal hemorrhage. He considers rather extensively dermatoses of the external nose, allergy, hay fever and rhinitis. It is interesting that in his discussion of sinusitis he recommends suction in both acute and chronic phases of the disease but makes no mention of the Proetz treatment as such.

In the diseases of the throat, the tonsil and adenoid problem receives a detailed discussion the author advising the removal of these structures only by competent specialists. It was somewhat surprising to read that he considers a suspicion of tuberculosis of the neck glands as an indication for tonsillectomy. He also recommends early tonsillectomy in about six or eight days following acute peritonsillar abscess. In considering the the question of focal infection, he agrees with the French authors that approximately 60 per cent of the latent sepsis is due to focal infections in the tonsils and that since neither sulfonamide or penicillin therapy is able to sterilize the primary focus a tonsillectomy is indicated.

Besides the usual prescriptions for pharyngitis, the author recommends balneotherapy and gives a list of twenty-four hot and cold springs in Switzerland alone. He takes occasion here to issue a special warning to general practitioners not to attempt removal of foreign bodies and manual procedures in the throat, hypopharynx and esophagus particularly in babies, where such procedures may result in the aspiration of the object into the lung or in pushing it into the stomach

The diseases of the larynx found only a short discussion but, the illustrations were exceptional in their clarity and educational value. In small slowly growing, circumscribed carcinoma of the larynx the author is satisfied with a transthyroideal cordectomy. He claims good results with this procedure and cites the results of other European authors. He recommends this type of surgery particularly in those patients who use their voice professionally. He is in full agreement with those who advocate preoperative roentgen therapy in an attempt to reduce the size of the tumor. For those patients who require a total extripation, he strongly recommends preoperative treatment with fractional dosage of roentgen radiation. After a short description of the neurogenic and functional disturbances of the larynx, the book closes with an extremely interesting chart of the new and old nomenclature. The new nomenclature was in all probability adopted by an international forum known as the I.N.S. (Nomina Anatomica, 1935).

Medicine. Volume One: The Patient and His Disease. By A.E. Clark-Kennedy, M.D., F.R.C.P., Physician to the London Hospital and Dean of the Medical School. Cloth. Price, $6. Pp. 383. Williams & Wilkins Co., Mount Royal & Guilford Aves., Baltimore 2, 1947.

To the student accustomed to the dry routine presentation of the subject of medicine in the manner of the usual textbook, Dr. Clark-Kennedy's monograph will make both interesting and stimulating reading. This is definitely not a textbook in the ordinary sense but rather a manual of instruction on the art of the practice of medicine. The patient is presented as a whole individual as met in the hospital bed or office and discussed as an organism with body and mind, reacting to the sum of hereditary factors and environment. It teaches the approach to the patient and the method of thought that should be employed in the analysis of the patient's symptoms and signs. Volume I presents a concept of all branches of medicine in a philosophical as well as scientific manner, correlated in writing as the practitioner must do in his thought when faced with the patient and his problem. It is divided into six chapters, with titles consecutively as follows: body and mind, symptoms, symptoms and signs, heredity and environment, reactions of the body and mind, and the nature of disease. The book is definitely not for the beginner in medicine

Signs and Symptoms: Their Clinical Interpretation. Edited by Cyril Mitchell MacBryde, A.B., M.D., F.A.C.P., Assistant Professor of Clinical Medicine, Washington University School of Medicine, St. Louis. Cloth. Price $12. Pp. 439, with 86 illustrations. J. B. Lippincott Company, 227-231 S. 6th St., Philadelphia 5, 1947.

In this volume a number of competent practitioners present basic considerations in the diagnosis of disease, making altogether one of the most instructive books available for either specialists or general practitioners. The chapters are devoted to the taking of the history of the patient and the analysis of symptoms such as pain, headache, sore tongue and sore mouth, fever, unconsciousness, swelling, loss of motion cough and change of weight. Here in concentrated form is graduate education of high quality The illustrations are excellent and adequately supplement the text, as does a detailed index.

Liberia. By Charles Morrow Wilson. Cloth. Price, $3.75. Pp. 226 with illustrations. William Sloane Associates, Inc., 119 W. 57th St. New York 19, 1947.

The year 1947 marked the centennial of Liberia as a republic. This book is a history of the early colonization of the country, the establishment of a commonwealth and ultimately the republic. The country is situated near the African Gold Coast; it has a land area of approximately 45,000 square miles and an estimated population of 1,600,000. Ninety-five per cent of the people are members of indigenous tribes. Citizenship and property rights are restricted to peoples of African blood.

For many years the culture and economy of Liberia were similar to others of the dark continent. Little progress was noted until the Firestone Tire & Rubber Company began developing some of the natural resources and introduced Hevea plantations. These plantations were a potent supply source of natural rubber for America and Allied nations.

Of interest to those associated with medicine is the important role of modern medicine in the cultural and economic advancement of the country. Although medicine is touched on throughout the book, one chapter, "Liberia and Medicine," deals more specifically with medical problems. For years modern medicine was unknown. George W. Harley, M.D., medical missionary, founded and still directs an impressive clinic in the tribal countryside of Ganta. His work and the medical personnel and facilities available through Firestone have brought scientific care to many Liberians.

There are still areas where the native medicine man is the only practitioner available to treat the natives. In the language of the Mano tribe "Nye ke mi" means the person who makes medicine—the doctor. Whatever his tribe, he is an important person acting as priest, physician and philosopher—much as the modern medical doctor is to his patients in more advanced countries.

Illustrations of Regional Anatomy. By E. B. Jamieson, M.D. Section I; Central Nervous System; Section II: Head and Neck; Section III: Abdomen; Section IV: Pelvis; Section V: Thorax; Section VI: Upper Limb; Section VII: Lower Limb. Seventh edition. Paper. Price, Section I, $3.50; Section II, $4; Section III, $3; Section IV, $2.50; Section V, $2.50; Section VI, $3; Section VII, $3.50. Pp. 51, with 51 plates; 52-115, with 64 plates; 116-159, with 44 plates; 160-194, with 35 plates; 195-226, with 52 plates. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1947.

This set is basically a cumulative record of the author's own dissections and teaching efforts. Occasional minor flaws are observed; these are probably due to the progressive expansion of the scope of work and the constant improvement in the quality of the material presented. These flaws, which are observed in conjunction with some illustrations, do not involve anatomic facts. This series can be used to great advantage by the medical student as well as the practitioner. The material is presented in sufficient detail and clarity to be as helpful in the dissecting room as in the private medical library. The illustrations are good and are particularly striking in the volumes dealing with the thorax and abdomen. Another desirable feature is the fact that individual volumes can be purchased.

An Introduction to Gastro-Enterology: A Clinical Study of the Structure and Functions of the Human Alimentary Tube. By James Dunlop Lickley, M.D. Cloth. Price, $3. Pp. 143, with 21 illustrations. Williams and Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1947.

This is a rather ambitious title for such a small book. Probably because the writer was once a lecturer on applied anatomy the best part of the volume is on the anatomy of the digestive tract. There is a section on the physiology of the tract, another on the pathologic physiology and another on clinical applications. It would have been somewhat of a miracle if the author had been able to pack into the small space available a really adequate amount of information. Material also should have been right up to date and based more on research articles than on old textbooks. Actually the book is somewhat disappointing and one feels that the writer could have done much better.

Biochemistry for Medical Students. By William Veale Thorpe, M.A., Ph.D. Fourth edition. Cloth. Price, $5. Pp. 496, with 36 illustrations. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1947.

This book, as its title implies, was written primarily for the use of medical students, and particular emphasis has been placed on problems of diagnosis. An effort has been made to supply facts and methods which the medical student should know about rather than to deal with theory. A bibliography supplying references to monographs and special articles is furnished for more detailed study. In the present edition (fourth) particular attention has been paid to the problem of the use of isotopes in biochemical investigations, and the sections on protein structure, coenzymes, flavoproteins, bile pigments and nutrition in wartime have been largely rewritten.

The general plan of the book is as follows: Following a preliminary discussion of physical-chemical principles there is discussion of substances found in tissues and food. This includes consideration of special catalysts. In part 2 problems of digestion and absorption and of intermed~~iary~~ metabolism are considered, as well as the role of hormones and vitamins in metabolism. Part 3 deals largely with problems of energy needs, food composition, nutritional aspects and waste products.

The small size of the book makes it easy to read, and its condensed form enables the student to learn many facts about biochemistry in an elementary way. It is unfortunate that the author expresses measurements of intestine in man in terms of feet, absorptive area in terms of square meters, and total weight in terms of stones. It is hoped, however, that in future editions the metric system will be utilized consistently.

Bovine Tuberculosis Including a Contrast with Human Tuberculosis. By John Francis, B.Sc., M.R.C.V.S. Fabrikoid. Price, 25s. Pp. 220, with 36 illustrations. Staples Press, Ltd., Staples House, 10 Cavendish Place, London, W.1, 1947.

This small volume presents rather well the subject of bovine tuberculosis. The author traces the disease from the Mediterranean littoral, particularly Rome, to Britain and Northern Europe. Finally, the infected high bred English cattle disseminated the disease to many other parts of the world.

No control was attempted until after the tubercle bacillus was found. Ostertag in Germany attempted, unsuccessfully, to wipe out the disease by killing off all the ill cattle. Bang, in Denmark, had more success by separating all calves from their mothers and starting new herds with the young animals. Since only 0.5 per cent of the young are infected at birth, this method was fairly successful. Another method, used mostly in England, was to do tuberculin tests in herds and regions and gradually separate the infected animals and eliminate them. Finally, the method used in the United States was to kill off all tuberculin reactors on a national scale. As a result, practically no tuberculosis remains in continental United States. The Federal Government, the state and the owner each bore an equal share of the loss.

Vaccination has been a total failure. BCG protection lasts only about six months, and the vaccine made from the human strain may be passed back to human beings.

The pathogenesis of the disease is considerably different from that in human beings. There is not the susceptibility in young cattle that there is in young human beings, and the complete healing of tuberculous lesions in cattle is a rarity. Reinfection lymph node complexes, rare in the human being, are the rule in cattle. Lymph nodes do not rupture into bronchi in cattle as they frequently do in human beings. Some breeds of cattle are more resistant than others. Herefords are more resistant than Jerseys, and the Zebu African cattle are the most resistant of all. About 5 per cent of tuberculous cows have metritis as a result of hematogenous dissemination, but only 1 per cent of the calves are infected. From 1 to 2 per cent of tuberculous cows have tuberculous mastitis also, as a result of hematogenous seeding. Cattle are infected generally by the aerogenous route (80 to 90 per cent) usually while in their stalls. Infection is rare in open pastures. Infection of man with bovine tubercle bacilli (where bovine bacilli are prevalent) is around 5 per cent, and about 30 per cent of tuberculous children have bovine infections due to drinking infected milk. Cattle are only slightly susceptible to avian and human strains of tubercle bacilli.

Some good photographs of typical bovine lesions, appropriate charts and tables and an easily readable type make the work a worthy addition to the literature of comparative medicine.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

CHRONIC HEPATITIS

To the Editor.--A 28 year old white female patient in March 1947 experienced headache, malaise, anorexia, moderate pain in the upper part of the abdomen and in the lumber region, nausea, vomiting and diarrhea. She ran a low grade fever. Physical examination revealed a palpable tender liver and moderate inguinal and cervical lymphadenopathy, as well as pharyngitis. Blood count and hemoglobin were normal; the blood Wassermann reaction was negative. The urine was dark brown, and the thymol turbidity test positive in result. The icterus index was 9; cephalin flocculation reaction was 4 plus, and the sulfobromophthalein sodium test normal in result. The patient was treated with rest in bed, a diet low in fat, infusions of 5 per cent glucose, vitamin B complex and sulfadiazine, 1 Gm. every four hours. After six weeks of rest in bed there was symptomatic improvement, but the cephalin flocculation reaction remained 2 plus. In August of 1947, while on vacation, the patient experienced severe diarrhea, and a Salmonella organism was cultured from the stool. After therapy with succinylsulfathiazole and sulfasuccidine the cultures became negative. However, at this time the patient again experienced pain in the right upper part of the abdomen, nausea, vomiting, headache and mild diarrhea persisted. Several tests showed a persistent 2 to 3 plus cephalin flocculation reaction, and normal sulfobromophthalein sodium reaction. The blood alkaline phosphatase and albumin globulin ratio were normal and the icterus index 6. The patient was put on rest in bed for three months and a diet high in protein and in methionine advised. Vitamin B complex and folic acid were prescribed. A course of dehydrocholic acid was given, 1 tablet three times a day. At the present time the patient is again at work, and on a regular diet with no medication. She has occasional severe headache and nausea, and persistent soreness in the hepatic region. The cephalin flocculation reaction remains at 2 plus, and sulfobromophthalein sodium reaction normal. Would a liver aspiration biopsy be advisable, or justified in this case? What value, or danger if any, is there in the use of sulfadiazine, folic acid and dehydrocholic acid in this case? What diagnostic procedures would be of value in following this case, and what therapeutic program is suggested? What is the prognosis?

M.D., New York.

ANSWER.—The history and findings in this case are consistent with those present in a diagnosis of infectious hepatitis, although the minimal degree of icterus places the case in the category of anicteric cases. Symptoms of the type described are oftener encountered in areas where the disease is epidemic than where it is sporadic, and one wonders whether this patient had any contact with other persons suffering from the disease or whether there is any history of antecedent use of blood or plasma. The complicating Salmonella infection is not unusual and is not necessarily connected with the relapse of hepatitis which the patient apparently had thereafter.

Residual malaise with pain and soreness in the region of the liver may indicate low grade chronic hepatitis. Such symptoms, however, may be of little clinical significance, since some degree of retention of sulfobromophthalein would be expected if the hepatitis were active. In regard to other tests of hepatic function in this patient, the only definite finding mentioned is the weakly positive result of the cephalin cholesterol flocculation test, which is hardly sufficient for diagnosis. The thymol turbidity test and the test for determination of serum bilirubin should be repeated; the level of serum globulin should be checked. If this exceeds 3.5 Gm. per hundred cubic centimeters of serum and there is thymol turbidity in excess of 4 units, the hepatitis may still be active. Cholesterol and esters should be checked, and, if possible, quantitative studies of the urobilinogen content of the urine should be performed. As Watson and others have shown, the hepatitis may still be active so long as there is significant urobilinogenuria, no matter what other tests of hepatic function may show. In such cases, an increased excretion of the type I isomer coproporphyrin in the urine may be a concomitant finding. If the liver is readily palpable below the costal margin, a needle biopsy may be justifiable; it is conceivable that it may give information of value. The reader is referred to a recent account of the residues of hepatitis by Kunkel, Labby and Hoagland (*Ann. Int. Med.* 27:202-219 [Aug.] 1947) for more detailed information in regard to diagnosis and classification of such cases.

Treatment of chronic or relapsing infectious hepatitis in the active phase is largely a matter of rest, a diet high in calories and in protein and elimination of existing infections elsewhere in the body. In the inactive phase, the maintenance of optimal nutrition is the only requirement (Capps, R. B., and Barker, M. H.: *Ann. Int. Med.* 26:405-416 [Mar.] 1947). No benefit will accrue from the use of the sulfonamide drugs, bile salts or folic acid so far as is now known; the first two remedies may, at least in some cases, do harm. The prognosis is probably good, although the ultimate developments in chronic hepatitis are still not clearly understood.

MENOPAUSE AND FERTILITY

To the Editor:—Is there any examination acceptable to the courts in determining whether it is possible for a woman, age 56, who has passed the menopause, to bear children?

J. P. Richardson, M.D., Ellensburg, Wash.

ANSWER.—Fertility in women reaches a low ebb in the premenopausal period and is completely extinguished after the menopause. There is no likelihood of pregnancy when menses have been absent for a year. It is of interest that the oldest woman to give birth to a baby in 100,000 consecutive deliveries was 46 years old and the oldest pregnant woman was 48.

The following findings are typical of the postmenopausal period and indicative of a complete absence of fertility. Their presence in a 56 year old woman should bear considerable legal weight: 1. Atrophic changes in the external genitalia, the vagina and the uterus become increasingly evident during the postmenopausal period. 2. Endometrial biopsies reveal atrophy of the endometrium which is fairly characteristic. 3. There is a great decrease in urinary estrogens although traces of such hormones are detectable for several years after the cessation of the menses. 4. The onset of the menopause is associated with a greatly increased elimination of urinary gonadotropins (ten to fifty times the normal amount), follicle stimulating in character. 5. Only traces of pregnandiol are present in the urine, and these ultimately disappear.

CONTAMINATED WELLS

To the Editor:—For the past five months my neighbor and I have noticed an odor of gasoline in our water supply. It varies from a slightly perceptible to a disagreeably strong odor, although at no time has the water been discolored or covered with an oily film. Both our houses are supplied by driven wells 60 to 75 feet (18.3 to 22.9 meters) deep, with an outer casing of iron pipe at least 40 feet (12.2 meters) deep, and the lead-in pipe from the well to the house is completely cemented into the casing. Both wells are within 6 feet (1.8 meters) of the houses. There are four gasoline stations in the immediate vicinity, each with underground tanks of over 500 gallon (1,890 liter) capacity. The distances are 90 feet (27.4 meters), 75 feet (22.9 meters), 250 feet (76.2 meters), and 100 feet (30.5 meters), respectively. Air pressure tests on the nearest tank revealed no leak. The other tanks were measured by stick; that is, the level of the gasoline in the tank was noted on a stick and checked after twelve to eighteen hours. Leakage was not noted with this method, which is admittedly inaccurate. The owners, however, would not or could not use the air pressure method. On opening the casing cover on one well, the odor of gasoline was distinct and a lighted match dropped in caused a flash fire. The ground was dug up for about 5 feet (1.5 meters) around this well to get to the casing, and this ground also had the odor and burned when ignited. A sample was obtained from the surface of the well, and it was a dark black oily liquid smelling strongly of gasoline. It is known that at the site of the tank 250 feet away about fifteen to eighteen years ago about 10,000 gallons (37,850 liters) of gasoline was lost through a leak in the tank that was put in underground. I have several questions on the problem: 1. Is this contaminated water harmful for drinking, cooking or washing? 2. Since each tank is owned by a different company, can chemical analysis identify different brands of gasoline? 3. Could the gasoline lost years ago be the cause of our present contamination? 4. Would digging deeper wells help us in obtaining a clean water supply? 5. Is there a filter on the market that would be of help to us?

Abraham D. Cohen, M.D., New City, N.Y.

ANSWER.—1. There is danger of lead contamination of the drinking and culinary water, as most modern motor fuels are leaded. The United States Public Health Service considers waters having lead content in excess of 0.1 part per million as unacceptable for drinking purposes. Obviously the water may be used for washing if the gasoline odor is not too objectionable. Fire and explosion hazard should be considered in the use of the wells if, as stated, the gasoline vapors in one of the wells has been ignited.

2. It is doubtful whether chemical analyses will indicate the source of the gasoline pollution unless the fuels from the various storage tanks are of distinctly different grades.

3. The gasoline which leaked into the ground years ago may be causing the contamination, but if so it is difficult to understand why it did not show up in the wells prior to five months ago. More recent gasoline spills should be considered as possible sources of pollution.

4. Drilling of deeper wells to tap lower water-bearing strata may be the solution of the problem. The well casings should be sealed to prevent entrance of the gasoline-contaminated water from near the surface of the ground. The local well drillers should be able to advise regarding the availability and quality of water from deeper strata and regarding the practicability of sealing off water from strata near the ground surface.

5. Gasoline odors can be removed by filtering the water through activated carbon if the water is not seriously contaminated. Such filters are available on the market. They will not remove lead from the water.

RADIOACTIVE IODINE

To the Editor:—In the Feb. 22, 1948 issue of the *American Weekly* is an article entitled "Atomic Energy, World's Greatest Killer of Toxic Goiter" by G. B. Lal. The atomic drink—colorless, odorless, tasteless; the dose, usually small, of radioactive iodine cured the patient. Just what is the status of radioactive iodine?

William J. Stapleton, M. D., Detroit.

ANSWER—There are still not enough observations to say definitely what the status of radioactive iodine is in the treatment of toxic goiter. From data available it appears possible to produce a cure in a relatively large percentage of patients. If the correct amount of radioactive iodine is given, one dose is usually adequate. It has the advantage that it may be given by mouth. Thyroxin, which is the most important constituent of the thyroid hormone, contains 65 per cent of iodine by weight. When iodine is given in small quantities, it is taken up almost entirely by the thyroid, and if it is radioactive it destroys the thyroid cells. Patients who have received this form of treatment have not yet been followed long enough to determine whether there are any late complications, notably carcinoma. Expensive apparatus is necessary to follow the effect of radioactive iodine in an intelligent manner. Because of the expense involved and the uncertainty concerning complications of treatment, the use of radioactive iodine has been restricted to those patients who present poor operative risks. Propylthiouracil has been used for medical management in the same types of patients.

PETIT MAL

To the Editor:—During the past several months I have had under my care a middle-aged, white bipara who has had recurrent attacks of petit mal. Trimethadione ("tridione") with phenobarbital decreased the attacks for approximately three weeks, but the attacks then recurred, and the patient's leukocyte count approached 4,500 per cubic millimeter; hence the trimethadione was discontinued. She is now on 4 to 6 Gm. of glutamic acid daily with phenobarbital. Do you have any further suggestions?

M.D., California

ANSWER.—Petit mal (pyknoepilepsy) is rare in persons of middle age. The attacks are easily confused with mild psychomotor seizures. If possible, the diagnosis should be checked by the electroencephalograph. Psychomotor seizures require from 0.3 to 0.5 Gm. of diphenylhydantoin sodium or of "mesantoin" (methylphenylethyl hydantoin) (or of both). If the attacks are petit mal, a larger dose of trimethadione than that given may be required. Neutropenia (1,600 white cells per cubic millimeter or lower) or sharp reduction in the abundance of platelets calls for discontinuance.

LEUKOPLAKIA

To the Editor:—There is a difference of opinion among the physicians at this hospital as to the best method of treating leukoplakia of the lower lip. Some favor radiation therapy, while others recommend peeling of the lesion followed by cauterization of the base. I would appreciate an opinion.

C. K. Pearlman, M.D., Huntington, W. Va.

ANSWER.--Leukoplakia of the lower lip only is commonly induced by the irritation from pipe smoking. There is no specific cure. The treatment of leukoplakia divides itself into preventive and active measures. One should remove the known common causes. These include poor oral hygiene, such as poor dental alinement, accumulation of tartar and decay. Dentures must fit properly and be clean. Strong drinks and irritating foods that are too hot and highly spiced are agents which predispose to and aggravate the condition. Smoking is the commonest agent known to induce and continue leukoplakic changes of the mouth. An important part of any treatment regimen must depend on the complete interdiction of this habit. Most observers agree that half-hearted measures to discontinue the use of tobacco led to failure. The physician should be the patient's prop in the early trying days. He must be sympathetic and yet induce courage by his forcefulness. The complete cessation of smoking leads often to surprisingly gratifying results. Simple mouth washes as with sodium perborate solution are useful.

Leukoplakia sometimes involutes or improves with the administration of vitamin A. The dose is from 50,000 to 150,000 units a day and should be continued for an extended period. Estrogenic substance is said to be of benefit, but this statement lacks sufficient verification. Use of estrogens should be attended with the caution that hormonal therapy in general deserves. Caustic agents such as silver nitrate are to be avoided. They are not curative but frequently produce damage. Cancer can supervene from their use. If a destructive method is desirable, this is best found in the use of actual cautery, electrocoagulation, fulguration or surgery.

Syphilis is said to be a sufficiently frequent factor in the production of leukoplakia to warrant careful search for its possible presence. Some consider that antisyphilitic therapy is warranted even though the results of blood serum tests and physical examinations are negative. It would seem, however, that there should be some definite support for such an attack above mere surmise.

Where the changes in the mucous membrane are smooth and the surface is intact with no tendency to bleed, conservative measures are apt to suffice and sometimes cure. Otherwise, active measures become necessary. It must be remembered that squamous cell cancer may be an end result in the thickened, fissured and bleeding forms of leukoplakia and calls for the radical measures appropriate for it. Radiation therapy is used by some, but effective doses are cauterizing. The majority of observers do not favor its use except in connection with cancerous degeneration.

ELECTROCARDIOGRAPHY

To the Editor:—Appreciating that theoretically unipolar electrocardiography is superior to bipolar or standard studies, can it be expected that the former will generally replace the latter? Other than for correlative study is there a sound reason for routinely recording both standard and unipolar limb leads? Are most progressive cardiac clinics and medical services employing unipolar studies at present?

Felix Wroblewski, M.D., Brooklyn.

ANSWER.—The present controversy about unipolar leads does not concern the desirability of using true unipolar leads. All authorities agree that a truly unipolar lead is highly desirable. At present there is considerable argument over the present technic of taking unipolar leads. One school of thought led by Wilson maintains that the central terminal used for taking these leads has a potential close enough to zero to permit the recording of leads which are for all practical purposes unipolar. The opposing school of thought led by Wolferth maintains that the central terminal is not of zero potential and that the leads recorded are not true unipolar leads. This problem has not been settled and until it is unipolar leads will not replace bipolar leads. When it becomes possible to prove that electrocardiographic leads can be made unipolar, bipolar leads will become entirely superfluous. Until that time many electrocardiographers are using the so-called unipolar leads in order to gain experience with them.

It is not within the scope of this communication to list the advantages of unipolar leads, nor can the question about the progressiveness of clinics using these methods be answered.

SULFAMERAZINE

To the Editor:—Kindly supply information on rashes following medication with sulfamerazine; data in relation to method of administration; dosage, and possible toxic effects.

M.D., Pennsylvania

ANSWER.—Many of the rashes attributable to other sulfonamide compounds have followed the administration of sulfamerazine. These rashes include generalized erythema, maculopapular eruptions, purpura, erythema multiforme, erythema nodosum-like lesions and, rarely, an exfoliative type of dermatitis. In one large clinic the incidence of rashes with sulfamerazine was no greater than that associated with sulfadiazine and less than that following the administration of sulfathiazole.

For systemic bacterial infections the oral dose of sulfamerazine for small children is ½ to 1 grain (0.0325 to 0.065 Gm.) per pound of body weight in twenty-four hours. For adults an initial oral dose of 3 to 4 Gm. is followed by 1 Gm. every six hours. The sodium salt of sulfamerazine may be utilized for intravenous administration. It is desirable that the patient maintain an alkaline urine while sulfamerazine is being administered, and for this purpose sodium bicarbonate may be employed in a total daily amount of 12 to 14 Gm. given in divided doses. The total output of urine should be observed closely.

The toxic effects of sulfamerazine are similar to those encountered with sulfadiazine and other sulfonamide drugs and include renal complications such as hematuria, oliguria, pain and anuria. This last [illegible] complication can be prevented to some exte[illegible]f the urine and the administration of adequate fluids. Blood dyscrasias such as granulopenia and agranulocytosis occur rarely, usually after the drug has been administered for two or more weeks. Rashes may appear but subside shortly after the discontinuation of therapy. Febrile episodes may indicate toxicity.

Sulfamerazine has about the same therapeutic advantage as sulfadiazine and is no more toxic than the latter. Blood concentration of sulfamerazine are maintained for longer periods than those which are obtained with equivalent doses of sulfadiazine. This indicates that sulfamerazine can be given at less frequent intervals, which is a distinct therapeutic advantage, especially in children.

NEUROLOGIC SYMPTOMS FOLLOWING INJECTION OF MERCURIAL

To the Editor:—Following up the discussion of the subject "Neurologic Symptoms Following Injection of Mercurial" (THE JOURNAL, Oct. 11, 1947, p. 396) and Dr. A.H. Ulm's note (February 7, 1948, p. 434) in Queries and Minor Notes, it has been my observation in many older, hypertensive arteriosclerotic persons that the symptoms of numbness, tingling and especially the cramping of the posterior lower leg muscles will occur if the dose of the mercurial compound is too large. I tried to explain this to myself on the hydrodynamic theory, because it only happened a number of hours after the administration of the mercurial and only after adequate diuresis or more than adequate diuresis. The pain is similar to the muscle cramp of intermittent claudication but will occur at rest also, and all the sooner if the patient is on his feet and walking. I have never had this complaint from a female patient. Physicians had all better learn that an ampule's content of 2 cc. does not mean that the dose is 2 cc. Does one administer the full 1 cc. of epinephrine in an attack of bronchial asthma just because the ampule contains 1 cc.?

Robert R. Schwartz, M.D., Bronx, N.Y.

MEDICATION FOR PINWORM DURING PREGNANCY

To the Editor:—The answer in THE JOURNAL, Feb. 7, 1948 page 434, on the subject "Medication for Pinworm during Pregnancy" is incomplete. The most efficient drug for eradication of pinworms is gentian violet tablets with water-soluble coating. The adult dose is 1 grain (60 mg.) three times a day one hour before meals for eight days, followed by a seven day rest period. The treatment is then resumed for another eight day cycle. For children 15 or under, the schedule is the same with a dose of 10 mg. of gentian violet per day per year of age. Hexylresorcinal is also effective but in a much larger dose than recommended in the aforementioned article. For an adult, the contents of one vial, a total of 1 Gm. of the drug, are taken at one time, to be repeated in a week if needed. Enemas of 1:1,000 hexylresorcinol, approximately a quart being used at a time, are also beneficial. Frequent repetitions of therapy are often required, since reinfestation is rather common.

Sam F. Hartman, M.D., Maplewood, La.

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ROENTGEN EXAMINATION OF THE STOMACH IN SYMPTOMLESS PERSONS

LEO G. RIGLER, M.D.
Minneapolis

Despite the enormous effort that has been expended on the surgical approach to carcinoma of the stomach and on better methods of diagnosis the results in this disease are still exceedingly poor. Of all the tumors, cancer of the stomach continues to produce by far the largest number of deaths. The vast majority of persons coming to surgical treatment, even at the present time, are in an advanced stage of the disease, so much so that surgical treatment is impossible in a high percentage of the cases. In order that there be any opportunity for a surgical cure in carcinoma of the stomach the diagnosis must be made at a sufficiently early stage so that extirpation is feasible and metastasis to lymph nodes is not yet present. Some means must be devised to discover carcinoma of the stomach when the lesion is small and in an early stage of development.

Because of the insidious onset and the relatively late development of symptoms, tumors of the stomach are frequently of large size before they are recognized. It is more and more evident from various studies that have been made that surgical cures of carcinoma of the stomach will continue to be infrequent unless the diagnosis is made before the development of any appreciable symptoms or physical signs. From studies which my associates and I have pursued over a period of years it is evident that a tumor of the stomach may attain a remarkably large size at a time when the patient denies any appreciable gastric disturbance. While it is true that relatively small tumors occasionally produce symptoms, such an event is the exception, not the rule. It is trite to say that a skin test for carcinoma or some blood test which would be suggestive of the presence of carcinoma would be highly desirable as a means of selecting cases for further examination; no doubt such a procedure would constitute a simple and effective method for the early detection of carcinoma of the stomach. Unfortunately, no such process is presently available and, therefore, in the light of present knowledge, some other method must be considered.

It is true that gastroscopy might conceivably be practiced on a large scale and by this means some cases of carcinoma of the stomach might be detected at an early stage. All of our experience and that of many others indicates that this is not practical; it is difficult to persuade patients to submit to gastroscopy unless there is a specific and serious indication. Furthermore, the diagnostic accuracy of gastroscopy is sharply limited by reason of the inability of the gastroscopist to visualize certain portions of the stomach and by the difficulties dependent on the passage of the gastroscope in certain elderly persons. There are other intrinsic limitations of the method.

Even the most careful study of the history and physical signs is, as has been stated, an ineffective means for the detection of gastric cancer, since it usually gives no information until the tumor is well advanced. It has been pointed out that the universal employment of roentgen examination of the stomach in persons with gastric symptoms would result in the detection of a much larger number of operable carcinomas than is presently the case. Nevertheless, for the long range pursuit of the reduction in mortality in carcinoma of the stomach, some other procedure must be undertaken by which the tumors will be discovered before the development of any symptoms or physical signs.

In the absence of any other means the only method which appears to be universally applicable and reasonably accurate is the routine roentgen examination of the stomach. Such studies have been proposed on a number of occasions and have been undertaken in certain selected groups. Because the incidence of carcinoma of the stomach is relatively low, probably not more than 3 per thousand of the living population over the age of 45, the productivity of routine roentgen examination is of such an order as to discourage efforts to undertake it. Nevertheless if any real impact on the problem of carcinoma of the stomach is to be made within the limits of present knowledge of diagnosis and treatment some efforts must be exerted in this direction.

Mass diagnostic surveys of the population using the roentgen method have been reasonably effective in the discovery of diseases of the lungs. In large part this effectiveness is due to the relative ease and inexpensive character of the roentgen examination of the thorax. Unfortunately such ease of procedure and lack of expense do not apply generally to the roentgen examination of the stomach. For this reason serious questions have arisen as to whether this type of examination can be applied generally to large sections of the population who are relatively symptomless.

ACCURACY OF ROENTGEN METHOD

The first question which must be answered is whether or not the roentgen method is actually an accurate procedure for the diagnosis of carcinoma of the stom-

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From the Department of Radiology and Physical Therapy, University of Minnesota.

Read before the Section on Radiology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N.J., June 11, 1947.

ach. Various statistical studies have been published in past years bearing on the accuracy of roentgen examination and indicating that it is an extraordinarily reliable procedure. The published data, however, are based almost entirely on symptom-producing tumors, the vast majority of which are of large size and readily detected. There are a few reports in the literature indicating the possibility of roentgen diagnosis of really small carcinomas of the stomach. There are, in addition, some reports of small benign tumors of the stomach, but in comparison to the extremely large number on which statistical studies are based these are extremely uncommon.

Some experience has already been had in the demonstration of tumors of the stomach in symptomless persons. In a report [1] on patients with pernicious anemia, examined at semiannual intervals over a considerable period of years, my associates and I have demonstrated that it is possible to make the diagnosis of extremely small benign polypi in the stomach, some as small as 5 mm. (fig. 1) in diameter, and that relatively small carcinomas can also be demonstrated by the roentgen method. In a previous report [2] made much earlier I detailed some cases of carcinoma of the stomach of not more than 1 cm. in size which were successfully diagnosed by roentgen examination of the stomach.

In a second series, a group of symptomless persons, whose only indication for roentgen study was achlorhydria, were examined and a similar experience was obtained. In the course of these studies, however, it has become clearly evident that when small lesions are being searched for the percentage of error will rise appreciably and that positive errors will likewise be increased in their frequency. The effort to interpret small changes of significance in persons without symptoms may readily lead to a false positive diagnosis which might otherwise not have been made. At the same time extremely small lesions may easily escape detection.

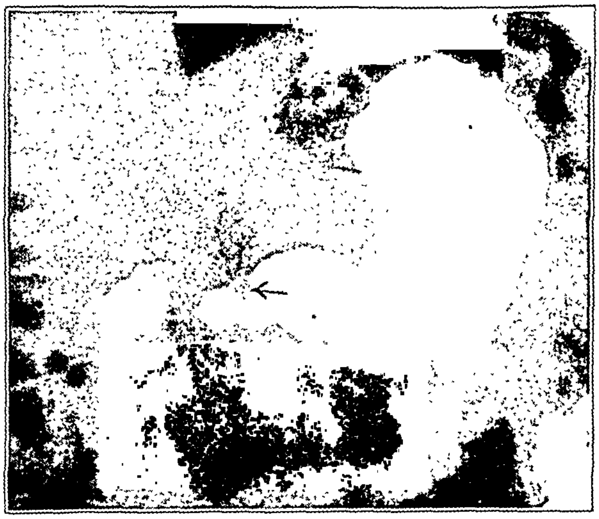

Fig. 1.—Benign polyp in antrum of stomach in a patient with pernicious anemia and no gastric symptoms. Conventional roentgenogram, right anterior oblique supine position. Note small, rounded, sharply defined filling defect (arrow). The lesion was found on routine roentgen examination. Gastroscopically, there was some suggestion that it might be malignant. Gastric resection was done. The tumor measured 5 mm. in diameter and was histologically benign.

In the practical consideration of the feasibility of extensive routine examinations of symptomless persons certain short cuts should be considered. It may be possible to reduce the number to be examined, and thus increase the productivity of the procedure, by selecting persons from the general population on the basis of some easily determined associated finding. The examination itself might be facilitated and rendered less expensive by changes in technic.

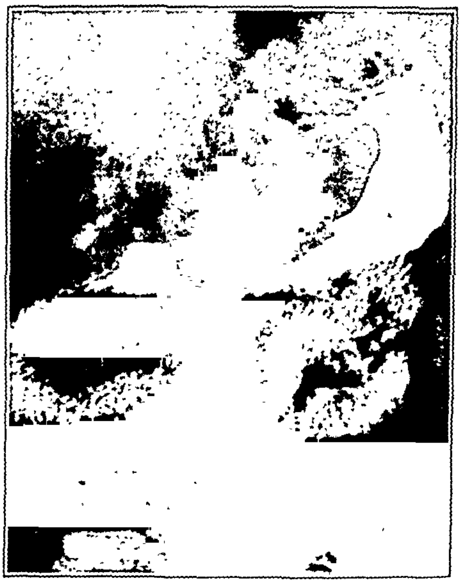

Fig. 2.—Carcinoma on lesser curvature of stomach in a patient with pernicious anemia and no gastric symptoms. Conventional posteroanterior roentgenogram, prone position. Note small, irregular, shallow filling defect with overhanging edges (arrow), measuring about 1 cm. in diameter. There is a suggestion of a small area of ulceration in the center. The lesion was not observed on the first fluoroscopic examination and was discovered as a result of the routine use of conventional roentgenograms. The patient refused operation but returned a year later with definite symptoms. The growth was then much more extensive and the surgeon was unable to remove all the carcinoma.

METHODS OF SELECTING PERSONS FOR EXAMINATION

In the effort to accomplish an effective selection of persons in whom the incidence of carcinoma would be greater than in the general population, certain conditions which seem to be associated with or to precede carcinoma of the stomach should be discussed.

The following are some of the common factors which accompany or precede carcinoma of the stomach and which might be used to select cases for further study.

1. *Age.*—Since the incidence rises sharply at the age of 50 examination of all persons beyond this age could be used. The number of persons to be examined would be extremely large and the productivity would be extremely small, as has been indicated, but a selection on this basis is absolutely necessary if the procedure is to have any chance of success.

2. *Family History of Carcinoma of the Stomach, Pernicious Anemia or Achlorhydria.*—It is thought that persons from families with a history of carcinoma of the stomach, pernicious anemia or achlorhydria are more likely to have gastric cancer than the rest of the population. While such data are of interest from the standpoint of etiology they are of little value from a practical point of view in order to discover cases, since the associated incidence is extremely small.

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[1] Rigler, L. G.; Kaplan, H. S., and Fink, D. L.: Pernicious Anemia and the Early Diagnosis of Tumors of the Stomach, J. A. M. A. **128:** 426 (June 9), 1945.

[2] Rigler, L. G.: The Roentgen Diagnosis of Small Carcinomata of the Stomach, Wisconsin M. J. **34:** 236, 1935.

3. *Atrophic Gastric Mucosa.*—Atrophic gastric mucosa is undoubtedly related to the development of some cancers of the stomach and of many benign epithelial tumors. There are, however, no specific indications for the presence of this process and it can scarcely be discovered except by gastroscopy, which, as has been pointed out, would not be a feasible routine procedure.

4. *Gastric Ulcer.*—Gastric ulcer may possibly be related to carcinoma in an extremely small number of cases. Certainly all cases of gastric ulcer should be looked on with suspicion and followed by repeated examination. Nevertheless, only a few carcinomas of the stomach will be discovered in this manner.

5. *Occult Blood in the Stool.*—Occult blood in the stool is frequently found in carcinoma of the stomach and may be a helpful accessory means of finding patients who may have a tumor. The application is limited, however, and would obviously only result in the discovery of a portion of the cases. As a practical matter it is difficult to apply.

6. *Achlorhydria and Hypochlorhydria.*—The absence of free hydrochloric acid in the gastric contents, especially if the analysis is made after the triple histamine test, is a common accompaniment of gastric cancer. It is probable that almost 90 per cent of all the cases of carcinoma of the stomach will exhibit less than 30 units of free hydrochloric acid in the gastric contents if the triple histamine test is used (Hebbel and Gaviser[3]). By a gastric analysis for all persons past the age of 50, followed by roentgen examination for all those with values as indicated, the vast majority of carcinomas could be discovered. Furthermore, this would reduce the number of persons to approximately 30 per cent of the age group, an enormous saving in time and effort. This proposal has already been made by Wangensteen[4] and a preliminary report of the studies has been made by State.[5] The results of the roentgen study in such cases will be discussed later.

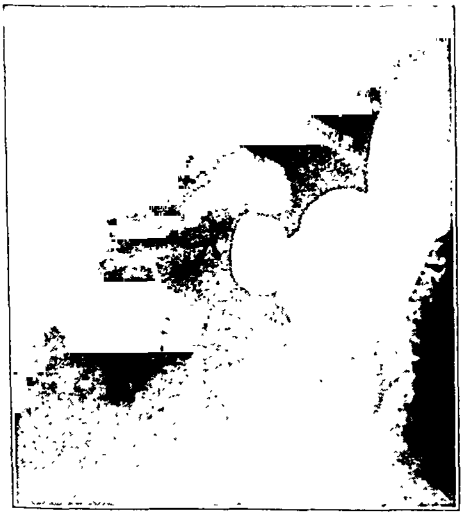

Fig. 3.—Carcinoma at pylorus, greater curvature, in a patient with achlorhydria and no gastric symptoms. Conventional roentgenogram, right oblique anterior supine position. Note rounded defect in base of duodenal bulb and on greater curvature of pylorus (arrow). The lesion was missed both on fluoroscopy and in the examination of the roentgenograms. It was an error of interpretation and indicates the difficulty of roentgen diagnosis of certain small lesions. The patient had a carcinoma of the cecum for which he was operated on, and a small carcinoma measuring about 2 cm. in diameter was found on the posterior wall of the pylorus extending outward and compressing the duodenum.

7. *Pernicious Anemia.*—The close association of pernicious anemia with carcinoma of the stomach has been clearly established by previous studies.[6] Repeated examination at semiannual intervals of patients with pernicious anemia has resulted in the detection of a considerable number of early cancers of the stomach. As a practical matter, however, it does not approach a solution of the problem, since only 5 per cent of persons with carcinomas of the stomach have pernicious anemia.

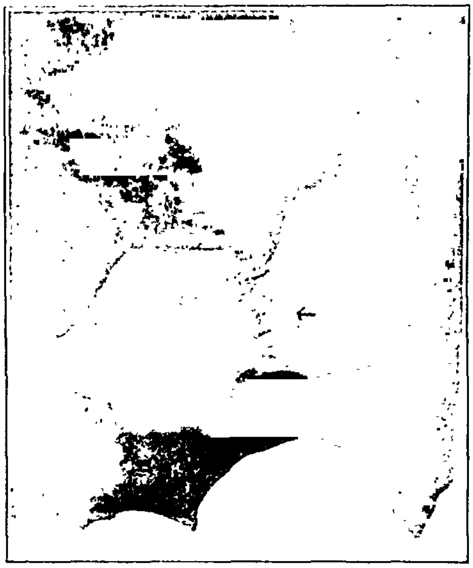

Fig. 4.—Gastric tumor in a person with achlorhydria. The patient suffered a gastric hemorrhage two months earlier but was otherwise symptomless. "Spot" film of stomach to demonstrate abnormalities observed fluoroscopically. Note rounded filling defect, which appears smooth and sharply defined, typical of a benign polyp. Above it is an elongated defect which was interpreted as a large fold. Because of a cardiac condition surgical treatment was not undertaken.

8. *Polypi.*—Polypi in the stomach have been shown to be precursors of carcinoma. Patients who have polypi should either be treated as if they had carcinoma or followed closely to determine malignant generation. As a practical approach to the problem it is ineffective, since polypi are usually discovered by routine examination and are associated with a relatively small percentage of gastric cancers.

MEANS FOR FACILITATING ROENTGEN EXAMINATIONS

The development of means by which the roentgen examination might be rendered less arduous, time consuming and expensive has also been studied to some degree. The possibilities here are as follows:

1. *Fluoroscopy Alone.*—Examination might be restricted to fluoroscopy only. This would, of course, produce a considerable saving in time and expense, although the saving may well be not as great as might be expected. The major expense involved in a good

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[3] Hebbel, R., and Gaviser, D.: Personal communication to the author.

[4] Wangensteen, O. H.: The Problem of Gastric Cancer, J. A. M. A. **134:** 1161 (Aug. 2) 1947.

[5] (*a*) State, D., Varco, R. L., and Wangensteen, O. H.: A Study to Determine Likely Precursors of Gastric Cancer, Staff Meet. Bull., Hosp. Univ. of Minnesota **18:** 155, 1947; (*b*) Attempt to Identify Likely Precursors of Gastric Cancer, J. Nat. Cancer Inst. **7:** 379, 1947.

[6] Kaplan, H. S., and Rigler, L. G.: Pernicious Anemia and Carcinoma of the Stomach: Autopsy Studies Concerning Their Interrelationship, Am. J. M. Sc. **209:** 339, 1945.

roentgen examination of the stomach is the time of the roentgenologist, and this would not be decreased by simple fluoroscopic examination. It might rather be increased, since the fluoroscopist would be under compulsion to make an extremely thorough examination because of the absence of any roentgenographic checks. There are probably only a limited number of men in the United States whose fluoroscopic experience and ability are of such an order as to permit them to detect the small tumors which one would look for in such a mass survey. Our own experience has led us to believe that small lesions may well be overlooked even by experienced fluoroscopists and that the absence of any films for detailed study is a serious handicap. In the two series of cases which we have studied we have had some opportunity to test this procedure. At the beginning of the study both fluoroscopic and film examinations including "spot" films were used. As a result of the shortage of films, however, for a considerable period fluoroscopy alone was utilized. It is our impression that the results were not as accurate during this period.

The following 2 cases are cited to indicate the difficulties which may attend such a procedure. The first case was of a patient with pernicious anemia without gastric symptoms. She was examined carefully by a rather competent fluoroscopist and the stomach was thought to be normal. One of the roentgenograms made a day later is illustrated here (fig. 2). A rather small tumor measuring less than 1 cm. in diameter was clearly delineated on the lesser curvature and could be determined with considerable certainty. Reexamination with fluoroscopy after the discovery of this lesion led to some suggestive findings, although even on the second fluoroscopic examination the lesion was not clearly apparent. This is to be expected from the very nature of fluoroscopic study and illustrates well the possibilities of error in this procedure when done alone. Another case of similar character is illustrated in figure 3. This patient had achlorhydria, and the routine examination was done for this reason. There were no gastric symptoms. On fluoroscopy nothing was found. This fluoroscopist had not had much experience and the error might possibly be assigned to that. On the roentgenographic study the lesion was also overlooked, and I am certain that the major reason for this was the conviction of the roentgenologist that the stomach was normal because of the negative fluoroscopic examination. There is a small defect shown on the greater curvature, which proved to be an extremely small carcinoma of the posterior wall arising just on the pylorus. It was found during the course of abdominal exploration for a carcinoma of the cecum.

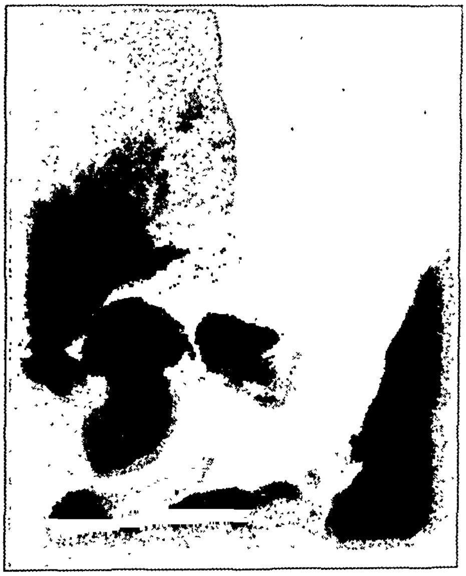

Fig. 5.—Same case nine months later. "Spot" film with some magnification as compared to figure 4. Three characteristic filling defects are seen. Pronounced increase in size has occurred, so much so that a diagnosis of carcinoma was made on the basis of the rapid growth. The stomach was resected and three movable, well encapsulated papillomas were found arising from a single stalk. The gross appearance was that of benign tumors but histologically there were found varying degrees of malignant change in different portions of the tumors.

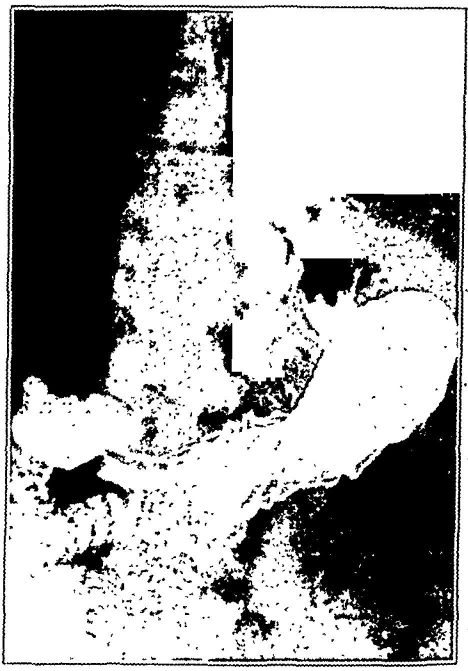

Fig. 6.—Carcinoma of the stomach in a patient with achlorhydria and no gastric symptoms. Posteroanterior roentgenogram on first examination, Oct. 23, 1946. A small rounded defect (arrow) in the middle third of the stomach was thought to be present but was difficult to demonstrate adequately either fluoroscopically or in the films. A tentative diagnosis of a tumor was made. The patient had syphilis of extensive character, so that surgical procedures were not undertaken until intensive therapy had been instituted, particularly since the diagnosis was in doubt and there was a bare possibility that the finding was due to a gumma.

2. *Roentgenographic Examination Alone Without Fluoroscopy.*—Roentgenographic examination alone is an expensive procedure if a sufficient number of films are to be exposed to make an adequate examination possible. For this reason it would probably not be the best method. It has the advantage of putting the entire burden of the technical examination on a technician. The films could be examined by the roentgenologist at his leisure. The large number of films involved and the elaborate technic necessary to make an adequate examination this way would result in considerable expense. It is doubtful that the results would be as accurate as desired.

3. *A Combination.*—A combination of fluoroscopy with "spot" films and a roentgenographic examination, as presently practiced by most roentgenologists, is, in some respects, the most expensive of all methods. It is without doubt the most effective method for the demonstration of small lesions, although even by this procedure some errors will occur. Such a combination

involves a good deal of work on the part of the roentgenologist and at the same time considerable technical work. In this combination the making of spot films by one method or another undoubtedly is of the first importance.

The possibilities of such a procedure are illustrated by the following case. A woman aged 70 years came in with a history of bleeding from the stomach several months before. There were no other gastric symptoms. On gastric analysis, achlorhydria was discovered. Fluoroscopic and roentgenographic examination was made. A small defect was detected in the middle portion of the stomach (fig. 4). By means of fluoroscopy and repeated films it was possible to demonstrate the mobility of the lesion and that there was no infiltration of the margins of the stomach. They were flexible and showed peristalisis extending throughout. It was thought to be a benign polyp. Gastroscopy was done and the lesion was observed. It was considered possibly malignant. The patient refused operation. Nine months later, simply as a matter of routine follow-up study, she was reexamined. There was no further blood in the stool nor any other symptoms. At this time the examination (fig. 5) revealed the presence of three fairly large defects clustered together which appeared to be somewhat movable. There appeared to be such a considerable increase in size of these lesions in the period of nine months which had elapsed that the probability of their having become malignant was seriously considered, despite the fact that there was no apparent infiltration, interference with peristalsis or fixation of the lesion. At operation a cluster of polypi arising from one stalk was found. Grossly they appeared to be benign. On microscopic examination, however, both benign and malignant tissue was found.

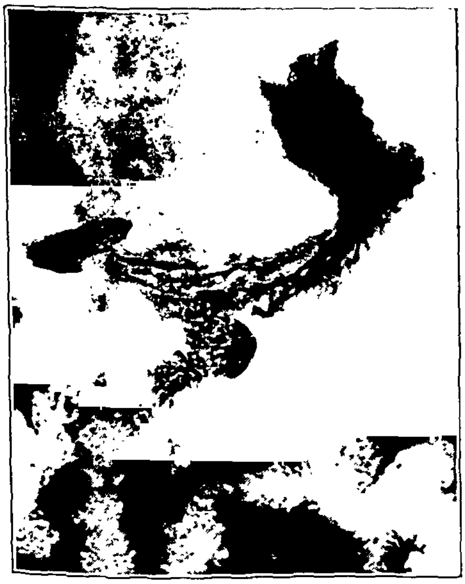

Fig. 7.—Same patient one month later. Careful study both on fluoroscopy and with roentgenograms failed to reveal any clear evidences of the defect previously seen. Note the good mucous membrane pattern in this roentgenogram made when the stomach was partially emptied. Further procedures were postponed pending the completion of the antisyphilitic therapy. There were still no gastric symptoms.

Another case is cited to illustrate the difficulties which occur even while using the combined examination, when extremely small lesions are under study. A patient without symptoms but exhibiting achlorhydria was examined in October 1946. An extremely small defect was observed but not clearly delineated (fig. 6). It seemed to be sharply demarcated. This patient had syphilis of an extensive character and it was thought wise to treat it before entering into any surgical program. Reexamination was done one month later, and critical examination of a number of roentgenograms made at that time revealed practically no evidence whatever of the process which had been previously observed (fig. 7). The fluoroscopist likewise was unable to make it out and some question arose as to the validity of the original diagnosis. Since the patient was still under strenuous antisyphilitic therapy and there were contraindications to immediate surgical treatment no immediate reexamination was made. Four months later, however, she was reexamined (fig. 8), and a characteristic rather large-sized defect was observed. At operation this was found to be a localized, somewhat polypoid type of carcinoma which was extremely well demarcated and measured about 3 cm. in its longest diameter. This case illustrates some of the difficulties which may be encountered in the detection of small lesions. It is not entirely possible to appreciate why this lesion was not discovered in the roentgenograms made two months after the original observation of an extremely small lesion.

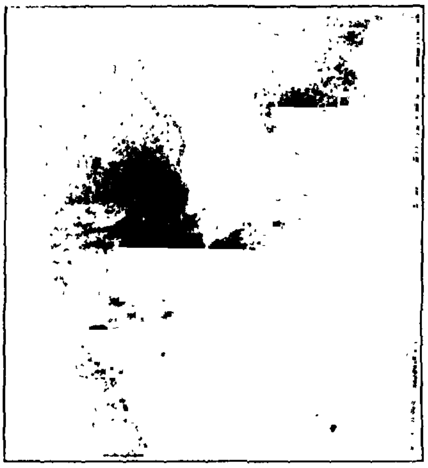

Fig. 8.—Reexamination four months later. "Spot" film reveals large, sharply defined, oval-shaped filling defect characteristic of a tumor. Obviously, rapid growth had occurred in the five months from the first study. The appearance was somewhat suggestive of an intramural tumor. There were still no gastric symptoms. Resection of the stomach revealed a well localized carcinoma measuring about 3.5 cm. in diameter. There was no extension beyond the stomach and no metastasis. The difficulties of the roentgen diagnosis of small lesions, the importance of frequent reexamination and the value of this type of study are all well illustrated by this case.

4. *Photofluorography.*—Photofluorography has been proposed as a means of rapid examination of large numbers of persons in whom routine examination is desirable. This has the great advantage of limiting the time needed by the roentgenologist to the smallest amount possible. The small size of film permits rapid interpretation. The rapidity with which the films can be exposed and their small size reduce the expense of the examination. A large number of views could be made, providing the technical factors were such as to permit this to be done without the risk of any undue radiation effects on the patient. Such a large number of films taken in a variety of positions and with varying amounts of barium in the stomach might constitute a

fairly adequate examination, and considerable accuracy might be achieved. The device would be time saving to the roentgenologist and relatively inexpensive.

In this connection attention should be directed to the method of de Castro.[7] He uses a photofluorographic unit which is so designed as to permit manipulation of the patient into almost every position and rapid exposure of the films almost in motion picture fashion. The apparatus has the great advantage of having a slit through which examination can be made to determine the position of the barium and of the patient's stomach at the time when exposure is to be made. Adequate localization can thus be achieved without difficulty and the results are accordingly better than in cases in which focusing is done rather blindly.

It is obvious from the foregoing discussion that none of the short cuts are entirely satisfactory, and in none has there been any adequate proof of accuracy except for a few small series which have been previously attempted. It seems reasonable to propose that a number of studies should be undertaken on a small scale in various portions of the country by these various methods in order to ascertain how accurate each is and how rapidly and inexpensively they could be achieved.

A number of efforts have already been undertaken in the field of the routine examination of symptomless persons by a variety of methods. Beginning in 1939 some of my associates and I have examined patients with pernicious anemia at semiannual intervals. The results of this have been previously reported.[1] At the present time 248 cases have been studied and carcinomas have been found in 6 per cent, and benign polypi in approximately 7 per cent. In this series, as previously reported, many small benign lesions have been discovered and, in addition, a number of small carcinomas.

A study of symptomless but otherwise unselected persons over the age of 50 has been carried out by St. John, Harvey and Swenson.[8] These investigators used the fluoroscopic method alone, reexamining with roentgenograms when there was some specific indication. They found two carcinomas, one lymphosarcoma and no polypi. The small number of tumors which they discovered was somewhat disappointing but indicates how unproductive such a procedure may be if there is no selection of patients except on a basis of age. The possibility that one or two more lesions might have been discovered if a more elaborate form of examination had been used should be considered, since the incidence is reputed to be somewhat higher than the number which they found.

In another series, Dailey and Miller[9] examined 500 patients and found no malignant tumors in this small series. There was one polypus seen.

During the past two years, in cooperation with the Department of Surgery and the Out-Patient Department of the University of Minnesota, we have had opportunity of studying another series of patients. Roentgen examination of the stomach has been done on these patients at semiannual intervals. The patients have been selected with three criteria in mind. They were all over the age of 50, had no particular gastric symptoms and showed either achlorhydria or free hydrochloric acid of less than 30 units in the gastric contents. In most of the cases the gastric analysis was done after the triple histamine test. In some cases two doses of histamine were used; in a few cases only one dose. Approximately 30 per cent of all persons on whom gastric analysis was performed fell into the group.

To date 544 such persons have been examined. We have found, by roentgen examination, 3 cases of gastric carcinoma which have been proved. One additional case, reported in a foregoing paragraph (fig. 3), should have been found but was missed as a result of an error in interpretation. The lesion was discovered during the course of an operation for another tumor. There were, in addition, some 11 other cases of gastric carcinoma in this series, but these are not considered since they were not entirely symptomless. In a few cases the symptoms were either remote or minor as illustrated by 1 of the cases cited (figs. 4 and 5), but they do not fall within the category of truly symptomless persons.

In the same series there were found 19 patients with gastric polypi, presumably benign. Most of these have been confirmed either by gastroscopy or at operation. Small as they are, it is possible that there are some actual malignant growths among them. Only time will determine this definitely. The finding of these small tumors is of great importance, since this group is no doubt the most susceptible of all to the development of carcinoma and will be observed frequently for evidences of rapid growth or other signs of malignant change as in the cases reported (figs. 4, 5, 6, 7 and 8).

The greater productivity of the roentgen examination in such a selected group as compared with those reported by others is well brought out by the large number of tumors discovered. Although the incidence is far less than that found in pernicious anemia it is of a sufficiently substantial order to justify the effort made. We are convinced that one of the reasons for the discovery of so many small tumors, particularly the large number of polypi, is the thoroughness of the roentgen study, which included, in most cases, prolonged, painstaking fluoroscopy, "spot" films and roentgenograms in several positions.

In addition to the tumors numerous other abnormalities in the stomach and duodenum were observed. As might be expected in such an age group there were an appreciable number of hiatus hernias, apparently symptomless. A few cases of duodenal deformity were discovered. There were a number of cases of enlarged gastric rugae which gave great difficulty in differentiation from polypi. It should be noted that gastroscopy was used frequently for confirmation or further elucidation in the positive or doubtful cases.

Further studies are being carried out with other criteria for the selection of the patients to have roentgen examination. The details of these studies as well as other details of the study are being reported by State.[5b] It is our impression that the results of our studies indicate the feasibility and the value of the routine roentgen examination of symptomless persons for the discovery of gastric tumors.

SUMMARY

Routine roentgen examination of symptomless persons is the only presently effective means for the discovery of gastric tumors in an early stage of their development.

While the error inherent in the examination will be greater in such cases than in patients with symptoms, the procedure is capable of discovering most of the tumors present, even if of extremely small size.

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[7] Moretzsohn de Castro, J.: Principios fundamentais para aplicação da cineradiografia como método auxiliar do diagnóstico radiológico, São Paulo méd. **2**: 81, 1944.

[8] St. John, F. B.; Swenson, P. C., and Harvey, H. D.: An Experiment in Early Diagnosis of Gastric Carcinoma, Ann. Surg. **119**: 225, 1944.

[9] Dailey, M. E., and Miller, E. R.: Research for Symptomless Gastric Cancer in Five Hundred Apparently Healthy Men, 45 and Over, Gastroenterology **5**: 1, 1945.

The incidence of gastric tumors is small and the expense per examination is large.

Methods for the selection of persons for roentgen examination and methods for reducing the expense of the procedure are discussed.

In 544 symptomless persons over the age of 50 whose gastric contents showed either achlorhydria or free hydrochloric acid of less than 30 units, three carcinomas and nineteen presumably benign polypi were discovered by routine roentgen examination.

ABSTRACT OF DISCUSSION

Dr. Paul Swenson, Philadelphia: I am particularly pleased to discuss Dr. Rigler's paper because he refers to the attempt my colleagues and I made some years ago at a mass survey. Also, I am happy to know that a good friend and colleague has the same philosophic approach to the problem. If the members of the medical profession are going to do anything about the cancer problem before the biochemist has solved it, the only hope for enhancement of their work is to arrive at a better means of early diagnosis, which, as Dr. Rigler said, is still a problem in spite of the fact that the surgeon has better technics and that postoperative care is so good. Patients still report in relatively far advanced stages and something has to be done in order to pick out the early cases. Such a survey as this may be just as important as the mass surveys of the chest being done these days, if not more important. The best and most important results in mass surveys of the chest are found in special groups such as food handlers, hospital attachés and so forth, where there is a particular hazard in having a lesion of the chest present, and in that respect these special groups that Dr. Rigler has worked on certainly offer a good plan of procedure. It is discouraging to find but 3 cases of a malignant nature among 2,500 persons, as we did. Nevertheless, one must not forget that it was important to those three persons. We are continuing with this problem at Jefferson by adapting our photofluorograph to this method. It will have a few advantages. The patient can come in at any time. He does not have to report at a specified time when the fluoroscopist can be present, and more than one person can view the films. As we were doing it back in 1939 it was purely a one man show, and if the fluoroscopist was not alert the case was missed. There will be cases of that kind from time to time and there will be an advantage in having films in oblique and anterior-posterior projections which can be viewed by more than one person for discussion. There is also the safety factor to consider, less exposure being necessary to this fluoroscopist. We have found the danger to the patient is not too great in a single examination. Dr. Rigler has some early cases to show you in his roentgenograms, but I do believe that you can find early lesions with the fluoroscope as well. The fluoroscope can also pick them up early. I hope it does not sound too arrogant on my part to say that in our routine work some of our films have failed to show some things which we saw in the fluoroscope. Later, we went back to the fluoroscope because we doubted the films, and proved the lesions by both methods the second time. One can become that adept at picking up early lesions if one is careful and does not have to give oneself or the patient too much exposure to do it.

Dr. Leo G. Rigler, Minneapolis: I want to underline what Dr. Swenson said about surgical therapy. One surgeon reported on 60 cases with a 4 per cent mortality, and when surgeons can do that one gets some idea of how the surgeons have progressed in their part of the program. I do not wish to advocate at this time general mass surveys over the United States, as a number of persons have suggested. I do think what is needed is a number of pilot experiments going on in several institutions. We are carrying on some in selected groups with the fluoroscope, spot films and roentgenography. Dr. Swenson has told you of his work with photofluorography. I think that is extremely important and that there should be other experiments to determine the best answer to this problem.

STUDIES ON HYALURONIDASE

DELBERT M. BERGENSTAL M.D.*
and
WILLIAM WALLACE SCOTT, M.D.
Baltimore

The enzyme hyaluronidase has been implicated in the process of fertility primarily as the result of the following reports.

McClean and Rowlands [1] and Fekete and Duran-Reynals [2] showed that the ovum in the fallopian tubes is covered with many follicular cells which are embedded in a thick, viscous gell-like material. Before the sperm can penetrate the ovum, these cells must be dispersed and the sticky gel covering removed. This material which holds the follicular cells to the ovum has been shown to be hyaluronic acid, a polysaccharide, which, according to Meyer and Palmer,[3] is composed of equal molecular parts of glucuronic acid and acetylglucosamine. This polysaccharide forms a loose combination with body proteins and appears to play an important role as an intercellular cement. It is found in all mesenchymal tissue and is in high concentration, especially in human umbilical cord, synovial fluid and pleural and ascitic fluid of patients with mesotheliomas. Hyaluronic acid is soluble in water and forms an extremely viscous solution.

Hoffman and Duran-Reynals [4] and McClean [5] in 1930 observed that extracts of mammalian testis contained factors which profoundly modified the permeability of connective tissue and that this alteration in permeability was due to the action of the extract on hyaluronic acid. These factors became known as "spreading factors" because of their action in causing ink or dye, injected intradermally, to spread over wide areas. In 1934, Meyer and Palmer [6] gave the name hyaluronidase to an enzyme which they found in autolysates of a rough type II Pneumococcus and which was capable of hydrolyzing hyaluronic acid. Subsequently, Chain and Duthie [7] showed that the hyaluronidase activity of testicular extracts was similar to the activity of the testicular "spreading factor" of earlier workers.

McClean and Rowlands [1] found that testicular hyaluronidase added to recently ovulated ova caused a dispersion of the follicular cells, denuding the ova, but without apparent damage. They were the first to suggest that a type of sterility exists in which there is an insufficient concentration of hyaluronidase in sperm to disperse the follicular cells. Fekete and Duran-Reynals [2] and Leonard and Kurzrok [8] confirmed this dispersing effect on the mouse and rat ova respectively.

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[1] McClean, D., and Rowlands, J. W.: Role of Hyaluronidase in Fertilization, Nature, London **150**: 627-628, 1942.

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[3] Meyer, K., and Palmer, J. W.: On Nature of Ocular Fluids, Am. J. Ophth. **19**: 859-865, 1936.

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[6] Meyer, K., and Palmer, J. W.: Polysaccharide of Vitreous Humor, J. Biol. Chem. **107**: 629-634, 1934.

[7] Chain, E., and Duthie, E. S.: Identity of Hyaluronidase and Spreading Factor, Brit. J. Exper. Path. **21**: 324-338, 1940.

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In 1944, Rowlands[9] showed that artificial insemination of rabbits with semen containing a sperm concentration known to be inadequate for fertility resulted in no pregnancies. If a sperm-free hyaluronidase filtrate was added to this inadequate semen sample, four out of five experiments resulted in fertilization of the ovum.

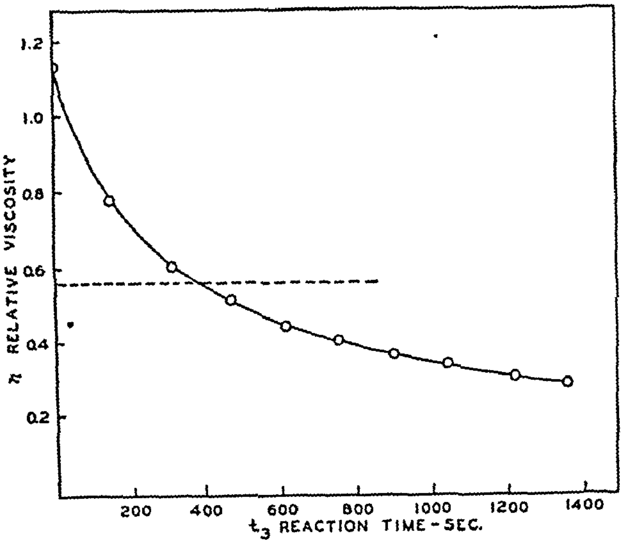

Chart 1.—The decrease of viscosity as a function of hyaluronidase concentration and time.

In the past two years renewed interest has been shown in this enzyme system as regards its role in fertility. Joel and Eichenberger,[10] Greenberg and Gargill[11] and Werthessen and colleagues,[12] by use of viscosimeter technic, studied the activity of human semen. Werthessen showed that the sperm count was roughly proportional to the hyaluronidase level.

Kurzrok and associates[13] have recently studied the semen of 90 patients with sperm counts ranging from 0 to 400,000,000 per cubic centimeter. Hyaluronidase activity was measured by a turbidity ring test. They concluded that hyaluronidase increased directly with sperm count up to 100,000,000 sperm per cubic centimeter. Beyond this the hyaluronidase did not increase proportionally to the sperm count. Furthermore, several specimens of semen with high counts did not contain hyaluronidase. These latter specimens were considered infertile. Mixing of semen and bull testis hyaluronidase or cervical packing with hyaluronidase before normal coitus was reported to have increased the number of successful fertilizations.

The purpose of the research to be presented here was to obtain more information about the relationship of sperm count to hyaluronidase concentration, the rate and site of formation of this enzyme and the enzyme content of structures of the genital tract and their secretions.

METHODS

Substrate.—Hyaluronic acid was isolated from human umbilical cord as described by Haas.[14] A solution containing 6 to 8 mg. of the dry powder per cubic centimeter of 0.02 molar acetate buffer of p_H 4.7 was made and stored at low temperature. Slight variations in substrate concentration had no effect on the accuracy of determining the concentration of hyaluronidase of a standard preparation in repeated determinations.

Enzyme.—Hyaluronidase used in calibrating the viscosimeters employed in the determination of unknown concentrations of this enzyme was prepared from bull testis by the method of Madinaveitia and Quibell.[15] An active stable preparation was obtained by extracting fresh bull testis with 0.1 normal acetic acid, fractionation with ammonium sulfate between 0.3 and 0.7 saturation, dialysis of the neutralized solution, and drying by lyophilizing.

Viscosimetric Assay of Hyaluronidase.—The viscosimetric technic, as described by Chain and Duthie[7] and Madinaveitia and Quibell[15] and later modified by Haas,[14] was used. This enables one to measure quantitatively the decrease in viscosity due to depolymerization of hyaluronic acid. The decrease of viscosity as a function of hyaluronidase concentration and time is shown in chart 1. The time required to diminish the viscosity of the substrate to 50 per cent of the original level is called the half life time, R_0. Since the reaction is believed to be unimolecular, the rate equation $K = 1/t \log a/a - b$ will hold (a = initial concentration of hyaluronic acid; b = concentration of hyaluronic acid at half life time; t = half life time in seconds, or R_0). Log $a/a - b$ will remain constant and may be dropped, giving the equation $K = 1/R_0$. To make K an easier value with which to work $1/R_0$ has been multiplied by 10^4. Thus $K = 1/R_0 \times 10^4$ (1/sec.) is an expression of the hyaluronidase activity. Values for K are directly proportional to hyaluronidase concentration.

Collection, Preparation and Examination of Specimens of Semen.—All specimens of semen were collected in clean glass containers and obtained by masturbation either in the clinic or at home. Time of collection was noted in each instance, and samples were stored in the ice box if not used immediately for determination. Time from collection to enzyme determination varied from twenty minutes to four hours. Time relations will be discussed. All specimens were examined for volume, number of spermatozoa, leukocytes, percentage of abnormal forms, motility and hyaluronidase activity.

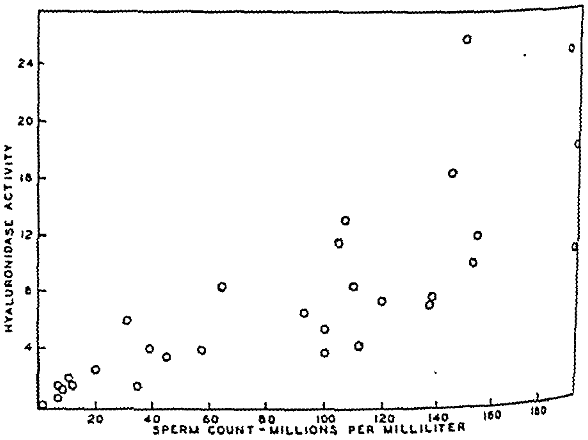

Chart 2.—The relation of sperm count to hyaluronidase content of semen.

In order to learn more of the rate and site of formation of hyaluronidase, partition and treatment of whole semen was carried out as follows:

Seminal Plasma and Whole Sperm: Centrifugation of the ejaculate as received at 3,000 revolutions per minute for ten minutes resulted in separation into a supernatant phase (seminal plasma) and a sediment (whole sperm).

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[9] Rowlands, I. W.: Capacity of Hyaluronidase to Increase Fertilizing Power of Sperm, Nature, London **154**: 332-333, 1944.

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[13] Kurzrok, R.; Leonard, S. L., and Conrad, H.: Role of Hyaluronidase in Human Fertility, Am J. Med. **1**: 491-506, 1946.

[14] Haas, E.: On the Mechanism of Invasion: I. Antinvasin I, an Enzyme in Plasma, J. Biol. Chem. **163**: 63-88, 1946.

[15] Madinaveitia, J., and Quibell, T. H.: Studies in Diffusing Factors: Action of Testicular Extracts on Viscosity of Vitreous Humour Preparations, Biochem. J. **34**: 625-631, 1940.

Homogenized Whole Semen: In all experiments in which homogenized semen was used it was prepared in the following manner. After centrifugation of 0.5 cc. of semen and removal of the seminal plasma, to the whole sperm was added 0.5 cc. of 0.2 molar borate buffer, *p*H 6.7, and 0.7 cc. distilled water. This sample was then homogenized in a glass homogenizer for three to five minutes. The homogenate was added back to the seminal plasma previously removed by centrifugation. This we refer to as homogenized whole semen. Direct homogenization of the semen produces excessive foaming which leads to errors in measurement and transfer.

Homogenized Sperm and Whole Sperm: Wherever it was desired to study the amount of enzyme remaining in the sperm, a procedure similar to that described for homogenized whole semen was used. However, the supernatant fluid was heat inactivated before combination with the homogenized sperm This we refer to as homogenized sperm. Whole sperm obtained by centrifugation after combination with heat inactivated seminal plasma is referred to as whole sperm.

Table 1.—*Relation of Hyaluronidase Activity to Sperm Count, Volume of Ejaculate, Motility of Sperm, Number of Abnormal Forms and Leukocyte Count of the Ejaculate*

Case Number	Sperm Count, Millions per Cc.	K Value * 0.5 Cc. Whole Semen	Volume, Cc.	White Blood Cells per High Power Field	Percentage Abnormal Forms	Motility
29	205	18.2	...	.....	..	...
35	195	10.9	3	5	18	4+
3	194	25.0	3.5	0	17	3+
31	154	12.2	6.5	5-10	23	2+
22	153	10.4	3.0	5-10	29	3+
4	150	35.0	4.0	0	19	3+
23	145	16.7	...	10	21	3+
5	138	8.0	2.5	0	10	3+
24	137	7.4	3.5	10	17	2+
30	120	7.7	3.5	5-10	21	3+
21	112	4.6	3.5	5-7	21	2+
13	110	8.9	7.5	10-12	24	3+
9	107	13.5	2.0	3-4	8	4+
15	105	11.9	1.5	10	13	3+
10	100	4.2	2.0	3	15	4+
20	100	5.7	6.0	5	19	3+
26	93	6.9	7.5	5	21	2+
16	64	8.7	1.0	0	17	2+
11	57	4.2	4.0	0	23	1+
6	45	3.7	6.0	3	27	2+
7	42	4.3	2.0	3	20	2+
17	35	1.8	2.5	10	16	2+
19	31	6.3	3.5	10	24	1+
25	20	2.9	3.0			
36	12	1.7	...			
34	8	1.4	...			
33	7	0.9	...			
32	0	0	2.0			
28	11	2.2	...			
12	7	1.6	...			
2	0	0	3.0			
27	0	0	2.0			
18	0	0	3.5			
37	0	0	4.0			

* K = 1/Ro × 10^4 (1/sec.).

Other Genital Fluids and Tissue: Prostatic and seminal vesicle fluids of man were obtained by collecting ejaculate from two patients after vasectomy. Prostatic fluid of the dog was obtained from animals having prostatic fistulas prepared according to the method of Huggins and associates.[16]

Prostatic and testicular tissue of man after homogenization in phosphate buffer were tested for hyaluronidase activity.

Spermatocele fluid, obtained in two instances by aspiration from human beings, was tested for hyaluronidase activity.

RESULTS

Relation of Sperm Count to Enzyme Activity.—Table 1 shows the analyses of 34 cases. The relation of sperm count to enzyme activity is shown in chart 2. In this series hyaluronidase activity is roughly proportional to sperm count. The fact that this relation is not directly proportional is of some interest in the problem of sterility and will be discussed later. It is important to note that in every case in which sperm were present in a specimen that specimen contained hyaluronidase activity; in all cases in which sperm was not present, no hyaluronidase activity was found.

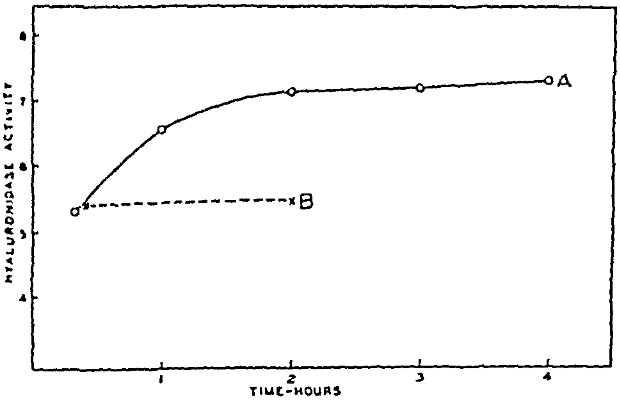

Chart 3. The change in hyaluronidase activity with time. *A*, whole semen (solid line). *B*, homogenized whole semen (interrupted line).

There seems to be no clearcut relation of hyaluronidase activity to volume of ejaculate, motility of spermatozoa, the number of abnormal sperm or the number of leukocytes present in the semen.

The patients showing aspermia consisted of 1 who had suffered an irridiation accident, 1 eunuch, 1 on whom vasectomy had been done and 2 persons in whom the cause was not apparent after examination.

Site and Rate of Formation of Hyaluronidase.—As the analysis of samples of semen progressed it became clear that a direct relation did *not* exist between sperm count and hyaluronidase activity. Several questions arose including the site of formation of hyaluronidase and the rate of release or formation of the enzyme.

Table 2 shows the differential analysis made on several semen samples. These samples were analyzed within four to six hours after collection. All samples of seminal plasma contained approximately as much enzyme as did whole semen. This would indicate that during the determination diffusion or release of hyaluronidase did not occur. For example, in case 22 (table 2) there remained a rather large amount of enzyme in the sperm which was liberated on homogenization.

Table 2.—*Differential Analysis of Semen*

Case Number	Sperm Count, Millions per Cc.	K Value,* Whole Semen	K Value,* Seminal Plasma	K Value,* Homogenized Whole Semen	K Value,* Homogenized Sperm	K Value,* Whole Sperm
29	205	18.2	....	18.5	...	...
31	154	12.2	....	13.4	...	...
22	153	10.4	10.3	19.6	...	...
23	145	16.7	....	23.8	...	...
24	137	7.4	6.6	10.3	2.5	4.4
30	120	7.7	....	12.5	...	...
21	112	4.6	4.0	7.9	...	...
13	110	8.9	7.7	...	1.4	...
9	107	13.5	11.8	...	...	...
20	100	5.7	4.6	...	...	1.1
26	93	6.9	6.4	7.9	3.1	3.1

* K = 1/Ro × 10^4 (1/sec.).

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[16] Huggins, C.; Masina, M. H.; Eichelberger, L., and Wharton, J. Q.: Quantitative Studies of Prostatic Secretion: I. Characteristics of the Normal Secretion; the Influence of Thyroid, Suprarenal, and Testis Extirpation and Androgen Substitution on the Prostatic Outout, J. Exper. Med. 70: 543-556. 1939.

The amount of hyaluronidase remaining in sperm is not constant for the various samples. This may represent a variable rate of release of the enzyme by the sperm. In case 24 (table 2) the analyses of homogenized sperm and whole sperm indicate that both contained additional enzyme. Whether in the case of whole sperm this represents absorption, diffusion or manufacture is a matter of conjecture.

Studies to determine the rate of release, or formation of enzyme are illustrated in figures 3 and 4.

Figure 3 *A* illustrates the rate of increase of hyaluronidase in whole semen with increasing time. This sample contained 100,000,000 sperm per cubic centimeter. At the times indicated aliquots of whole semen were analyzed for enzyme. Increasing hyaluronidase activity was observed for the first two hours, leveled off and remained rather constant for the third and fourth hours. This could indicate production and release, or release only.

In figure 3 *B* is shown the result of work to determine whether there is continued formation of enzyme within the sperm over a period of hours or whether most of the hyaluronidase is present or formed before ejaculation (or within a few minutes after ejaculation) and is gradually released from the sperm. This sample contained 70,000,000 sperm per cubic centimeter. Twenty minutes after collection of this ejaculate an aliquot was homogenized as described for the preparation of homogenized whole semen. This should indicate the total hyaluronidase present in both seminal plasma and sperm at that time. The remaining whole semen was permitted to stand at room temperature for two hours and a second aliquot homogenized. The hyaluronidase activity of the two hour sample was only slightly greater than that of the 20 minute sample, and indicated that in this ejaculate there was little enzyme formed twenty minutes after ejaculation. This has been confirmed to a similar degree in other experiments.

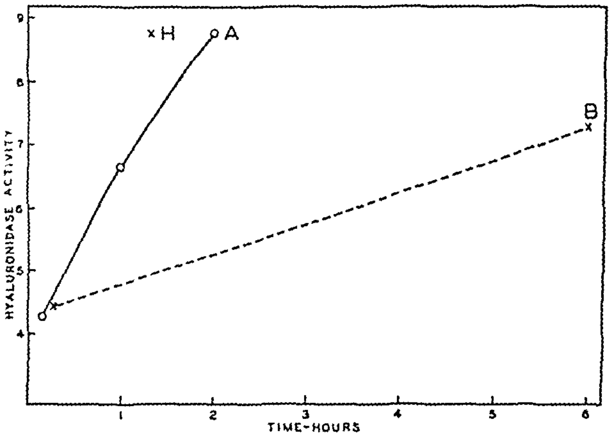

Chart 4.—The release of hyaluronidase activity with time.

Figure 4 *A* shows again that the sperm may contain large amounts of hyaluronidase and gradually release it into the seminal plasma. In this instance at the end of two hours enzyme activity had increased from 4.3 at ten minutes to 8.8. (The sample contained 100,000,000 sperm per cubic centimeter.)

Figure 4 *B* shows an increase from 4.4 to 7.3 in six hours. (The sample contained 150,000,000 sperm per cubic centimeter.) An aliquot of this specimen was homogenized at eighty minutes (homogenized whole semen) and its enzyme activity determined to be 8.7 (point H on graph), a value higher than for the amount of enzyme released in six hours. This would indicate a capacity of the sperm in this ejaculate to liberate more enzyme in time.

Spermatocele Fluid.—Consideration was next given to the question whether sperm can release or form hyaluronidase without contact with prostatic and seminal vesicle fluids. Fluid from two different spermatoceles was examined for enzyme activity. In both extremely high concentrations were found; both contained many spermatozoa, predominantly nonmotile. A comparison of "supernatant spermatocele fluid" and "homogenized whole spermatocele fluid" revealed little difference in enzyme content.

Prostatic and Seminal Vesicle Fluid.—In 2 patients with vasectomy no hyaluronidase was found in the ejaculate. Five dogs previously prepared with prostatic fistulas and orchidectomized showed no hyaluronidase activity in the prostatic fluid.

Human Prostatic and Testicular Tissue.—Homogenates of 3 human prostate glands removed for benign hyperplasia contained no hyaluronidase. Testes from 2 patients over 50 years of age castrated for prostatic cancer showed small amounts of the enzyme. Histologic sections of these testes revealed moderate tubular atrophy and decreased spermatogenesis.

COMMENT

Although there appears to be no direct proportionality between sperm count and hyaluronidase activity, the two appear to be related. In our experience all ejaculates with sperm showed enzyme activity. Our findings indicate that hyaluronidase is either derived from the sperm or closely associated with them. The mechanism of "carry" has not been determined.

The site of formation of hyaluronidase has not been determined, but the absence of the enzyme in the vasectomized human being demonstrates that the enzyme is derived from the genital tract above the vas deferens. Furthermore, whereas human testis homogenates contain the enzyme, prostate does not. It should be recalled that the commercial source of hyaluronidase is the bull testis, which is extremely high in the activity scale.

The rate of formation of hyaluronidase in the human being appears difficult to determine. Our studies in which the enzyme concentration of homogenized whole semen was determined at intervals after ejaculation indicate that within a short time after delivery to the outside maximum concentrations are observed. There appears to be no further production of the enzyme with time. Increase in enzyme concentration in whole semen with time may be a function of diffusion. This rate of release may be influenced by many factors, including those added by admixture with seminal vesical and prostatic fluid. Apparently these fluids do not influence production.

SUMMARY

A viscosimetric method for the determination of the enzyme hyaluronidase in human semen is discussed.

Hyaluronidase activity of 34 specimens of human semen has been determined. The level of this enzyme is only roughly proportional to the sperm count. In all instances absence of sperm was associated with absence

of enzyme. All specimens with sperm contained hyaluronidase.

Hyaluronidase appears to be derived from the sperm or closely associated with them. At or shortly after ejaculation concentration of hyaluronidase in homogenized whole semen appears to be maximal. There is a gradual increase in the enzyme content of whole semen with time. This appears to represent diffusion from sperm to seminal plasma and not continued production.

The hyaluronidase content of certain genital tissues and fluids is presented.

ABSTRACT OF DISCUSSION

Dr. A. E. Goldstein, Baltimore: Dr. Scott made mention that the hyaluronidase is in the sperm itself and the fluid. Has he determined the normal amount of hyaluronidase carried in one ejaculate? If the sperm contains the hyaluronidase and a normal amount of hyaluronidase is present, does each sperm carry some hyaluronidase or can a person have a normal amount of hyaluronidase and sometime some sperm not have any hyaluronidase, so that when it meets with the ovum that hyaluronic acid will not cause a dissolution of the mucoid substance? My colleagues and I have been interested in hyaluronidase in the laboratory, and in using the extracts of hyaluronidase. I am anxious to know how the hyaluronidase reaches the ovum, whether it goes through with the sperm or with the seminal fluid. I am sorry that I have to disagree with Kurzrock's article, with his thoughts about the hyaluronidase in fertility. Seigler carried out a series of experiments similar to the experiments that Kurzrock carried out and got the opposite results.

Dr. Henry Sangree, Philadelphia: This is an important paper, and I believe it is epoch making in the treatment of infertility. Dr. Scott's investigations with hyaluronidase parallel in importance the research work of Dr. Huggins, of Chicago, on prostatic enzymes and subsequent treatment of prostatic cancer. I am interested in the relation of hyaluronidase to endocrine studies, particularly in its relation to thyroid and pituitary endocrine secretion. Can Dr. Scott give us any further information on Ringer's solution, used, I believe, considerably by gynecologists and obstetricians for its spermatokinetic action. In an exhibit at this meeting of the American Medical Association of 222 cases involving male fertility, the doctors are much more interested in the modern endocrine knowledge of fertility than in operative or other forms of clinical treatment. My endocrine treatment to date has been extremely unsatisfactory. I want to congratulate Dr. Scott and his colleagues for their epoch making discoveries and investigations in this important field of study.

Dr. W. W. Scott, Baltimore: With regard to the amount of hyaluronidase in a single ejaculate, we are not sure just how much there is on a weight basis. Furthermore, we do not know whether the individual sperm carries hyaluronidase. At present, our methods are not capable of sorting out one sperm and detecting the enzyme content in that particular sperm. As to how the enzyme reaches the ovum, we do not know. We do not know whether the hyaluronidase reaches the ovum by the sperm or in the fluid. This requires further work. As to endocrine relations to enzyme concentration, we are reasonably sure that there is a relationship between production of androgen by the testis and the production of the enzyme. We are reasonably sure that there is a relationship to the pituitary and the testes. An animal that has had a hypophysectomy shows a diminution in the amount of hyaluronidase in the ejaculate. The same holds after removal of the testes. Furthermore, there is a definite relationship to protein deficiency. Rats placed on protein deficiency diets show azoospermia, which is reversible when protein feeding is resumed. They also show a decrease in the amount of enzyme present in the testis with a restoration to normal if protein feeding is carried out.

URETHROCYSTOGRAPHY IN THE MALE CHILD

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Urethrocystography is a well established diagnostic procedure in the adult,[1] but its merits in infants and children are insufficiently recognized. The paucity of the literature on the subject is sufficient proof of this. In over three hundred papers and monographs and in highly specialized roentgenographic and urologic texts[2] references to urethrocystographic studies in children are meager or inadequately presented.

Urethrocystoscopy in children is considered a formidable procedure. The necessity of hospitalization and anesthesia often results in procrastination by parents, and technical difficulties cause temporization by the physician. There is therefore need for a simple, painless and safe substitute for the endoscopic examination. We believe that urethrocystography is valuable for investigation of organic uropathy in pediatric patients. The simplicity of urethrography in children is advantageous. It is an office or dispensary procedure; anesthesia is not necessary; the ordinary x-ray apparatus, one or two simple instruments and a proper opaque medium are all that is required. This method presents a permanent graphic record for systematic study of the existing conditions, for the evaluation of prospective treatment and for the appraisal of results. It minimizes the danger of infection and trauma to the tissues. In many conditions in which cystoscopy is impossible or impractical urethrography is the only method of choice.

This paper is based on roentgenographic investigations carried out in over 250 male patients under 16 years of age. The study is not scientifically exhaustive, but is presented to demonstrate the clinical importance of this procedure in the pediatric patient. Additional experience, and correlation of the roentgenographic observations with the anatomic changes produced by the lesions of the urethra and its appendages, will make urethrocystography as valuable for the study of the lower urinary tract as pyelography is for the diagnosis of renal disease.

INDICATIONS

Urethrocystographic examination is indicated in every male child with suspected obstructive uropathy, persistent or recurrent pyuria, nocturnal and diurnal enuresis[3] and other symptoms related to the lower part of the urinary tract. It is also important for the evaluation of postoperative results and in the study of the physiology of micturation and its variations from the normal.

There are two methods of urethrocystographic study: the retrograde and voiding. Both may be necessary for a complete study. Voiding urethrograms depict the urethra in the physiologic state of micturition; retrograde urethrograms visualize it in a state of distention. In the former, the sphincters are opened by the nerve mechanism of the patient and the pressure is exerted from the bladder distally; in the latter, the sphincters

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From the Departments of Urology and Radiology, Tufts College Medical School, the Beth Israel Hospital, the Boston Floating Hospital and the Boston Dispensary.

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[3] Brodny, M. L., and Robins, S. A.: *Enuresis: The Use of Cystourethrography in Diagnosis,* J. A. M. A. **126:** 1000 (Dec. 16) 1944.

are opened by the force of the injected mediums and the pressure is exerted from the meatus proximally to the bladder.

CONTRAINDICATIONS

The contraindications are urethral bleeding, acute local infections and recent instrumentation. This procedure should be painless. Improper technic, especially too great pressure on injection, may cause extravasation or reflux into the venous system. Age is not a contraindication to urethrography; it has been satisfactorily employed in infants. The voiding method is impractical in patients who are unable to urinate on command.

TECHNIC

The patient is routinely prepared as for any abdominal roentgen examination. He is then instructed to empty his bladder. A flat roentgenogram of the abdomen is taken so as to include the kidneys, ureter and bladder. This picture will reveal the presence of calculi, abdominal masses and spina bifida occulta. If the kidneys are not well outlined or appear abnormal in size, shape or position, urographic studies are indicated.

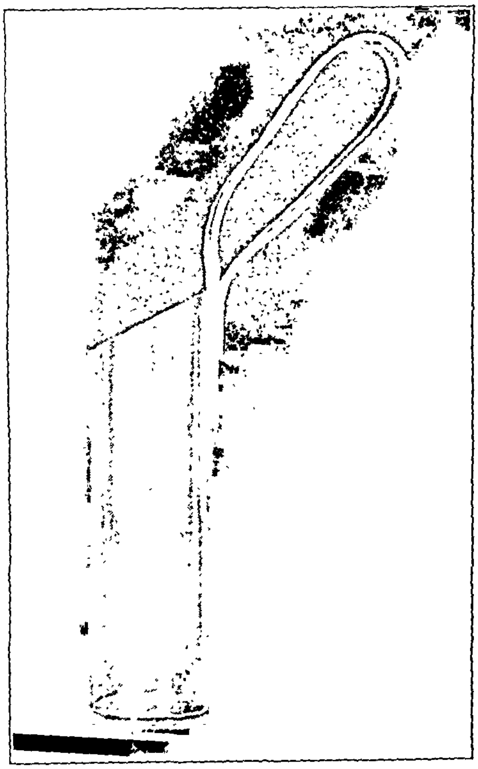

Fig. 1.—A Nonopaque transparent plastic receptacle to facilitate voiding urethrography. The urinary stream is under continual vision and the *urine can be collected without the patient's wetting himself.*

OPAQUE MEDIUMS

Various opaque mediums such as iodized oil, chloriodized oil, sodium iodide, methiodal sodium and acacia have been used. We now employ a new substance, "rayopake,"[4] which is superior to the iodized oils for urethrocystography. "Rayopake" contains 4.8 per cent of a "viscosity base" (a polymeric form of polyvinyl alcohol) and 50 per cent of the diethanolamine salt of 2,4-dioxo-3-iodo-6-methyl-tetrahydropyridine-N-acetic acid. This medium mixes with water and urine, flows easily, is well tolerated by the mucous membrane and produces a homogeneous shadow with sharply defined outlines. The opacity of "rayopake" can be controlled by dilution with water; we use a dilution of 20 per cent for cystography and one of 50 per cent for urethrography. The medium does not break up into globules when mixed with the urine in the bladder. Instruments and catheters are easily cleansed with warm water after their use. "Rayopake" does not deteriorate rubber or support bacterial growth. It is especially valuable for voiding urethrograms, and can be easily voided in a steady stream which has sufficient density for satisfactory roentgenograms. A complete report on "rayopake" in urethrocystography is now in press.[5]

CYSTOGRAPHY

A small rubber catheter is passed into the bladder under aseptic precautions and the amount of residual urine is determined. A culture and sediment of the catheter specimen are obtained. The bladder is then filled with the sterile opaque medium (20 per cent solution of "rayopake") until the patient complains of a desire to void. The quantity of the solution is noted. This amount varies with age. A simple guide to the normal limits is 50 to 100 cc. at age 5, 100 to 150 cc. at age 10, 150 to 200 cc. at age 15 and the normal adult capacity at age 20. The sensitiveness of the bladder and the muscle tone can be gaged by this maneuver. The central rays are directed over the pubis. A rapid exposure is desirable. Anteroposterior and oblique views are used.

URETHROGRAPHY

Voiding Urethrogram.—There are two methods of obtaining satisfactory voiding urethrograms. postcystographic and posturographic. These will now be described.

Postcystographic Method: The bladder is filled with 50 per cent "rayopake" until the patient has a desire to void. He is then placed in a position halfway between the dorsal and lateral so that the pelvis forms an angle of 45 degrees to the film. The leg nearer the Bucky diaphragm is flexed and abducted, and the other leg is fully extended. The central rays are directed about 1 inch (2.54 cm.) medially to the middle of Poupart's ligament, and 8 by 10 cm. or 10 by 12 cm. films with screens are used. The patient is given a nonopaque plastic container specially designed for voiding (fig. 1) and is instructed to do so. When the stream has assumed its full force, a rapid exposure of the bladder and urethral region is made. The patient is instructed to cease voiding and is rotated back to the dorsal position. The target of the roentgen ray tube is centered over the root of the penis and the voiding and exposure technic is repeated. Another roentgenogram is taken of the bladder after voiding to determine whether any of the opaque medium has been retained.

Posturographic Method: In children, satisfactory urethrograms can be obtained by utilizing the concentrated medium (iodopyracet compound solution[6]) that collects in the bladder after excretory urography. After completion of the roentgenographic study of the upper part of the urinary tract, a voiding urethrogram is obtained in the manner which has been described. This procedure enhances the diagnostic value of intravenous urography by furnishing information about the lower as well as the upper part of the urinary tract. We believe that urethrographic study by the posturographic method should be a routine of excretory urography in children.

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[4] Hoffmann-La Roche, Inc., Nutley, N. J., supplied the material used in this study.

[5] Brodny, M. L., and Robins, S. A.: The Use of a New Viscous Water-Miscible Contrast Medium "Rayopake" for Cystourethrography, J. Urol. 58: 182, 1947.

[6] "Diodrast," manufactured by Winthrop Chemical Company.

Retrograde Method.—A penile clamp with a syringe for urethrography has been previously reported by one of us.[7] It is comfortable to the patient, and the hands of the operator can be protected from exposure to the roentgen rays; it facilitates the injection and permits awaiting development of the film in the different positions. A special metal tip to fit the end of the cannula has been devised for use in infants and children.[8] It tapers to a point small enough to obturate the urethral meatus. If the glans is too small for clamping, a gauze strip wound around the penis behind the corona will permit a firm grip. The syringe is filled with 10 to 15 cc. of "rayopake" and is attached to the cannula of the clamp. In order to outline the prostatic urethra, the exposure must be made while the injection is in progress. Complete exploration of the entire urethra requires two views, anteroposterior and oblique; sometimes a lateral projection is also necessary. Stereoscopic films are of value in some cases. Patience and gentleness will facilitate examination and instil confidence in the youthful patient. The technic is the same as for voiding urethrograms.

The Length of the Male Urethra in Childhood, Based on the Data of Zweineff and Waldeyer *

	Length of Urethra, Cm.			
Age, Years	Total	Pars Cavernosa	Pars Membran.	Pars Prostat.
1	6.7	5.25	0.65	0.8
3	8.1	6.2	0.9	1.0
6	9.4	7.4	0.9	1.1
12	11.9	9.2	1.1	1.6
15	15.7	12.2	1.5	2.0
Adult	18-20			

* Gundobin, N. P.: Die Besonderheiten des Kindesalters, edited by S. Rubenstein, Berlin, 1921

ANATOMY OF THE MALE URETHRA

The male urethra begins at the internal sphincter of the bladder, perforates the prostate in a slightly concave curve from the base to the apex, passes through the triangular ligament and continues along the ventral surface of the penis to the tip of the glans. The urethra is arbitrarily divided by the triangular ligament into an anterior or cavernous portion and a posterior or muscular portion.

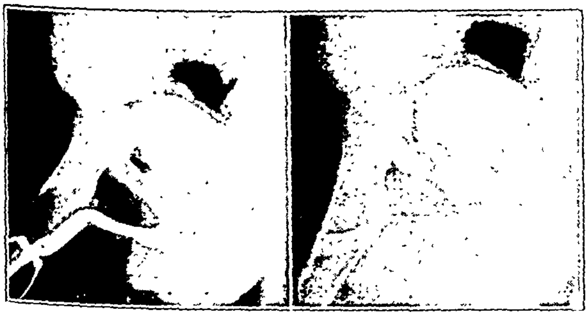

Fig. 2.—E.G., aged 7. Left, retrograde. Right, voiding. Note the widening of the supracollicular portion of the urethra and the semilunar cusplike defect caused by the valves. The bladder is trabeculated with numerous small sacculae. The verumontanum is not visualized on the voiding urethogram. The urethral canal below the obstruction appears narrowed because of the deficiency of the stream.

The length of the urethra varies with age. It is 6 cm. at birth, 7 cm. at 5 years of age and 8 to 9 cm. at 16 years. The adult length varies from 14 to 22 cm. and is attained at 18 to 20 years of age.

There are three normal areas of narrowing of the urethral canal: the internal sphincter, the external sphincter and the urethral meatus. There are also three normal areas of dilatation: the fossa navicularis, the bulbous part of the anterior urethra and the collicular portion of the prostatic urethra.

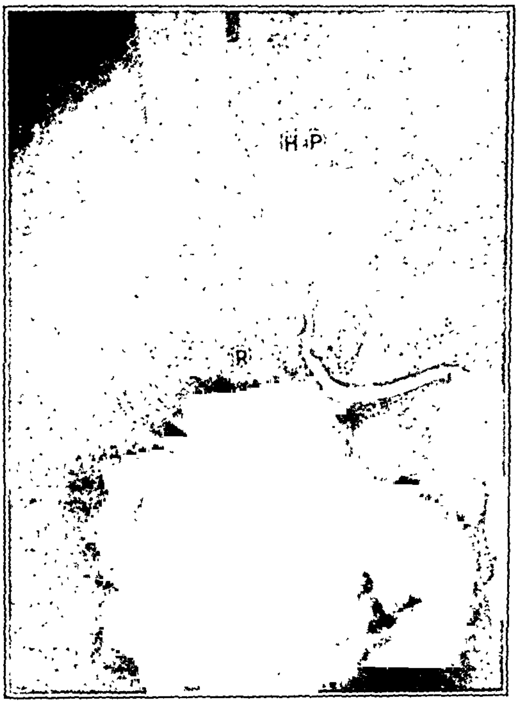

Fig. 3.—H.P., aged 5. This patient had obstruction at the vesical neck and left ureteral reflux which destroyed the kidney and required nephrectomy. A cystotomy was also done and a hypertrophied internal sphincter was resected.

ROENTGENOGRAPHIC ANATOMY OF THE MALE URETHRA

The entire urethra is outlined, including the base of the bladder. In the relaxed state on the anteroposterior view in the child, the bladder is spherical or elliptic, and the base, which lies well above the level of the upper border of the symphysis, is flattened or slightly convex, with the convexity downward. In the contracted state, the bladder assumes a more rounded form, being elongated vertically and narrowed horizontally, and the base is about 1 cm. lower.

The prostatic portion of the urethra lies in the midline behind the symphysis pubis; it begins at the base of the bladder and terminates at the external sphincter. The proximal narrowed portion represents the internal sphincter, and the distal portion the external sphincter. On voiding, the descent of the detrusor retracts the posterior lip of the vesical neck and the internal sphincter appears on the urethrogram shaped like an inverted cone. In the widest portion of the prostatic urethra is an ovoid area of increased radiance produced by the elevation of the verumontanum. This structure is best visualized on the retrograde urethrogram. The length of the prostatic urethra, the supracollicular portion, and the seminal colliculus varies with age (the table).

The membranous portion of the urethra is wedge shaped, with the apex at the external sphincter. The distal portion terminates at the bulb, but its boundaries are ill defined.

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[7] Brodny, M. L.: A New Instrument for Urethrography in the Male, J. Urol. 46: 350, 1941.

[8] The Clay-Adams Company, New York, gave technical assistance and supplied this tip.

The bulb is the widest portion of the urethra. In the anteroposterior view, it is spherical in shape and casts a denser shadow than the rest of the urethra owing to the penoscrotal curve, which causes overlapping in this view.

The anterior part of the urethra is visualized in its entirety on the oblique view. The outline is regular and narrows distally to the meatus.

COMMENT

The limitations of space forbid the presentation of a complete series of urethrocystograms illustrating every condition that can be diagnosed by this procedure. For purposes of discussion, the major pathologic conditions for which urethrocystographic examination is of value in the male child have been classified in five groups: congenital anomalies, obstructive uropathies, infections, neuromuscular dysfunction and control of surgical status. Pertinent examples of each group are presented, and sufficient data and description are introduced to appraise the value of the procedure.

[illegible] *Congenital Anomalies.*—Forty per cent of all the anomalies of the body occur in the urogenital tract, [illegible] a third of these are urologic problems. Anomalies [illegible] the lower portion of the urinary tract are especially important in the pediatric patient, since they may lead to bilateral renal destruction if they are of the obstructive type. Therefore, early diagnosis and correction of the lesion before permanent damage occurs is often life saving.

It is recognized that more than one anomaly may occur in the same patient, and complete and thorough investigation is indicated even in the presence of obvious external lesions. Urethrography in hypospadias has disclosed, for example, additional lesions such as atonicity of the bladder and internal sphincter secondary to a spina bifida occulta. Urethroscopy in many of these patients is often difficult and inconclusive. The visualization of the type and extent of accessory urethral canals is best accomplished by the roentgenologic method.

Valves of the posterior urethra are serious congenital lesions which not infrequently occur in children. Obstruction is produced in the prostatic urethra by mucosal folds which distend into cusps and retard or obstruct the urinary flow. These can be visualized on the retrograde and voiding urethrogram and appear as a balloon-like dilatation of the supracollicular portion of the urethra. The typical effect of back pressure due to infravesical obstruction is found proximal to the valves.

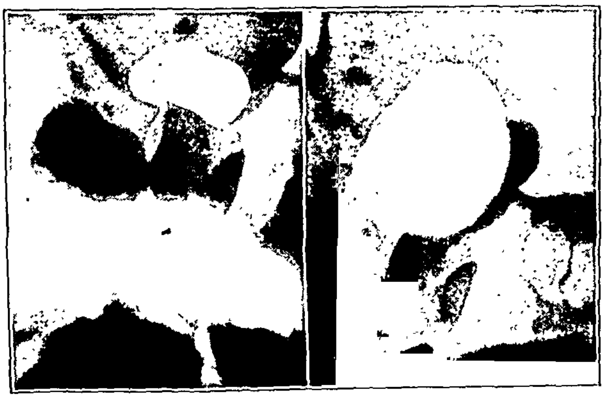

Fig. 4.—M.S., aged 9. Median bar obstruction. Right, voiding method, oblique view. Left, retrograde method, oblique view. Note the rigidity of the vesical neck and the notching of the posterior lip.

The value of urethrocystography is illustrated in the case of a boy aged 9 years. This patient was seen on April 4, 1945, with a history of nocturnal and diurnal incontinence since birth. He was one of twins; the other twin appeared much healthier and did not have any urinary symptoms. Local physical examination revealed no significant abnormality except for a pinpoint urethral meatus. The urethrographic findings are shown in figure 2. The presence of a valve in the posterior part of the urethra was verified by cystoscopy two days later. We have encountered 3 other patients with congenital valves, in 1 of whom serious renal damage and renal rickets developed. This case has been previously reported in detail.[9]

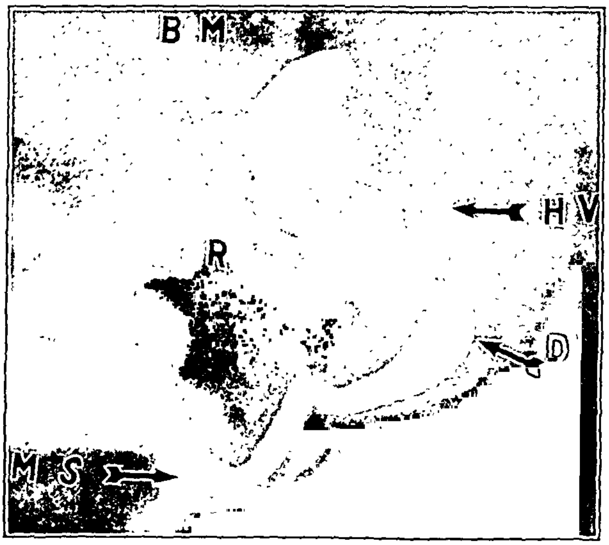

Fig. 5.—Patient B.M. *M.S.*, meatal stricture. *D.*, dilated bulbous urethra. *H.V.*, hypertrophic verumontanum. The triangular appearance of the vesical neck is consistent with hypertrophy.

Urethrocystography is also of value in the study of pseudohermaphrodism, congenital urethral fistula, diverticulum of the urethra and reduplication of the urethra.

2. *Obstructive Uropathies.*—The importance of early recognition of obstruction of the lower portion of the urinary tract in children cannot be too forcefully emphasized. Mechanical interference with voiding causes stasis, back pressure, infection and ultimately destruction of tissue. The prognosis is dependent on the extent of permanent renal damage produced by these factors. Roentgenography will materially aid early diagnosis.

Various types of congenital and acquired lesions occur at the vesical neck that can be diagnosed by urethrocystography. Changes in the architecture of the posterior part of the urethra in relation to the base of the bladder may be recognized. From roentgenographic studies, the details of the anatomic relationship of the urethra, the prostate and the base of the bladder can be determined, and also physiologic information can be obtained as to the tone of the bladder wall, the sphincters and the detrusor mechanism.

The cystogram in these obstructions reveals thickening of the bladder wall and irregularity of the vesical outline. The trabeculations, saccules or diverticula that may appear are similar to those caused by obstruction in the adult bladder.

In hypertrophy of the internal sphincter, the supracollicular portion of the urethra is elonga[illegible]d comressed, forming a collar-like deformity which projects nto the bladder and elevates and makes concave the utline of the base (fig. 3). In contracture of the vesical eck, the region of the internal sphincter is shortened nd constricted and the base of the bladder is flattened.)n the voiding urethrogram, the supracollicular portion f the urethra fails to dilate entirely owing to the igidity of the vesical neck, which appears triangular n shape. Median bar hypertrophy is best recognized n the oblique view and appears as a notching and elevaion of the posterior lip at the urethrovesical junction, esulting in angulation of the channel in an anteroosterior direction. On the voiding urethrogram, there s a barlike projection of the posterior urethral wall t the vesical neck (fig. 4).

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[9] Derow, H. A., and Brodny, M. L.: Congenit[illegible] Urethr[illegible] Valve Causing Renal Rickets, New England J. Med. [illegible] 1939.

Strictures of the urethra may be congenital, inflamnatory or traumatic in origin, and they may be single or nultiple. Urethrocystography will demonstrate their ype, location and number, the degree of obstruction nd the response to treatment. The small caliber of the anal in children makes routine urethroscopy difficult nd unsatisfactory.

Stricture of the external meatus is the most frequent onstriction of the urethra in the pediatric patient and nay be associated with anomalies of the urethra such s hypospadias or epispadias. However, the majority f strictures are secondary to excoriation of the external rifice in infancy. These ulcerations form a scar which ncircles the meatus and eventually contracts and gives ise to stenosis. This condition is commonly found n persons subject to enuresis and can be demonstrated n the urethrogram (fig. 5). On the voiding urethrogram, the canal is usually considerably dilated from the ladder to the meatus, and the cystogram may show rabeculation or even sacculation.

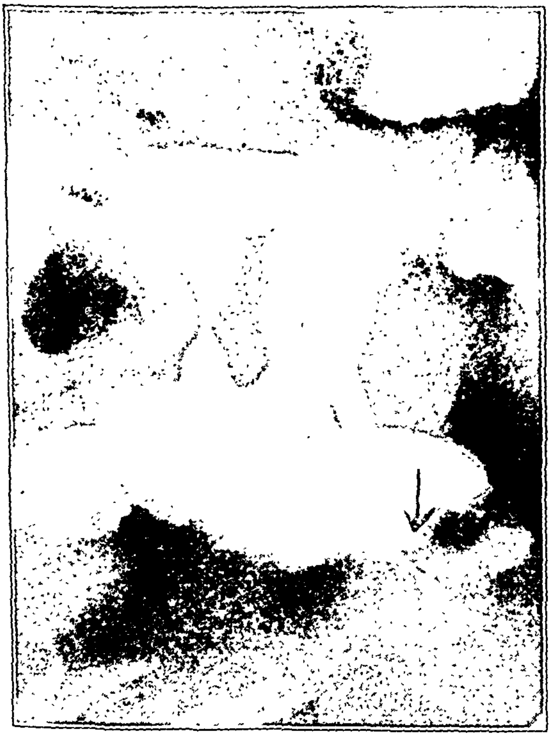

Fig. 6.—The arrow points to narrowing of the fossa navicularis. Note ronounced widening of the anterior portion of the urethra. The verumonmum is enlarged and the bladder is atonic.

Constriction or narrowing of the navicular portion of the urethra is usually congenital in origin, and the length of the urethra affected varies (fig. 6). The seminal colliculum is a common site of pathologic change in children and is well visualized on the urethrogram. The normal seminal colliculum appears as an elliptic area of diminished density in the midportion of the prostatic urethra, and its size varies with the age of the patient. Hypertrophy of this area may be congenital and at times causes obstruction. Congestion and infection associated with prostatitis may cause enlargement of the seminal colliculum, which may increase to two to three times its normal size and become round or pyriform in shape. Polyps, cysts and edema produce characteristic images on the roentgenogram. Occasionally the seminal colliculum is not visualized, and its absence may be a congenital anomaly or be due to hormonal disturbances.

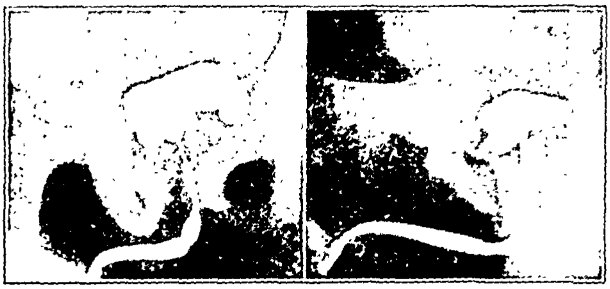

Fig. 7.—Patient aged 12, with prostatitis. Note the presence of a budlike projection resembling a saccule in the region of the verumontanum. This represents a dilated prostatic duct.

3. *Infections.*—We have found roentgenographic and cystoscopic evidence of chronic infection of the bladder in many children with negative urinary findings. The absence of pus or organisms in the urine sediment in routine examination does not always rule out inflammatory changes. Cystitis is always secondary to infection of the upper or lower portion of the urinary tract.

The cystogram in acute cystitis shows a spastic contracted bladder with irregular fuzzy borders due to edema. On the voiding urethrocystogram, thickening of the bladder wall, increase of the bladder contraction and spasticity of the lumen of the posterior part of the urethra and external sphincter can be observed.

Chronic cystitis in children is often an insidious disease and may be associated with infravesical obstruction or neuromuscular imbalance. The cystogram in mild infections of the bladder does not differ from the normal. In infections of long standing, the capacity of the bladder is diminished and the outline is fuzzy or slightly irregular.

Urethritis in the young male may be nonspecific and secondary to urethral meatitis, balanoposthitis, phimosis, foreign body irritation or abnormal masturbation, or it may be due to a gonorrheal infection following sexual contact. Urethrocystography is chiefly of value in patients in whom infection persists or recurs. The picture will help disclose urethral obstruction, congenital anomalies and the presence of complications. The anatomic changes caused by infection in the anterior part of the urethra appear on the roentgenogram as a narrow canal with a fuzzy outline. Following constant drainage of the bladder by a catheter, the urethrogram may present a bizarre appearance caused by edema and infection.

Prostatitis in the young may be idiopathic, hematogenous in origin or a complication of urethral or vesical infection. Elevation of the base of the bladder, enlargement or elongation of the seminal colliculum and slight compression and narrowing of the prostatic urethra are typical findings on the urethrogram. Since rectal examination and prostatic massage may be unsatisfactory in the young male, roentgenographic investigation is of value, as illustrated by the following case.

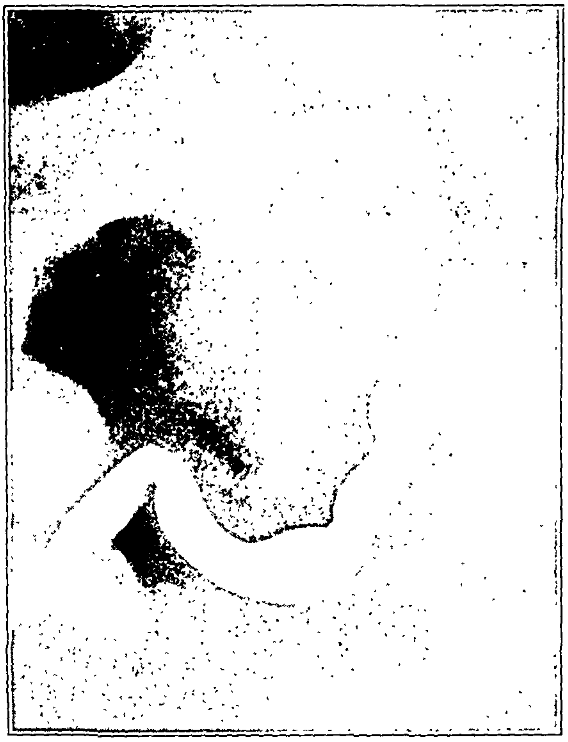

Fig. 8.—Urethrocystogram. Neurogenic bladder and urethra, spastic type. Bladder contracted and trabeculated. The internal sphincter is relaxed and the posterior part of the urethra is considerably widened.

A boy aged 12 complained of frequency and burning of one week's duration. Local physical examination was negative. The sediment of the urine was not remarkable. Attempt at prostatic examination was unsatisfactory, and a urethrogram was taken (fig. 7). Subsequent rectal examination confirmed the diagnosis of prostatitis. The normal prostatic ducts are not outlined on the urethrogram. Infected ducts are readily filled with opaque medium owing to inflammatory changes causing dilatation and loss of tone. These ducts appear as elongated, linear or budlike projections radiating from the region of the utricle.

Excessive masturbation causes chronic congestion of the prostate and characteristic changes on the urethrogram. The lateral lobes project into the bladder, distorting and elevating its base and producing a pressure defect. There may be compression, elongation of the prostatic urethra and enlargement of the seminal colliculum.

4. *Neuromuscular Dysfunction.*—Neuromuscular vesical and urethral disturbances may be congenital or acquired. Early recognition of the etiologic factors and the underlying pathologic changes is necessary for proper treatment. Many of these young patients have long-standing histories of enuresis or chronic urinary infection.

Neuromuscular vesical disturbances vary in the degree and extent of involvement. The bladder may be atonic or hypertonic, smooth or trabeculated; the sphincters may be relaxed or spastic; the ureteral orifices may function properly or permit regurgitation. The cystogram and urethrogram localize the involved muscular components. The presence of infection may modify the roentgenographic picture.

The urethrocystographic examination in the spastic type of dysfunction shows a small and scalloped bladder, which is due to thickening of the bladder wall and exaggeration of the vesical rugae. The sphincters are contracted, and the entire picture is one of attempted expulsion of the mediums (fig. 8).

The cystogram in the atonic type of dysfunction shows an enlarged bladder, which may fill the entire pelvis or may extend beyond. The outline is smooth and regular. There may be a pouching of the base, roof or lateral recesses of the bladder. The vesical neck is not delineated on the cystogram, but if the internal sphincter is relaxed, the opaque medium leaks into the posterior urethra producing a funneled appearance. On the voiding urethrogram, the shape of the bladder changes little during expulsion of its contents owing to lack of muscle tonus. The changes in the urethra are primarily confined to the supracollicular portion, which is dilated because of atonicity (fig. 9). There may be a generalized dilatation of the remainder of the urethra.

5. *Control of Surgical Status.*—Urethrocystography not only will uncover pathologic changes which require surgical intervention, but is valuable for recording the anatomic and functional status following surgical treatment of the lower part of the urinary tract. The ease, simplicity and safety of the procedure permit frequent examination of the postoperative condition and aid in establishing the causes of unsatisfactory results. The procedure has been utilized postoperatively in children to check the results of urethrotomy, closed and opened

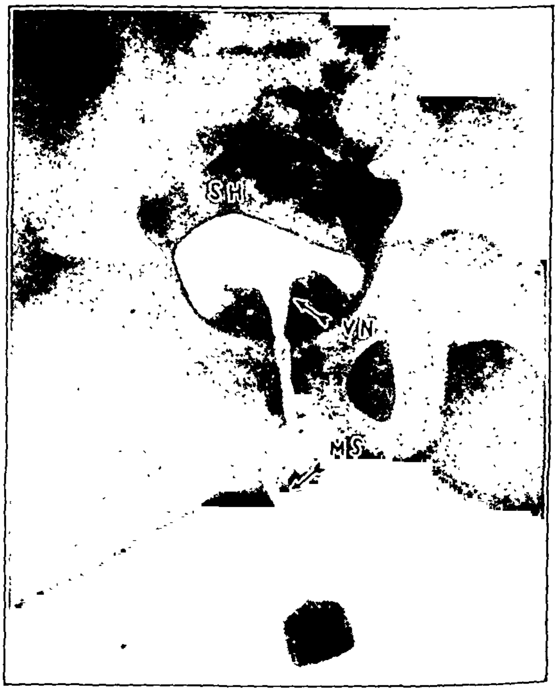

Fig. 9.—S.H., aged 10, experienced dysuria, frequency and burning for several months. An intravenous pyelogram was normal. There is moderate relaxation of the internal sphincter. The verumontanum is elongated and there is a narrowing at the external urethral meatus.

resection of the vesical neck, repair of hypospadias and epispadias, desiccation of urethral valves, polyps and cysts of the seminal colliculum, removal of urethral diverticulum and closure of urethral and vesical fistulas. Roentgenographic studies will determine the rate of recovery of the vesical tonus in the infant and child following chronic overdistention secondary to urethral obstruction, with or without infection, the persistence of ureteral reflux or the recovery of the internal sphincter following resection.

Urethrocystography in young children plays an important role in the diagnosis of trauma and foreign bodies in the lower part of the urinary tract, since a reliable history is not always available.

SUMMARY AND CONCLUSIONS

Methods of roentgenographic studies of the male urethra and bladder in children are described. "Rayopake," a *new* contrast medium, has been introduced for urethrocystography in children. A special instrument designed for urethrography in the adult has been adapted for children by the use of a small metal tip. The complete roentgenographic study of the urethra and bladder in children often requires the use of the voiding and retrograde methods. A technic of obtaining voiding urethrograms following intravenous pyelography in children has been described and is recommended as a routine procedure. A nonopaque plastic receptacle to facilitate voiding urethrography has been introduced.

It is possible by roentgenographic studies to visualize many of the anatomic changes and to interpret some of the urinary dysfunctions produced by diseases of the urethra and bladder.

Urethrocystography is valuable for studying the end results of operative therapy of the lower part of the urinary tract.

The usefulness of roentgenographic examination of the bladder and urethra in children will increase as experience is gained in the correct interpretation. This requires extensive correlation of the roentgen observations with cystoscopic, operative and postmortem studies.

Urethrocystography is an innocuous procedure which merits general adaptation for the study of the lower part of the urinary tract in pediatric patients.

636 Beacon Street.

ABSTRACT OF DISCUSSION

Dr. Monroe E. Greenberger, New York: The paper emphasizes phases of our specialty in which the general urologist shows an inadequate interest. Most of us lack an abundant experience in pediatric urology and in our interpretations of roentgenographic observations on the distal part of the urinary tract we are not as definite in our opinions as we may, for example, be about calyceal distortions. Judging from the excellent illustrations, the new opaque medium, "rayopake," introduced by Dr. Brodny, promises to be extremely useful in delineation of the lower part of the urinary tract. It is often difficult to conduct a study on children involving manipulative procedures without the use of anesthesia. Dr. Brodny is to be commended for his apparent facility in overcoming the obstacle. No doubt his instrument for urethrography in the male has made this possible. We have had increased success in obtaining cooperation from some of our younger patients by delaying any type of instrumental study, even simple passage of a small catheter, until several visits have established a warm, trusting relationship. The possibility of psychic trauma in certain children of an age group likely to be sensitive concerning treatment of external genitalia must be considered. Occasionally, it may be advisable to forego the advantages of study without anesthesia to spare condemnation from some psychoanalyst at a late date, as the early source of the development of a sexual neurosis. Dr. Brodny's suggestion of obtaining urethrograms following intravenous pyelography is especially appealing, and we may well consider it as a supplement to our usual routine in adults as well as children. The discussion of various types of disorders of the lower part of the urinary tract visualized by roentgenographic study has been excellent and informative, but one cannot be too dogmatic about interpretation, particularly about verumontanum shadows. How often do we have a definitely similar inflammatory syndrome in the posterior part of the urethra in persons who present several varying degrees of pathologic change in the verumontanum ranging from pale atrophy to an intense congestion and enlargement. We all agree that increased experience and correlation with other types of clinical investigations will enhance the value of cystourethrography.

Dr. M. Leopold Brodny, Boston: There are two points I wish to make. One is that we must not be discouraged with *the interpretation of urethrograms. It takes practice and* requires some correlation with the cystoscopic findings. When we first started out, we had to do many of these procedures, see what we found cystoscopically and see what we found at the time of operation. The interpretation is not always correct, not any more than interpretation of pyelograms is always correct. But we believe that, if an effort is made, the procedure will be found extremely valuable and as accurate as pyelograms are for the diagnosis of renal pathologic change. I want to pay tribute to my co-worker, Dr. Robins, who is a roentgenologist. I feel that this type of work must be done in the form of a cooperative study, because the point of view of the urologist and that of the roentgenologist add ideas and information which are valuable for this type of work.

NEWER REPOSITORY PENICILLIN PRODUCTS

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D. K. KITCHEN, M.D.
New York

Buckwalter and Dickison[1] recently reported a new repository type of penicillin product.[2] They introduced the principle of suspending penicillin salts in peanut oil gelled with aluminum stearates, water repellent substances. They compared the absorption-delaying properties of this vehicle with the conventional repository vehicles in animals. The study recorded here was designed to carry this comparison further—in human subjects.

The facilities of four assay laboratories were used, and assays were performed by two different methods, a modified Rammelkamp method and a cup plate procedure employing Sarcina lutea. Control samples of blood were drawn before the injection; each patient then received 300,000 units of penicillin in repository form, and consecutive samples of blood were taken at the intervals indicated on the chart. The lines on the chart are the lines fitted by the method of least squares to the logarithm of the average blood concentration with time in hours.

Messrs. Brumbaugh, Noel and Crutchfield of Bristol Laboratories, Inc., made the statistical analysis of these data.

From Bellevue Hospital and New York University College of Medicine, New York (Drs. Thomas and Rein); Syracuse University Hospital, Syracuse, N. Y. (Dr. Lyons); Antibiotic Section Laboratory Walter Reed General Hospital and George Washington University Hospital Department of Medicine, Washington, D. C. (Dr. Romansky), and Bristol Laboratories Inc., New York (Dr. Kitchen).

[1] Buckwalter, F. H., and Dickison, H. L.: A New Absorption-Delaying Vehicle for Penicillin, to be published.

[2] "Flo-cillin," supplied by Bristol Laboratories, Inc.

Table 1 presents, in accordance with standard practice,[3] the percentages for all patients whose blood concentrations were 0.03 unit per cubic centimeter, or above, at the indicated hours for the various products studied. It also shows the total number of patients whose blood samples were assayed and the average concentration of penicillin per cubic centimeter of serum at these various intervals.

Table 3 shows the number of lots of each product tested and the percentage of particles of each product above or below a diameter of 50 microns on a relative weight basis.

The results obtained by a single injection indicated that the gelled product warranted a series of observations following its prolonged use.

Table 2 exhibits blood concentrations following prolonged administration of procaine penicillin in oil gelled with 2 per cent aluminum monostearate (large particle). Sixteen patients received injections once daily for sixteen days, and blood levels were determined at

TABLE 1.—*Number of Patients, Average Blood Levels and Percentage of Patients with Blood Concentrations of 0.03 Unit or Higher at Successive Time Intervals Following Single Injections (300,000 Units Each) of Six Repository Penicillin Preparations (Sarcina Lutea Technic)*

Time Following Administration (Hr.)	A			B			C		
	Sodium Penicillin G in Peanut Oil with 4.8% (w/v) White Wax			Sodium Penicillin G in Peanut Oil with 2% (w/v) Aluminum Monostearate			Procaine Penicillin G in Oil		
	Number of Patients	Average Blood Level	Percentage of Patients With Blood Level 0.03 or Higher	Number of Patients	Average Blood Level	Percentage of Patients With Blood Level 0.03 or Higher	Number of Patients	Average Blood Level	Percentage of Patients With Blood Level 0.03 or Higher
1	17	1.032	100.0	18	2.583	100.0	81	1.120	100.0
12	20	1.310	100.0	16	.140	87.5	80	.190	78.8
24	22	.077	77.3	16	.038	62.5	78	.050	42.3
30	17	.035	58.8	17	.022	23.5	75	.019	18.7
36	17	.021	41.1	18	.013	27.8	75	.010	12.0
40	13	.004	0.0	18	.010	16.7	75	.006	12.0
48	19	.002	5.3	18	.004	11.1	75	.003	4.0

Time Following Administration (Hr.)	D			E			F		
	Procaine Penicillin G in Peanut Oil with 2% (w/v) Aluminum Monostearate (Large Particle)			*Aluminum Penicillin in Peanut Oil* with 2% (w/v) Aluminum Monostearate			*Procaine Penicillin G in Peanut Oil* with 2% (w/v) Aluminum Monostearate (Small Particle)		
	Number of Patients	Average Blood Level	Percentage of Patients With Blood Level 0.03 or Higher	Number of Patients	Average Blood Level	Percentage of Patients With Blood Level 0.03 or Higher	Number of Patients	Average Blood Level	Percentage of Patients With Blood Level 0.03 or Higher
1	160	.593	98.7	39	.251	100.0	184	.169	99.5
12	162	.244	98.1	45	.083	88.9	179	.104	98.3
24	162	.120	90.1	47	.067	55.3	208	.114	98.1
30	161	.092	82.6	39	.035	33.3	178	.088	97.8
36	159	.069	75.5	43	.013	16.3	182	.076	97.3
40	160	.050	63.8	39	.002	2.6	128	.071	96.9
48	161	.038	52.2	46	.006	8.7	206	.091	92.1
72	...	....	....	..	....	....	190	.077	93.2
96	...	....	....	..	....	....	173	.057	86.7

TABLE 2.—*Blood Concentrations After Prolonged Administration of 300,000 Units of Large Particle Procaine Penicillin per Cubic Centimeter of Peanut Oil Gelled with 2 per Cent Aluminum Monostearate (Modified Rammelkamp Assay Method)*

Case	24th Hr.	Day *															48th Hr. After Last Injection
		2d	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	
1	<.039	.039	.039	<.039	.078	.078	.078	.078	.078	.039	.078	.078	.078	.039	.078	.039	.039
2	.156	.156	.078	.078	.078-.156	.312	.156	.312	.312	.156	.078	.156	.312	.078	.078	.312	<.039
3	.078	.078	.078	.078	.156	.078	.078	.156	.078	.078	.156	.156	.078	.156	.156	.156	.078
4	.156	.078	....	.156	.312	.078	.156	.156	.078	.312	.078	.156	.078	.078	.156	.078	<.039
5	.078-.156	.156	.078	.078	.156	.312	.078	.078	.039	.078	.039	.156	.312	.156	.078	.078	....
6	.078-.156	.078	.156	.078	.078	.156	.078	.078	.156	.078	.156	.156	.039	.156	.078	.078	.039
7	.156	.156	.156	.078	.156	.312	.312	.312	.078	.312	.312	.312	.156	.156	.156	.312	Trace
8	.039	.039	.078	.078	.078	.078	.156	.078	.078	.078	.312	.078	.078	.078	.039	.078	<.039
9	.039	.156	....	.039	.156	.156	.156	.312	.312	.312	.312	.156	.312	.156	.312	.312	Trace
10	.078	.078	.156	.078	.156	.156	.039	.078	.078	.156	.078	.078	.078	.078	.078	.039	<.039
11	.078-.156	.156	.039	.039	.078	.078	.078	.078	.078	.156	.039	.078	.156	.078	.078	.078	....
12	.625	.312	.312	.312	.312	.312	.312	.312	.625	1.25	.312	.156-.312	.312	.312	.312	.312	0.39
13	.156	.156	.078	.078	.078	.156	.078	.156	.078	.078	.078	.156	.156	.156	.078	.156	<0.39
14	.078	.078	.312	.156	.078	....	.156	.156	.625	.312	.312	.156	.156	.156	.156	.312	Trace
15	Trace	.078	.078	.312	.156	.078	.078	.078	.078	.039	Trace	.039	.156	.078	.078	.078	<.039
16	<.039	<.039	.078	.039	.039	.039	.156	.156	.078	.039	.030	.078	.078	.039	.078	.078	<.039

* Blood levels were determined at regular intervals for the first twenty-four hours and at twenty-four hour intervals thereafter.

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[3] Eagle, H.: Speculations as to the Therapeutic Significance of the Penicillin Level, Ann. Int. Med. 28: 260 (Feb.) 1948. Tucker, H. A., and Eagle, H.: Serum Concentrations of Penicillin G in Man Following Intramuscular Injection in Aqueous Solution and in Peanut Oil-Beeswax Suspension, Am. J. Med. 4: 343 (March) 1948.

regular intervals for the first twenty-four hours and at twenty-four hour intervals thereafter until the concentration fell below 0.039 unit per cubic centimeter following the last injection. The purpose of this study was twofold: (1) to observe any untoward effects of repeated injection and (2) to record maintenance of high blood concentrations.

TABLE 3.—*Number of Lots of Each Product Tested and Percentage of Particles Above or Below 50 Microns in Diameter*

Product	No. of Lots	Particle Size*
A. Sodium penicillin G in peanut oil with 4.8% (w/v) white wax	1	57% over 50 microns
B. Sodium penicillin G in peanut oil with 2% (w/v) aluminum monostearate	1	50% over 50 microns
C. Procaine penicillin G in oil............	3	78.5% over 50 microns
D. Procaine penicillin G in peanut oil with 2% (w/v) aluminum monostearate (large particle)	3	93% over 50 microns
E. Aluminum penicillin in peanut oil with 2% (w/v) aluminum monostearate	2	70% over 50 microns
F. Procaine penicillin G in peanut oil with 2% (w/v) aluminum monostearate (small particle)	5	95% under 5 microns

* Chandler, V. L.; Romansky, M. J.; Welch, H.; Robinson, J. A.; Zeller, W. M.; Dowling, H. F., and Hirsch, H. L., A Method of Determining the Size and Relative Weight of Penicillin Particles and Its Importance in Preparing Adequate Preparations of Liquid Penicillin in Oil and Wax, J. Am. Pharm. (Scient. Ed.) 37: 21 (Jan.) 1948.

COMMENT AND SUMMARY

The absorption of all salts of penicillin tested was delayed longer in the aluminum monostearate in peanut oil gel than when the same salts were suspended in peanut oil alone or in peanut oil plus wax. Further, it is of particular interest to note that procaine penicillin in peanut oil gelled with 2 per cent aluminum monostearate of a small particle size maintained a blood concentration over a much longer period than the same combination but with large-sized particle penicillin. No instance of undue irritation or untoward effects were reported by or observed in any of the subjects receiving the aluminum monostearate in peanut oil gelled products other than the occasional allergic reactions to penicillin. The influence of particle size, *per se*, on the maintenance of blood concentration will be reported later by Buckwalter, Dickison and this group.

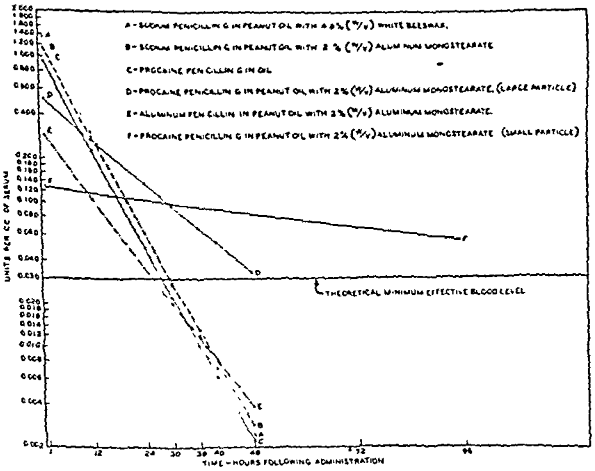

Chart of average concentrations of penicillin in the blood produced with single injections (300,000 units each) of six repository penicillin preparations (Sarcina lutea technic).

MORTALITY OF MEDICAL SPECIALISTS, 1938-1942

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The growth of specialization in the practice of medicine has reached a point where it may well be asked, first, whether the mortality of physicians so engaged differs from that of physicians in general practice and, second, what differences in mortality there may be among the several specialties. The answers to these questions may be determined from an analysis of the records used for an earlier study in which the mortality of all American physicians during the period 1938-1942 was compared with that of the general population.[1]

For the purposes of the present investigation, only physicians devoting full time to their specialty were considered as specialists, in accord with the following excerpt from the American Medical Directory (sixteenth edition, 1940):

> A symbol designating specialty practice is entered on request whenever the physician is (1) a member of a constituent state association, (2) a member of a special national or interstate society, the membership of which is listed in the Directory, or (3) a professor, an associate or assistant professor in an approved medical school. ..When the abbreviation designating a specialty is followed by a star (★) it indicates that the physician claims his practice is limited to that particular branch of medicine...This information concerning specialty practice is based only on personal data furnished by the physician.

This study thus excludes from the specialties those physicians who state an interest in some branch, but do not limit their practice to it.

SOURCES OF DATA

This study is based on a tabulation of full time medical specialists listed in the American Medical Directory of 1940[2] and the deaths among corresponding specialists within the five year period from 1938 to 1942. The data relate only to physicians residing within the United States.

The distribution of the living physicians in 1940 according to their specialty is shown in table 1. Of the 175,176 physicians listed in the Directory, 37,010, or 21.1 per cent of the total, claimed to be full time specialists. Largest in number was the group made up of ophthalmologists, otologists, laryngologists and rhinologists, of whom there were 7,636; these constituted 4.4 per cent of all

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From the Statistical Bureau of the *Metropolitan Life* Insurance Company.

[1] Dublin, L. I., and Spiegelman, M.: The Longevity and Mortality of American Physicians, 1939-1942, J.A.M.A. 134: 1211 (Aug. 9) 1947.

[2] The numbers of living physicians according to their specialty and year of birth, but without distinction by sex, were tabulated from the American Medical *Directory* for 1940 by the States Relations Division of the United States Public Health Service. The results of these tabulations were made available through the cooperation of Mr. Elliott H. Pennell.

physicians and 20.6 per cent of all specialists. Next in rank were those practicing internal medicine, numbering 6,466; these were 3.7 per cent of all physicians and 17.5 per cent of the specialists. Third in rank were the surgeons, of whom there were 5,892, or 3.4 per cent of all physicians and 15.9 per cent of the specialists. Obstetricians and gynecologists ranked fourth, with 2,553 members. Each of the remaining specialties listed in table 1 had less than 2,500 physicians who gave it their full time.

TABLE 1.—*Medical Specialists Listed in the Directory of the American Medical Association, 1940*

Specialty	Number	Percentage of All Physicians	Percentage of All Specialists
All physicians	175,146	100.0	
All specialists	37,010	21.1	100.0
Surgery	5,892	3.4	15.9
Orthopedic surgery	1,082	0.6	2.9
Proctology	350	0.2	1.0
Urology	1,733	1.0	4.7
Industrial surgery	416	0.2	1.1
Anesthesia	285	0.2	0.8
Obstetrics and gynecology	2,553	1.4	6.9
Ophthalmology, otology, laryngology and rhinology	7,636	4.4	20.6
Internal medicine	6,466	3.7	17.5
Pediatrics	2,417	1.4	6.5
Neurology and psychiatry	2,410	1.4	6.5
Roentgenology and radiology	1,595	0.9	4.3
Dermatology	979	0.5	2.6
Pathology	929	0.5	2.5
Public health	1,574	0.9	4.3
Tuberculosis	629	0.4	1.7
Bacteriology	64	*	0.2
Others, not specialists	138,136	78.9	

*Less than 0.05.

The average ages and the age distributions of all physicians, of the full time specialists, and of those not full time specialists, as derived from the American Medical Directory of 1940, are set forth in table 2. In this and subsequent tables, specialists in internal medicine and pediatrics were classed together in one group, since both practice under essentially similar conditions, and another group was formed of the surgical specialties, namely, orthopedic surgeons, proctologists, urologists and industrial surgeons.

TABLE 2.—*Average Age and Percentage Distribution According to Age of Medical Specialists Living in 1940*

Specialty	Average Age	Percentage Distribution According to Age (All Ages 100%) Under 35	35-44	45-54	55-64	65-74	75 and over
All physicians	47.6	26.1	22.3	18.2	18.0	11.6	3.8
All specialists	48.5	9.9	31.8	28.5	19.8	8.8	1.2
Surgery	49.4	7.7	29.8	30.4	21.6	9.2	1.3
Orthopedic surgery; proctology; urology; industrial surgery	47.7	8.6	34.2	31.2	19.5	5.8	0.7
Anesthesia	47.6	14.4	31.6	24.2	18.6	9.8	1.4
Obstetrics and gynecology	46.4	11.5	38.4	27.6	15.9	5.9	0.7
Ophthalmology, otology, laryngology, rhinology	51.3	7.6	24.5	28.4	24.0	13.4	2.1
Internal medicine; pediatrics	46.8	12.2	36.0	27.8	16.3	6.8	0.9
Neurology and psychiatry	48.5	9.9	33.5	25.7	20.2	9.2	1.5
Roentgenology and radiology	48.1	8.3	31.3	33.8	19.8	6.1	0.7
Dermatology	47.2	10.8	35.9	28.3	15.9	7.7	1.4
Pathology	47.3	9.5	34.3	31.8	17.8	6.0	0.6
Public health	48.2	18.6	27.5	19.4	20.5	12.7	1.3
Tuberculosis	48.6	8.8	32.1	28.8	21.6	7.3	1.4
Bacteriology	48.3	9.4	42.2	17.2	20.3	10.9	-
Others, not specialists	47.4	30.5	19.8	15.4	17.5	12.3	4.5

The average age of all specialists was 48.5 years, one year greater than that for the nonspecialists. Surgeons, with an average age of 49.4 years, were the oldest on the list, and obstetricians and gynecologists were the youngest, with an average of 46.4 years. Whereas 30.5 per cent of the physicians not specialists were under 35 years of age, only 9.9 per cent of the specialists fell within this age period. This contrast is a natural consequence of the time taken to acquire training and experience before one can become a specialist. The proportions of specialists under age 35 were smallest among surgeons and the group constituting ophthalmologists, laryngologists and rhinologists. On the other hand, the proportions under 35 were largest for anesthetists and public health physicians. Since specialization is a comparatively recent development, and, further, since the specialists are, by definition, those who devote their full time to their interest, it is not suprising to find only 1.2 per cent of them at age 75 and over. Among those not specialists, 4.5 per cent were included in this terminal age group. Because of the concentration of medical specialists within the age range from 35 to 74 years, the study was confined to this period of life. Although the proportion of specialists under age 35 is not negligible, it was considered advisable to omit them from the study, since they had not been exposed long enough to manifest the effects of any hazards that may be involved in the practice of a specialty. Besides, the number of deaths among specialists under age 35 was too small for study.

There were altogether 12,419 deaths of physicians at ages 35 to 74 years during 1938-1942 that entered into the earlier study. The full time specialists among them were located by referring to the latest issue of the American Medical Directory in which the name of the deceased was listed and noting the specialty claimed at that time. Most of the names of those dying in 1940, 1941 and 1942

TABLE 3.—*Deaths According to Cause Among Medical Specialists at Ages 35 to 74 Years, 1938-1942*

Specialty	Cause of Death: All Causes	Cardiovascular-Renal Diseases	Diseases of the Coronary Arteries and Angina Pectoris	Cancer	Pneumonia and Influenza	Accidents	All Other Causes
All physicians	12,419	7,442	2,879	1,267	560	541	2,589
All specialists	2,029	1,241	600	237	77	92	382
Surgery	357	228	106	34	11	16	68
Orthopedic surgery, proctology urology, industrial surgery	197	115	57	21	8	9	44
Anesthesia	17	11	4	3	-	1	2
Obstetrics and gynecology	111	65	38	13	8	6	19
Ophthalmology, otology, laryngology, rhinology	499	311	148	58	20	24	36
Internal medicine; pediatrics	374	228	104	44	13	12	77
Neurology and psychiatry	140	81	39	25	7	7	20
Roentgenology and radiology	95	55	28	13	4	3	20*
Dermatology	60	32	19	9	1	4	14+
Pathology	35	21	10	2	1	2	9
Public Health	98	63	32	11	4	7	13
Tuberculosis	43	29	13	4	-	1	9†
Bacteriology	3	2	2	-	-	-	1
Others, not specialists	10,390	6,201	2,279	1,030	503	449	2,207

* Includes 5 deaths from leukemia.
+ Includes 2 deaths from leukemia.
† Includes 3 deaths from tuberculosis.

were found in the 1940 Directory; for deaths in 1938, 1939 and later years not found in the 1940 Directory, reference was made to the 1938 Directory. In a few instances it was necessary to look into the 1936 Directory. In order to ascertain whether any bias was introduced by the use of three Directories, the deaths within each specialty were tabulated according to the year of occurrence; the scatter of the numbers left no ground for suspicion on this score.

The search just described yielded a total of 2,029 deaths of specialists at ages 35 to 74 years for the period 1938-1942; this number was 16.3 per cent of deaths of all physicians of the same ages. The distribution of the deaths from the principal causes according to the specialty of the deceased is shown in table 3. Only 23, or 1.1 per cent of the 2,029 deaths of specialists, were women. In view of this situation, it was not considered necessary to distinguish sex in studying the mortality of the specialists.

METHOD OF PROCEDURE

As a basis for comparison of mortality of specialists and nonspecialists, and also among the several specialties, the death rates according to age and cause of death for all male physicians from the earlier study of 1938-1942[3] were taken as the standard. For each specialty, the ratio was formed of the actual deaths from a specific cause to the number that specialty would have experienced if it had been subject to the death rates of the standard thus chosen.[4] For convenience the ratio found in this way will be referred to hereafter as the mortality ratio. The results of such a computation for all specialties combined are compared, in table 4, with the corresponding results for physicians who are not specialists. An asterisk following a mortality ratio indicates significance in the statistical sense, that is, the probability is less than 5 in 100 that a deviation of the actual from the expected deaths at least as great as that observed is a chance occurrence.

MORTALITY OF ALL SPECIALISTS

Taken as a group, the mortality of specialists at ages 35 to 74 years is only 78 per cent of the standard, while that of the nonspecialists at the same ages is 110 per cent of the standard. The advantage of the specialists is somewhat greater for those below age 55, for whom the mortality ratio is 74 per cent, than for those over that age, the ratio here being 80 per cent. Each of the specialty groups studied had a lower mortality than the nonspecialists (table 5).

TABLE 4.— *Mortality According to Cause of Death Among All Specialists and Others, Not Specialists, at Ages 35-74: Ratio of Actual Deaths to the Deaths Expected on the Basis of Age-Specific Death Rates for All Male Physicians, 1938-1942*

Cause of Death	Mortality Ratio: All Specialists	Mortality Ratio: Others, Not Specialists	Actual Deaths: All Specialists	Actual Deaths: Others, Not Specialists
All causes	0.78*	1.10*	2,029	10,390
Tuberculosis	0.55*	1.13*	31	202
Syphilis	0.51	1.12	9	57
Cancer, all sites	0.95	1.02*	237	1,030
of digestive organs	0.95	1.07	105	450
of respiratory organs	0.97	1.00	30	112
of genitourinary organs	0.99	1.05	37	197
Leukemia	1.02	1.07	10	52
Diabetes mellitus	0.35*	1.20*	19	249
Cardiovascular-renal diseases	0.81*	1.08*	1,241	5,201
Diseases of the coronary arteries and angina pectoris	0.97	1.02	500	2,779
Pneumonia and influenza	0.65*	1.13*	77	503
Ulcer of the stomach or duodenum	0.51*	1.12	11	57
Appendicitis	0.79	1.07	14	59
Hernia and intestinal obstruction	0.55	1.15	10	60
Cirrhosis of the liver	0.54*	1.11	29	157
Biliary calculi and other diseases of the gallbladder	0.79	1.12	13	70
Diseases of the prostate gland	0.91	1.05	9	49
Suicide	0.75*	1.09	55	227
Automobile accidents	0.95	1.07	59	227
Other accidents	0.54*	1.15*	33	222
All other causes	0.59*	1.14*	155	939

*Significant in the statistical sense, that is, the probability is less than 5 in 100 that a deviation of the actual deaths from the expected deaths at least as great as that observed is a chance occurrence.

TABLE 5.—*Mortality Ratios According to Cause of Death, Ratio of Actual Deaths Among Medical Specialists, at Ages 35 to 74 Years, to the Deaths Expected on the Basis of Age-Specific Death Rates for All Male Physicians, 1938-1942, Each Cause of Death Treated Separately*

Specialty	Cause of Death: All Causes	Cardiovascular-Renal Disease	Diseases of the Coronary Arteries and Angina Pectoris	Cancer	Pneumonia and Influenza	Accidents	All Other Causes
All specialists	0.78*	0.81*	0.97	0.96	0.65*	0.70*	0.67*
Surgery	0.81*	0.87*	1.00	0.81	0.55*	0.74	0.70*
Orthopedic surgery, proctology urology, industrial surgery	0.86*	0.86	1.03	0.99	0.77+	0.73+	0.84
Anesthesia	0.88*	0.97*	†	†	⊕	†	†*
Obstetrics and gynecology	0.75	0.76	1.08	0.95	1.19	0.71+	0.55*
Ophthalmology, otology, laryngology, rhinology	0.75*	0.78*	0.93	0.90	0.66*	0.81	0.62*
Internal medicine and pediatrics	0.69*	0.73*	0.81*	0.88*	0.53*	0.41*	0.63*
Neurology and psychiatry	0.83	0.81	0.96	1.55	0.90+	0.82+	0.54
Roentgenology and radiology	0.90	0.89	1.10	1.33+	†	†	0.81
Dermatology	0.98*	0.90*	1.31	1.58+	†	†	1.01+
Pathology	0.62*	0.64	0.73	†	†	†	0.69*
Public Health	0.83	0.89	1.13	0.95	†	1.29+	0.52+
Tuberculosis	0.99	1.14	1.24	†	⊕	†	0.93+
Bacteriology	†	†	†	⊕	⊕	⊕	†
Others, not specialists	1.10*	1.08*	1.02	1.09*	1.13*	1.11*	1.14*

* Significant in the statistical sense, that is, the probability is less than 5 in 100 that a deviation of the actual deaths from the expected deaths at least as great as that observed is a chance occurrence.
+ From 5 to 9 actual deaths entered the computation of this ratio.
† Less than 5 actual deaths were recorded in this category.
⊕ No deaths were recorded in this category.

There may be several factors contributing to this generally favorable situation among specialists. In the first place, some self selection may be exercised on the part of those entering a specialty; a certain degree

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3. For death rates in broad age groups for several causes of death, see Dublin, L. I.· Spiegelman, M., and Leland, R. G.: Longevity and Mortality of Physicians, Postgrad. M. I. 3:183 (Sept.) 1947. The detailed death rates used as the standard have not yet been published.

4. This computation was carried out separately for each five year age group, as 35-39 and 40-44. The first step was to obtain, for each specialty, an age distribution of physicians exposed to the risk of death. The following example shows how this was derived from the basic tabulation.[2] Thus, the number living at age 40 in each year of the period 1938-1942 is made up, in close approximation, of those listed in the Directory of 1940 as having been born in the period 1898-1902. A similar procedure was followed to obtain the number living at each age from 41 to 44 years, the sum of all these numbers yielding the total physicians in a specialty at ages 40 to 44 years exposed to risk of death during 1938-1942. For each five year age group, the number exposed to risk of death was multiplied by the corresponding death rate of the standard to obtain the expected deaths. The expected deaths were then summed for ages 35 to 74 years and compared with the actual number of deaths for the same broad age group.

of physical well-being is required to continue studies over an extended period of years. Then, the specialists, who on the whole undoubtedly have a larger income than the nonspecialists, may be in a better position to take care of themselves by more frequent and longer vacations when in health and by superior medical care when ill. The specialists, who are concentrated in urban centers, have a further advantage in their medical care from their accessibility to large hospital facilities and opportunities to consult with other specialists.

Over three fifths of the deaths of specialists at ages 35 to 74 years are from the cardiovascular-renal diseases, and their mortality ratio from these conditions is 81 per cent, practically at the same level as for all causes of death. A corresponding similarity is seen, in table 5, for almost all of the classes of specialists considered, as well as for nonspecialists.

For two of the important causes of death, cancer and diseases of the coronary arteries and angina pectoris, the mortality of specialists, as a unit, is not much better then that of the nonspecialists. In the case of diseases of the coronary arteries and angina pectoris, the mortality ratio of specialists is 97 per cent and that of nonspecialists 102 per cent. Thus, the advantage specialists have with regard to over-all mortality hardly exists at all as far as coronary disease is concerned. Apparently, whatever benefits specialization may bring, they are not great enough to overcome the tensions of medical practice in general. In the earlier paper,[1] it was indicated that the high rate of mortality of physicians from coronary disease, as compared with the general population, may arise from causative factors, in addition to the opportunity for better diagnosis and reporting. There is, of course, also the possibility of differences in the quality of diagnosis and reporting of coronary disease between specialists and nonspecialists.

For cancer, the mortality ratios are 96 per cent among specialists and 109 per cent among nonspecialists. There is little variation from these ratios when cancers of the digestive organs, the respiratory organs and the genitourinary organs are considered separately. Evidently, both the specialist and nonspecialist are equally concerned in observing abnormal growth in themselves and, also, in seeking adequate treatment. Leukemia is practically identical in its incidence as a cause of death among specialists and nonspecialists.

Mortality from diseases of the prostate gland among the specialists is somewhat lower than the standard, the ratio here being 91 per cent as compared with 105 per cent for the nonspecialist; however, the numbers of deaths involved are too small to give significance to these results.

The record for specialists, as compared with nonspecialists, is particularly favorable in the case of the diseases of the respiratory tract and infectious diseases. Thus, the mortality ratio for pneumonia and influenza among specialists is only 61 per cent, while that for nonspecialists is 113 per cent. The higher mortality from these conditions among nonspecialists is in line with expectation, since they are, in general, the more likely to call at any time, irrespective of weather, and, further, they are more likely to be exposed to the risk of infection from patients. Tuberculosis among specialists, as a group, has less than half the incidence observed for nonspecialists, the mortality ratios being 56 per cent and 118 per cent, respectively. A somewhat similar situation is seen for syphilis. The low rate of mortality from these two conditions among the entire body of physicians in general was shown in the earlier study.

Specialists experience about the same low level of mortality from ulcer of the stomach or duodenum, from hernia and intestinal obstruction and from cirrhosis of the liver; for each of these, the mortality ratio for specialists is somewhat over 60 per cent of the standard, while that for nonspecialists is over 110 per cent of standard. The rate of mortality among specialists is also comparatively favorable in the cases of appendicitis and of biliary calculi and other diseases of the gallbladder, both with ratios of a little under 80 per cent. The low rate of mortality from diabetes mellitus among specialists, only 36 per cent of the standard as compared with 120 per cent for the nonspecialists, may reflect better opportunities among the former for the recognition and treatment of this condition.

Violent deaths are relatively less frequent among specialists than among nonspecialists. Thus, the specialists have a mortality ratio of 76 per cent of standard from suicide, 95 per cent from automobile accidents and only 54 per cent from other forms of accident. The corresponding ratios for the nonspecialists are about 110 per cent.

Within the group of specialists, some rather wide variations in mortality become evident when the individual specialties are examined with regard to cause of death. For this aspect of the study, attention will be confined largely to the principal causes of death, that is, the cardiovascular-renal diseases as a unit, diseases of the coronary arteries and angina pectoris, cancer, pneumonia and influenzas and accidents. The numbers of deaths are too small for examination in greater detail. Table 5 shows the mortality ratios from the leading causes of death in the various specialties.

SURGERY

The rate of mortality among surgeons is somewhat higher than the average for all specialists, but considerably lower than that for nonspecialists. The mortality ratio for all causes of death at ages 35 to 74 years is 81 per cent for general surgeons and 86 per cent for the class comprising orthopedic surgeons, proctologists, urologists and industrial surgeons; the corresponding ratio for all specialists is 78 per cent and for nonspecialists 110 per cent.

There is little difference in the reported mortality from the diseases of the coronary arteries and angina pectoris among surgeons and nonspecialists, the ratios being practically at 100 per cent of standard for each category. It is pertinent that the mortality ratio from cancer among general surgeons is only 81 per cent of the standard,[5] a figure appreciably lower than that for any other specialty.

ANESTHESIA

There were only 17 deaths of anesthetists recorded during 1938-1942. In view of their close working association with surgeons, a comparison of the experiences in these specialties is of some interest. The mortality ratio for anesthetists, 88 per cent of standard, is somewhat higher than that of general surgeons, but hardly different from that of the class made up of orthopedic surgeons, proctologists, urologists and industrial surgeons.

OBSTETRICS AND GYNECOLOGY

Obstetricians and gynecologists, with a mortality ratio 75 per cent of standard from all causes of death, have a slightly better record than the average for all specialists. The mortality ratio from diseases of the coronary arteries and angina pectoris among obstetricians and gynecologists, namely, 108 per cent, is not statistically significant.

OPHTHALMOLOGY, OTOLOGY, LARYNGOLOGY AND RHINOLOGY

The mortality experience of this group of specialists from all causes, and also from the cardiovascular-renal diseases, from diseases of the coronary arteries and from cancer is a little below the average for all specialists; the mortality ratio is 75 per cent for all causes and 78, 93 and 90 per cent, respectively, for the specific conditions mentioned. Their mortality ratio for pneumonia and influenza, 66 per cent, is practically at the average for all specialists, but the ratio for fatal accidents appears high, though still well below the average for nonspecialists.

INTERNAL MEDICINE AND PEDIATRICS

Internists and pediatricians have a particularly low mortality ratio for all causes of death, only 69 per cent of the standard. This advantage extends through each of the causes of death shown in table 5. Especially noteworthy is their relatively low rate of mortality from diseases of the coronary arteries, 81 per cent of the standard. This contrasts sharply with the higher mortality from coronary disease among surgeons, obstetricians and gynecologists and suggests the possibility that conditions of practice may influence its low incidence.

NEUROLOGY AND PSYCHIATRY

The mortality ratio for neurologists and psychiatrists, 83 per cent of standard, is only a little above the average for all specialists. Their mortality from diseases of the coronary arteries lies just on the level of the average for specialists. However, for some reason not evident, neurologists and psychiatrists in this experience have an exceptionally high mortality from cancer, the ratio being 155 per cent of the standard; for all specialists, the mortality ratio from cancer is 96 per cent, while that for nonspecialists is 109 per cent.

ROENTGENOLOGY AND RADIOLOGY

Although the mortality ratio for all causes for roentgenologists and radiologists, namely, 90 per cent, is below that for nonspecialists, it lies well above the average for all specialists. In the case of coronary disease and cancer, their mortality ratios, 110 per cent and 133 per cent, respectively, exceed those for the nonspecialists. The high mortality from cancer among roentgenologists and radiologists may be of special significance when viewed in conjunction with their mortality from leukemia. Five of the 95 deaths among roentgenologists and radiologists in this experience were from leukemia; no other specialty had as many or as high proportion of deaths from this cause. The 5 deaths due to leukemia recorded for roentgenologists and radiologists is several times the number expected on the basis of the mortality experience of all male physicians, the standard of comparison. Although roentgenologists and radiologists constituted only 4.3 per cent of the living specialists, they had one quarter of the deaths from leukemia among all specialists. The facts are indicative of an extra hazard to roentgenologists and radiologists that may arise from their exposure to dangerous radiation.[6]

DERMATOLOGY

The mortality situation among dermatologists resembles that of roentgenologists and radiologists in considerable degree. Mortality from all causes among dermatologists, with a ratio of 98 per cent, is practically the same as the standard. Their mortality ratio from diseases of the coronary arteries, 131 per cent, is greater than that for any other specialty and lies well above the ratio for nonspecialists. Although the mortality ratio for cancer among dermatologists, 158 per cent, is based on only 9 recorded deaths, its high level may carry the same significance here as for roentgenologists and radiologists. In the small number of deaths (60) from all causes among dermatologists, 2 were ascribed to leukemia. When cancer and leukemia are considered together, the mortality ratio of dermatologists rises to 180 per cent of the standard. This situation may be of some importance in view of the frequent exposure of dermatologists to roentgen rays.

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[5] In this case, the probability is 11 in 100 that a deviation of actual from expected deaths at least as great as that observed is a chance occurrence.

[6] Henshaw, P. S., and Hawkins, J. W.: Incidence of Leukemia in Physicians, J. Nat. Cancer Inst. 4:339 (Feb.) 1944. Ulrich, H.: The Incidence of Leukemia in Radiologists, New England J. Med. 234:45 (Jan. 10) 1946.

PATHOLOGY

Pathologists are favored with a lower rate of mortality than any other group of specialists. Their mortality ratio from all causes of death was only 62 per cent of the standard; the ratio for coronary disease was 73 per cent, but this is based on only 10 deaths and is not statistically significant.

PUBLIC HEALTH

For physicians specializing in public health work, the mortality ratio is 83 per cent; this is only a little above the ratio for all specialists. However, their mortality ratio from coronary disease is relatively high, namely, 113 per cent, as compared with an average of 97 per cent for all specialists and 102 per cent for nonspecialists.

TUBERCULOSIS

Mortality among specialists in tuberculosis is higher than that for any other specialty, the ratio being 99 per cent of the standard. Notwithstanding their relatively poor situation among specialists, their record is somewhat better than that of nonspecialists. This is not the case, however, with regard to coronary disease, for which the mortality ratio for specialists in tuberculosis is 124 per cent. Since physicians with a personal history of tuberculosis often specialize in the disease, it is not surprising to see that this condition accounted for a higher rate of mortality than in any other specialty.

SUMMARY

Physicians of ages 35 to 74 years who died during 1938-1942 were classified according to full time specialty on the basis of the last report in the American Medical Directory. A corresponding distribution of the number of specialists exposed to the risk of death during the period of survey was derived from a tabulation made by the United States Public Health Service from the Medical Directory of 1940. From these data, it is seen that the rate of mortality of specialists, as a group, is only 70 per cent of that of nonspecialists. Although there are decided variations in the rates of mortality among the specialists, each of them made a better record than the nonspecialists.[7] The most favorable situation is seen among pathologists, whose rate of mortality is less than three fifths of that of the nonspecialists. Although the poorest record among the specialists is made by those in dermatology and tuberculosis, their rate of mortality is only nine-tenths that of the nonspecialists. The lower mortality of specialists may arise from the self selection on the part of the healthier physicians to continue their studies, from higher income levels, from more favorable conditions of work and from opportunities for better medical care.

For almost all of the specialists, the mortality ratios for the cardiovascular-renal diseases are not much different from the corresponding ratios for all causes of death.

The same high level of mortality from the diseases of the coronary arteries and angina pectoris runs through practically all classes of specialists and the nonspecialists. Only internists and pediatricians show a rate of mortality from these conditions that is significantly lower than the average for all physicians.

The rate of mortality from cancer among general surgeons is well below the record for any other specialty and also for nonspecialists. Their advantage in this regard may be a consequence of their training in early recognition of the condition and of their knowledge of the benefit of early treatment. On the other hand, roentgenologists, radiologists and dermatologists have a high rate of mortality from cancer and leukemia, far above that for nonspecialists; this situation among these specialties suggests strongly the effect of their exposure to dangerous radiations.

Specialists, as a group, have a much lower rate of mortality than nonspecialists from the diseases of the respiratory tract, and infectious conditions, such as tuberculosis, pneumonia, influenza and syphilis. The specialists also fare comparatively better than nonspecialists in their rate of mortality from ulcer of the stomach or duodenum, hernia and intestinal obstruction, cirrhosis of the liver, appendicitis and diseases of the gallbladder. Suicide, automobile accident fatalities, as well as fatalities from other types of accident, are relatively fewer among specialists than among nonspecialists.

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[7] There are some instances in which the lower mortality ratios for the specialists fail to meet the standard of statistical significance prescribed earlier in this paper. These instances have not been mentioned specifically in the text, since they can be located by reference to tables 4 and 5. In cases in which such mortality ratios are based on small numbers of deaths, the observations are subject to confirmation by the accumulation of further experience.

Special Article

DIPHTHERIA MORTALITY IN LARGE CITIES OF THE UNITED STATES IN 1947

Twenty-Third Report

No review of the deaths from diphtheria in the large cities was prepared for 1943 and 1944, but the annual tabulation and analysis of data was renewed in 1945 and 1946. The procedure followed for the 1947 report is described in the review of typhoid mortality for these same cities.[1] A communication was addressed to the health officer of each of the cities requesting the number of deaths from diphtheria both among residents and among nonresidents reported in 1947. Whenever the local data was incomplete, an appropriate request was directed to the state health officer. Comment was sought on any special outbreak of diphtheria or change in age incidence and any special program to secure the protection of children against this disease. In calculating death rates, the 1940 census figures were used. Footnotes indicate corrections in rates for those cities for which the Bureau of the Census has prepared official estimates for years subsequent to 1940.

The practice of charging all deaths, both among residents and among nonresidents, against the individual city has been continued, with the inclusion of appropriate symbols similar to those employed in previous years. Such symbols indicate those cities in which either (1) all deaths from diphtheria were stated to be among nonresidents or (2) one third or more of such deaths were stated to be among nonresidents. Attention is directed to table 11, which lists forty cities (there were thirty-one in 1946) that record no deaths from diphtheria in 1947. In eleven additional cities (table 13) (Albany, N. Y., Atlanta, Ga., Charlotte, N. C., Fall River, Mass., Kansas City, Mo., Milwaukee, Nashville, Tenn., Omaha, Richmond, Va., Spokane, Wash., and Washington, D. C.,) it is stated that all deaths from diphtheria in 1947 were among nonresidents. In addition to the thirty-six cities (table 12) (there were twenty-seven in 1946) with no deaths from diphtheria or typhoid in 1947, eight cities (Albany, Charlotte, Fall River, Milwaukee, Nashville, Omaha, Spokane, Washington) report no deaths among residents from either cause.

The fourteen New England cities (table 1) (population 2,579,152) have failed during the past seven years to equal the low point of 6 deaths in 1940. The number of deaths in 1947 (15), however, is less than half that of the preceding year (36). The death rate for the group as a whole was 0.23 in 1940 and 0.58 in 1947 (1.40 in 1946). These cities find themselves in fifth place (they were in sixth place in 1946), the death rate being higher only in the Mountain and Pacific group (1.45), the East South Central group (1.31) and the West South Central group (1.02). In contrast to the 22 deaths (12 among nonresidents) which were recorded in Boston in 1946, in 1947 there occurred only 8 deaths (3 among nonresidents). Nine cities (Bridgeport, Conn., Cambridge, Mass., Hartford, Conn., Lowell, Mass., New Bedford, Mass., New Haven, Conn., Springfield, Mass., Worcester, Mass., and Waterbury, Mass.) record no death (there were only five such cities in 1946). It is stated that in Fall River the 1 death was among nonresidents. Of the 15 deaths in this group of cities, 4 were among nonresidents. While the number of deaths among residents has decreased from 19 in 1946 to 11 in 1947, the number of deaths among nonresidents has decreased from 17 in 1946 to only 4 in 1947. As these cities maintain a liberal policy with regard to hospitalizing patients from nearby communities, it is evident that such communities have not contributed so significantly to the problem of diphtheria in the larger cities. After a period of ten years with no death from diphtheria, Lynn, Mass., reports 1 among residents in 1947. It is stated that this death was of a single male office worker, aged 59. The cause of death was determined at autopsy. Waterbury records no death during the past nine years and Bridgeport none for eight years. Worcester reports for the past eight years only 2 deaths among residents (in 1946). New Haven records no death among residents for nine years. Lynn, after a period of ten years with no death from diphtheria or typhoid, relinquishes the place of honor (table 12) to Yonkers with no death from either cause for nine years (and Grand Rapids with no death for eight years). Bridgeport records no death from diphtheria or typhoid for six

Table 1.—*Death Rates of Fourteen Cities in New England States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1935-1939	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Bridgeport	0.0	0.0	0.0	0.0	0.8	1.2	11.8	19.6	23.4	23.3	26.8	34.2	63.9	79.3
Waterbury	0.0	0.0	0.0	0.0	1.4	2.4	2.6	17.9	23.0	29.6	....	....	....	....
New Bedford	0.0	0.0	0.9	0.5	0.4	5.0	10.9	16.5	17.0	20.9	22.6	25.1	53.6	70.0
New Haven	0.0	0.6*	0.0	0.1*	0.4*	0.7†	1.6	7.1	14.2	14.9	22.7	15.6	54.8	74.5
Springfield	0.0	0.7*	0.7	0.4	0.3*	2.1	10.3	15.4	24.9	19.1	31.3	29.6	51.3	68.2
Cambridge	0.0	0.9	0.0	0.4	0.3	1.2	3.2	8.9	12.9	23.8	25.3	46.7	71.9	58.0
Worcester	0.0	1.0	0.0	0.0	0.7†	3.3†	8.6	15.5	14.1	21.3	32.2	16.5	50.3	47.8
Hartford	0.0	1.8†	0.6*	0.5†	1.9†	1.1†	5.3	11.9	13.8	25.3	28.1	38.8	47.8	120.9
Lowell	0.0	2.0	0.0	0.8	2.8	9.4	10.6	16.7	23.5	20.6	31.0	59.3	44.3	36.4
Fall River	0.9*	0.0	0.0	0.9	2.4	3.6	12.0	25.5	23.6	24.0	34.4	50.1	43.8	46.9
Lynn	1.0	0.0	0.0	0.0	0.4	1.7	13.5	17.0	17.8	17.2	21.7	38.0	44.0	49.0
Somerville	1.0	2.9	0.0	0.2	0.4	9.3	5.7	19.7	20.2	21.4	21.5	40.5	57.8	37.4
Boston	1.0†	2.9†	0.5	0.4†	0.7†	3.2†	8.3	20.2	26.3	20.0	26.2	53.7	83.9	112.2
Providence	1.6	0.4*	0.4	0.9†	0.6†	5.1	9.5	15.8	29.3	26.8	30.7	41.2	53.5	55.3

* All deaths from diphtheria were stated to be in nonresidents.
† One third or more of the reported deaths from diphtheria were stated to be in nonresidents.

The preceding articles were published in The Journal Sept. 20, 1924, p. 918; April 25, 1925, p. 1269; April 3, 1926, p. 1005; April 30, 1927, p. 1396; May 19, 1928, p. 1621; May 25, 1929, p. 1759; June 7, 1930, p. 1838; May 23, 1931, p. 1768; May 7, 1932, p. 1644; May 20, 1933, p. 1595; May 26, 1934, p. 1758; June 15, 1935, p. 2182; June 13, 1936, p. 2060; June 26, 1937, p. 2200; Aug. 6, 1938, p. 524; May 20, 1939, p. 2043; May 11, 1940, p. 1875; Feb. 28, 1942, p. 714; Aug. 29, 1942, p. 1503; Aug. 14, 1943, p. 1079; July 27, 1946, p. 1053, and Aug. 30, 1947, p. 1540.

[1] Typhoid in the large cities of the United States in 1947: Thirty-Fourth Report, to be published.

years and Waterbury none for four years. Providence, R. I., reports 4 deaths from diphtheria and Somerville, Mass., 1, all among residents.

The eighteen cities (population 13,129,185) in the Middle Atlantic states (table 2) continue to hold first place. The group rate of 0.24 is lower than that of 1946 (0.38), but double the rate of 1944 (0.11), when these cities set an all-time low for any group. In 1946 there were 50 deaths, 9 among nonresidents. In 1947 there were 32 deaths, 5 among nonresidents. Thus the number of resident deaths has decreased from 41 in 1946 to 27 in 1947. For 1947 eleven cities (there were eleven in 1946, twelve in 1945) appear on the honor list (table 11), with no death from diphtheria (Elizabeth, N. J., Erie, Pa., Jersey City, N. J., Newark, N. J., Paterson, N. J., Reading, Pa., Rochester, N. Y., Scranton, Pa., Syracuse, N. Y., Utica, N. Y., and Yonkers, N. Y.). Elizabeth reports no death for eleven years and heads the honor list (table 10), Yonkers none for ten years, Syracuse none for eight years, Paterson and Utica none for six years, Reading none for five years and Newark none for four years. Rochester reports only 1 death (in 1946) among residents during the past thirteen years. It is stated that no death from either typhoid or diphtheria has occurred in Yonkers during the last nine years, none in Paterson for six years, none in Reading for five years, none in Elizabeth and Syracuse for three years and none in Erie, Jersey City and Newark for two years. Utica reports a single death from diphtheria for fourteen years. New York records 12 deaths for 1947, all among residents. There were 18 deaths in 1946, 15 among residents (15 in 1945, 9 among residents, and 6 in 1944, all among residents). Philadelphia records 7 deaths (6 in 1946 and 3 in 1945), all among residents. Pittsburgh, although on the honor roll in 1944 with no death, has failed to return to this position. In 1947 there were 2 deaths, 1 among nonresidents. In 1946 there were 5 deaths, 3 among nonresidents. Buffalo reports 5 deaths, 3 among residents. In 1946 there were 16 deaths, 15 among residents (in 1945, 3 deaths, and in 1944, 1 death). After a period of five years without a death from either typhoid or diphtheria, Albany records 1 death from diphtheria among nonresidents in 1947. After a period of three years without a death from either cause, Trenton, N. J., reports 3 deaths from diphtheria among residents in 1947. Camden, N. J., reports 2 deaths from diphtheria for 1947, 1 among nonresidents. It should be noted that the Pennsylvania Department of Health has not made tabulations for nonresidents for Reading and Scranton and these data are unobtainable from the local health officers.

Table 2.—*Death Rates of Eighteen Cities in Middle Atlantic States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1935-1939	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Syracuse	0.0	0.0	0.0	0.0	0.2*	0.1*	2.0	22.9	12.9	16.6	17.4	17.7	31.1	55.4
Yonkers	0.0	0.0	0.0	0.0	0.3	0.6	10.4	17.0	17.7	25.3	....	....	....	....
Elizabeth	0.0	0.0	0.0	0.0	0.5*	1.5	13.2	10.2	19.3	14.8	51.7	42.4	60.5	79.3
Newark	0.0	0.0	0.0	0.1	0.2	3.0	11.5	9.7	11.6	23.3	30.1	46.7	79.1	110.4
Paterson	0.0	0.0	0.0	0.1	0.9	6.3	9.1	18.5	13.5	16.1	25.5	52.9	111.8	145.4
Utica	0.0	0.0	0.0	0.2	0.0	1.2	13.1†	....	....	....	....	....	....	....
Reading	0.0	0.0	0.0	0.2	2.5	3.6	7.3	21.1	16.9	35.7	29.2	70.1	72.0	94.1
Jersey City	0.0	0.0	0.3	0.5	2.4	6.0	11.5	18.4	21.0	23.2	32.6	57.9	55.4	105.6
Erie	0.0	0.0	0.9	0.3	0.0	1.0	5.8	16.8	15.1	17.7	27.1	42.3	23.1	...
Rochester	0.0	0.3	0.0	0.1‡	0.0	0.7	7.5	16.9	12.7	22.1	32.4	32.3	45.9	96.6
Scranton	0.0	0.7	0.0	0.1*	0.7	1.7	11.7	12.3	22.1	23.4	....	....	77.8§	48.6§
New York	0.2	0.2	0.2*	0.1	0.6	2.2	10.7	14.0	21.8	28.0	10.0	58.0	85.8	134.4
Pittsburgh	0.3*	0.7*	0.4*	0.5	1.3	5.1	11.5	20.1	22.3	29.3	20.4	36.9	32.9	86.4
Philadelphia	0.4	0.3	0.1	0.1	0.5	1.3	11.8	16.7	22.7	21.6	34.1	50.0	100.6	119.4
Albany	0.8‡	0.0	0.0	0.3‡	0.2‡	3.0	7.5	12.8	10.4	20.0	31.6	26.9	....	....
Buffalo	0.9*	2.8	0.5	0.3	0.8*	1.9	9.1	24.0	27.3	22.0	18.4	24.8	53.5	60.9
Camden	1.7*	2.5*	0.0	1.5*	2.7	8.1*	21.9	20.3	23.2	38.8	18.9	52.6	93.8	194.0
Trenton	2.4	0.0	0.0	0.5	0.8	2.7	4.4	7.3	8.8	12.8	15.8	23.6	92.7§	89.7§

* One third or more of the reported deaths from diphtheria were stated to be in nonresidents.
† Incomplete data.
‡ All deaths from diphtheria were stated to be in nonresidents.
§ Deaths from diphtheria from Chapin's Municipal Sanitation.

Table 3.—*Death Rates of Ten Cities in South Atlantic States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1935-1939	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Norfolk	0.0	0.7*	0.0	0.7†*	2.4	4.6	4.1	4.3	4.1	6.7	17.0	....	....	....
Miami	0.0	1.2†	0.6	0.5	2.2†	3.5	5.4‡	....	....	....	....	....	....	....
Wilmington	0.0	2.7	1.8†	0.5†	1.6	6.2	10.9	11.6	15.2	18.0	27.8	50.9	84.9	83.8
Tampa	0.0	3.7	2.8	2.4†	3.1†	1.0	4.6	5.2	9.5‡	....	....	....	....	....
Washington	0.1§	0.6‖	0.3*§	0.2†	2.8	3.7	7.1	10.5	11.9	6.9	11.2	23.5	50.9	77.9
Baltimore	0.7¶	3.1†¶	2.9¶	1.2¶	1.0†	1.7	7.6	11.4	13.5	14.2	16.1	33.0	68.1	70.0
Richmond	1.0§¶	0.0	0.0	0.3†	1.7†	3.5†	6.9	9.8	5.8	7.0	9.8	24.4	17.6	59.7
Atlanta	1.0§	1.0†	0.7§	1.6†	4.6†	5.9†	7.0	13.3	10.1	12.5	14.2	11.1	10.5	8.8
Jacksonville	1.7†	1.1	2.3	2.1	2.4	5.5	6.0‡	....	....	....	....	....	....	....
Charlotte	4.0§	1.0§	6.0§	2.4†	6.0†	4.1	....	....	....	....	....	....	....	....

* Special census for 1941 gives rate of 0.4 for 1946 and 0.5 for 1941-1945 for Norfolk, and rate of 0.2 for 1945§ for Washington.
† *One third or more of the reported deaths from diphtheria were stated to be in nonresidents.*
‡ Incomplete data.
§ All deaths from diphtheria were stated to be in nonresidents.
‖ Special census for 1946 gives rate of 0.5 for 1946 for Washington.
¶ Special census for 1943 gives rate of 2.7 for 1945 and 2.9† for 1946 and 0.6 for 1947 and 1.1 for 1941-1945 for Baltimore and 0.9§ for 1947 for Richmond.

In 1940 Charlotte was added to the nine cities previously included in the South Atlantic states (table 3) (population 2,727,985). The figures for this city have been omitted in the tables for group comparison. The number of deaths in the original cities decreased to a new low of 15 deaths, the previous low being 17 in 1942. There were 46 deaths in 1946 and 39 in 1945. The rate has decreased from 1.68 in 1946 to 0.55 in 1947. The new rate is slightly lower than that of the New England cities (0.58). However, the South Atlantic group, in spite of the noteworthy improvement, is in fourth place. The number of deaths among residents has decreased from 32 in 1946 to 6 in 1947 (5 of these were in Baltimore and 1 in Jacksonville, Fla.). The number of deaths among nonresidents (9) exceeded those among residents (6). Four cities (there was only one in 1946) appear on the honor list (table 11), with no death from diphtheria (Miami, Norfolk and Tampa, Fla., and Wilmington, Del.). It is stated that the 3 deaths in Atlanta, 4 in Charlotte, 2 in Richmond and 1 in Washington, D.C., all occurred among nonresidents. Charlotte and Richmond have been without a death among residents for five years. Norfolk, Tampa and Wilmington record no death from either typhoid or diphtheria during the past two years. Baltimore reports a decrease in deaths from diphtheria. In 1947 there occurred 6 deaths (5 among residents), and in 1946 there were reported 27 deaths (19 among

Table 4.—*Death Rates of Nineteen Cities in East North Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1935-1939	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Grand Rapids	0.0	0.0	0.0	0.0	0.2	0.7	2.0	19.6	13.5	20.0	26.0	17.2	32.4	59.2
Peoria	0.0	0.0	0.0	0.2	3.8	5.3	4.9	7.4	10.8	10.6	10.9*	14.0	14.6	55.0
South Bend	0.0	0.0	0.0	0.4	1.0	1.3	....	....	....	....	....	....	....	....
Toledo	0.0	0.7	0.4	0.4†	1.1	2.7	7.2	22.4	14.1	25.4	20.4	50.8	34.6	59.3
Flint	0.0	0.7	0.7‡	0.8†	2.8	2.7	4.5	29.9	25.5	12.7	11.0	16.8	6.9	69.2
Youngstown	0.0	1.2	0.0	0.0	0.7	3.3	10.5	18.5	11.9	10.5	23.5	28.0	17.6	28.4*
Cleveland	0.1	0.1	0.7†	0.5†	1.0	2.5	15.3	14.7	20.0	24.6	20.8	42.6	45.3	95.7
Chicago	0.1	0.4	0.1	0.8	2.2	4.5	11.7	17.5	31.2	37.9	27.0	33.9	69.7	117.3
Milwaukee	0.2‡	0.5	0.2	0.2	0.4	2.1	8.5	11.4	19.3	27.8	26.4	22.7	51.7	116.2
Detroit	0.4†	0.2†	1.3	0.8	1.1	5.2	19.7	21.3	32.2	33.3	22.6	38.5	62.9	132.9
Akron	0.4	0.8‡	0.0	0.2	1.8	2.7	4.9	10.4	18.9	27.8	21.8*	....	....	...
Dayton	0.5	1.4†	2.4†	0.9†	4.3	3.6	4.0	9.4	9.3	22.1	13.3	17.2	27.4	32.9
Cincinnati	0.7†	0.7‡	0.9†	1.2	2.4†	3.1	5.2	10.6	13.2	13.9	17.0	17.3	37.3	103.7
Fort Wayne	0.8	0.0	0.0	0.3	1.9	4.0	5.1	13.1	6.3	....	....	....	....	....
Canton	0.9	0.0	0.0	0.0	0.7	1.7	2.9	17.5	15.1*	....	....	....	....	....
Columbus	1.0†	1.9	3.9†	1.1†	1.9	3.2	4.6	8.5	7.6	12.1	10.5	11.6	28.5	56.9
Indianapolis	1.0	2.1†	2.8	2.0†	3.6	2.9	6.6	11.7	21.4	13.5	13.3	15.9	30.4§	97.3§
Gary	1.8†	0.0	0.0	0.2	2.8	1.4	....	....	....	....	....	....	....	....
Evansville	2.0	8.2	0.0	0.2	1.8	3.5	3.7	13.9	11.9	16.1	21.2	13.8	18.1	69.7

* Incomplete data.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
‡ All deaths from diphtheria were stated to be in nonresidents.
§ Deaths from diphtheria from Chapin's Municipal Sanitation.

Table 5.—*Death Rates of Six Cities in East South Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1935-1939	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Knoxville	0.0	5.4*	17.3*	5.5*	8.2*	10.0	6.3	11.2	....	....	....	....	....	....
Birmingham	0.7*	0.7*	1.5*	1.0*	3.1*	4.4	5.4	5.3	7.2	8.3	6.2	13.4	16.5	76.3
Louisville	0.9	0.9*	0.9*	0.5*	2.2	6.2	4.6	10.4	9.5	9.0	. ..	....	39.0†	48.6†‡
Nashville	1.2§	0.0	3.6*	1.1*	4.5*	8.0	11.8	8.0	8.9	7.3	10.3	13.9	30.1	28.4
Chattanooga	2.3	0.0	3.1	2.2	4.0	6.8	5.9	8.7	8.9	....	....	....	....	....
Memphis	2.4*	0.7	1.4§	1.1*	2.2*	6.0	5.8	9.5	11.2	11.9	13.4	6.9	10.0	28.5

* One third or more of the reported deaths from diphtheria were stated to be in nonresidents.
† Deaths from diphtheria from Chapin's Municipal Sanitation.
‡ Incomplete data.
§ All deaths from diphtheria were stated to be in nonresidents.

Table 6.—*Death Rates of Nine Cities in West North Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1935-1939	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Des Moines	0.0	0.0	0.0	0.2	1.5	4.3	5.2	15.1	16.6	15.1	23.8*	....	....	....
Wichita	*0.0	0.0	0.0	0.3†	1.2	5.7	4.2	....	....	....	....	....	....	. ..
Kansas City, Mo	0.2‡	2.3	2.3†	0.8†	0.9	3.3	4.7	14.4	22.8	15.7*	....	....	....	....
St. Louis	0.4	0.5	0.1‡	0.4†	2.4†	4.8	10.3	16.1	24.4	23.7	19.4	43.3	62.9	67.7
Omaha	0.4‡	0.9	0.0	0.4	1.4	5.1	6.4	22.9	35.8	15.8	24.5	20.5	28.2	82.9
Minneapolis	0.4†	1.8	0.6	0.4	0.6	1.7	11.9	13.4	19.9	28.3	24.4	44.6	34.0	55.0
St. Paul	0.7	1.0	0.0	0.4†	0.2	1.0	5.2	17.5	20.7	31.4	31.1	27.9	43.3	75.4
Kansas City, Kan.	0.8	0.8	3.3	1.6	1.6	3.5	4.6	9.8	23.1	12.4*	....	....	....	....
Duluth	1.0	6.9†	1.0	0.4	0.2	0.4	2.0	6.0	10.2	8.8	38.2	29.1	7.6	19.5

* Incomplete data
† One third or more of the reported deaths from diphtheria were stated to be in nonresidents.
‡ All deaths from diphtheria were stated to be in nonresidents.

residents). The low point for Baltimore occurred in 1942, when there were only 2 deaths. Jacksonville records 3 deaths, 2 among nonresidents.

In obtaining data for the cities of the East North Central group (table 4), Gary, Ind., has been included since 1940. The figures for this city have been omitted in the tables for group comparison. The cities of this group (population 9,386,378) report only half as many deaths as in 1946 (28 in 1947 and 56 in 1946). The number of deaths among residents decreased from 42 in 1946 to 20 in 1947. The rate decreased from 0.60 in 1946 to 0.30 in 1947. This group of cities is again in second place. Together with the cities of the Middle Atlantic group, the West North Central group, the South Atlantic group and the New England group, there are now five groups (two in 1946) with a rate below 1.0 in 1947. Only six cities, however, report no death from diphtheria (Flint, Mich., Grand Rapids, Mich., Peoria, Ill., South Bend, Ind., Toledo, Ohio, and Youngstown, Ohio). There were also six cities on the honor roll in 1946, nine in 1945 and ten in 1942. It is stated that the 1 death in Milwaukee was among nonresidents. Grand Rapids reports no death for ten years, Peoria none for six years and South Bend none for three years. Canton, after a period of eight years with no death from diphtheria and a period of seven years with no death from either typhoid or diphtheria, records 1 death from diphtheria among residents in 1947. Gary, after a period of five years with no death from typhoid or diphtheria, reports 2 deaths from diphtheria, one among residents, in 1947. Youngstown records no death from typhoid and only 2 deaths from diphtheria (both in 1946) during the past six years. For ten years Fort Wayne has reported no death from typhoid and only 3 from diphtheria (1 in 1947, a girl aged 25). For ten years South Bend has reported only 1 death from typhoid (1 among nonresidents in 1944) and only 2 from diphtheria. Chicago records a decrease from 13 deaths in 1946 to 3 in 1947, all among residents (in 1945 there were 3 deaths and in 1943 there were 53). Detroit reports an increase in deaths from diphtheria from 4 (2 among residents) in 1946 to 7 (3 among residents) in 1947. Cincinnati records 3 deaths, 2 among residents; Cleveland reports 1 death among residents. The number of deaths in Columbus, Ohio, has decreased from 6 in 1946 to 3 in 1947 (2 among residents). Deaths in Indianapolis have decreased from 8 in 1946 (4 among residents) to 4 in 1947 (3 among residents). Akron and Dayton, Ohio, each report 1 death among residents.

TABLE 7.—*Death Rates of Eight Cities in West South Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1935-1939	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Fort Worth....................	0.0	0.0	5.6	2.8	3.9	7.2	10.8	1.7*	2.6*	2.6	2.8	5.4	....	....
Oklahoma City..............	0.0	0.5	2.4	0.8	2.0	5.7	10.9	....	....	....	....	....	....	....
Tulsa..........................	0.0	0.7	0.7	1.5	1.7	6.8	12.5	8.3*	....	....	....	....	....	....
El Paso.......................	0.0	1.0	1.0†	5.6‡	4.7	8.3	7.3	20.0	17.6	29.2	....	....	....	....
Dallas........................	0.7‡	0.0	1.7‡	1.7‡	4.6	10.0	9.8	8.3	7.4	6.9	8.1	16.9	16.0	21.8
New Orleans................	1.2‡§	2.4‡§	3.4‡§	2.5‡§	1.3‡	5.5	8.5	6.5	11.6	19.6	10.2	11.5	17.1	51.3
Houston......................	1.6‡	1.3	2.1	1.5	2.6	5.6	8.2	6.4	6.1	7.8	10.5	4.2*	2.4	1.8
San Antonio.................	2.7	2.7	1.6‡	2.6‡	4.1	5.7	10.3	7.7	8.7	6.7	7.6	17.1	20.6	1.4

* Incomplete data.
† All deaths from diphtheria were stated to be in nonresidents.
‡ One third or more of the reported deaths from diphtheria were stated to be in nonresidents.
§ Special census for 1943 gives rate of 3.1‡ for 1945 and 2.3‡ for 1946 and 1.1‡for1947 and 2.4‡ for 1941-1945 for New Orleans.

TABLE 8.—*Death Rates of Twelve Cities in Mountain and Pacific States from Diphtheria (Including Group) per Hundred Thousand of Population*

	1947	1946	1945	1941-1945	1935-1939	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Long Beach..................	0.0	0.0	0.6*	0.4*	0.4	0.8	2.6	10.4†	....	....	....	....	. .	....
Tacoma.......................	0.0	0.9‡	2.7*§	2.0*§	0.4‡	3.9	9.3	12.1	7.7†	....	....	....	....	....
Sacramento..................	0.0	3.8	7.0§	6.0§	3.1	4.1	....	....	....	....	....	....	....	....
Oakland.......................	0.3‖	2.0§‖	0.3	1.1*§	2.5	2.0	7.4	18.8	8.1	10.3	16.1	29.1	....	....
Portland......................	0.7§*	0.7‡	4.2*§	2.2*§	0.3	1.3	6.4	11.3	6.0	12.3	12.2	20.2	....	....
Spokane.......................	0.8‡	0.0	6.5§	2.0§	0.5	0.7	7.5	11.3	4.2	7.6	25.8	....	59.5¶	18.1
Seattle........................	0.8	2.4	3.5	2.1§	0.4	0.4	1.4	6.6	5.5	5.2	12.5	13.4†	27.2¶	....
San Francisco..............	0.9#	2.4#	1.9§#	1.1#	1.0	1.2	4.6	23.0	17.0	9.2	14.4	44.2	21.6	51.8
San Diego.....................	1.0‖	1.5§‖	3.4*§	2.6*	2.3	2.9	6.6	12.2	10.5	8.0	5.8	2.4	....	....
Los Angeles.................	2.1‖	1.8‖	0.7*	1.2	2.5	5.2	7.0	14.4	7.1	7.5	15.3	25.4	35.8	49.0
Denver........................	2.2*	2.2*	1.5§	1.9	3.3	3.0	8.9	23.2	6.7	10.2	20.8	29.6	27.3	130.2
Salt Lake City..............	4.7§	0.7	0.0	0.5	1.0	1.3	10.1	12.5	14.5	15.1	34.2	46.0	14.8	56.7†

* Special census for 1944 gives rate of 2.1 for 1946 and 2.1 for 1947 for Denver; rate of 0.5 for 1945 and 0.3 for 1941-1945 for Long Beach; rate of 0.6 for 1945 for Los Angeles; rate of 0.9§ for 1941-1945 for Oakland; rate of 3.6§ for 1945 and 0.5§ for 1947 and 2.0§ for 1941-1945 for Portland; rate of 1.7§ for 1945 and 1.8 for 1941-1945 for San Diego; rate of 2.3§ for 1945 and 1.8§ for 1941-1945 for Tacoma.
†Incomplete data.
‡ All deaths from diphtheria were stated to be in nonresidents.
§ One third or more of the reported deaths from diphtheria were stated to be in nonresidents.
‖ Special census for 1946 gives rate of 0.8§ for 1946 and 0.5 for 1947 for San Diego; rate of 1.5 for 1946 and 1.8 for 1947 for Los Angeles; rate of 1.5§ for 1946 and 0.2 for 1947 for Oakland.
¶ Deaths from diphtheria from Chapin's Municipal Sanitation.
# Special census for 1945 gives rate of 1.4§ for 1945 and 1.8 for 1946 and 0.7 for 1947 and 1.0 for 1941-1945 for San Francisco.

The cities in the East South Central states (table 5) (population 1,286,747) report an increase in deaths from diphtheria, but only among residents. In 1947, in this group of cities there were 17 deaths, with 8 among nonresidents (in 1946 there occurred 13 deaths, 9 among nonresidents; in 1945 there were 41 deaths, 25 among nonresidents). In 1943 this group reported a low of 8 deaths, only 2 of which were among residents.

The group rate increased from 1.01 in 1946 to 1.31 in 1947 (it was 3.18 in 1945; the low was 0.62 in 1943). In 1947 these cities are in seventh place (they were in third place in 1946 and in eighth place in 1945). One city (Knoxville, Tenn.) appears on the honor roll (table 11) with no death from diphtheria. This city also reports no death from typhoid in 1947 (table 12). It is stated that the 2 deaths in Nashville, Tenn., occurred among nonresidents. Following a period of two years with no death among residents, Memphis reports 7 deaths (2 among residents) in 1947. It should be emphasized that 5 of the 7 deaths in Memphis, Tenn., were among nonresidents. Chattanooga, Tenn., and Louisville, Ky., each record 3 deaths among residents. It is stated that of the 2 deaths in Birmingham, Ala., 1 was among nonresidents. The health officer of Chattanooga states that deaths among nonresidents are not tabulated and data from the Tennessee Department of Public Health is not yet available.

TABLE 9.—*Two Cities with Highest Diphtheria Rate for 1947*

Salt Lake City	4.7*
Charlotte	4.0†

* One third or more of the reported deaths from diphtheria were stated to be in nonresidents.

† All deaths from diphtheria were stated to be in nonresidents.

TABLE 10.—*Nineteen Cities with No Deaths from Diphtheria in 1946 and 1947*

Bridgeport 8*
Des Moines 4*
Elizabeth 11*
Erie
Fort Worth
Grand Rapids 10*
Jersey City
Long Beach
New Bedford
Newark 4*
Paterson 6*
Peoria 6*
Reading 5*
South Bend 3*
Syracuse 8*
Utica 6*
Waterbury 9*
Wichita 5*
Yonkers 10*

* Number of years for which there were no deaths from diphtheria.

TABLE 11.—*Forty* Cities with No Deaths from Diphtheria in 1947*

Bridgeport
Cambridge
Des Moines
Elizabeth
El Paso
Erie
Flint
Fort Worth
Grand Rapids
Hartford
Jersey City
Knoxville
Long Beach
Lowell
Miami
Newark
New Bedford
New Haven
Norfolk
Oklahoma City
Paterson
Peoria
Reading
Rochester
Sacramento
Scranton
South Bend
Springfield
Syracuse
Tacoma
Tampa
Toledo
Tulsa
Utica
Waterbury
Wichita
Wilmington
Worcester
Yonkers
Youngstown

* Thirty-nine without Sacramento.

TABLE 12.—*Thirty-Six* Cities with No Deaths from Diphtheria or Typhoid in 1947*

Bridgeport 6†
Cambridge
Elizabeth 3†
El Paso
Erie 2†
Flint
Grand Rapids 6†
Jersey City 2†
Knoxville
Long Beach 2†
Lowell
New Bedford 2†
Newark 2†
New Haven
Norfolk
Oklahoma City
Paterson 6†
Peoria 4†
Reading 5†
Rochester
Sacramento
Scranton
South Bend 3†
Springfield
Syracuse 3†
Tacoma
Tampa
Toledo
Tulsa
Utica
Waterbury 4†
Wichita 5†
Wilmington
Worcester
Yonkers 9†
Youngstown

* Thirty-five without Sacramento.

† Number of years for which there were no deaths from typhoid or diphtheria.

The nine cities in the West North Central states (table 6) (population 2,716,484) show a decrease in the diphtheria death rate (0.41 in 1947, 1.29 in 1946, 0.66 in 1945). The number of deaths has decreased from 35 (28 among residents) in 1946 to 11 (8 among residents) in 1947 (there were 18 in 1945, 10 among residents). The low point occurred in 1941, with a rate of 0.18 and 5 deaths (4 among residents). Only two cities (Des Moines, Iowa, and Wichita, Kan.) are on the 1947 honor roll (there were two in 1946, four in 1945). Wichita records no death from typhoid or diphtheria for five years. Des Moines reports no death from diphtheria for four years. It is stated that the 1 death from diphtheria each in Kansas City, Mo., and Omaha, occurred among nonresidents. St. Louis reports 3 deaths, all among residents (there were 4 such deaths in 1946 and none in 1945). Minneapolis records 2 deaths, 1 among residents (in 1946 there were 9 deaths, 7 among residents; in 1945 there were 3 deaths, all among residents, and in 1942 no deaths were recorded). St. Paul reports 2 deaths among residents (3 in 1946 and none in 1945); Duluth reports 1 among residents (7 in 1946, 4 among residents, but 2 deaths in the preceding ten years). The 1 death in 1947 in Kansas City, Kan., occurred among residents.

TABLE 13.—*Eleven* Cities in Which All Deaths from Diphtheria in 1947 Were Stated to Be in Nonresidents*

Albany
Atlanta
Charlotte †
Fall River
Kansas City, Mo.
Milwaukee
Nashville
Omaha
Richmond
Spokane
Washington

* Ten without Charlotte.

† All deaths among nonresidents for five years.

TABLE 14.—*Number of Cities with Various Diphtheria Death Rates*

	No. of Cities	40 and Over	20 and Over	10 and Over	5 and Over	Under 5	0.0
1890-1894	64	52	60	61	62	2	0
1895-1899	66	34	53	63	65	1	0
1900-1904	68	22	46	64	66	2	0
1905-1909	72	3	43	66	71	1	0
1910-1914	79	1	36	63	78	1	0
1915-1919	84	0	25	62	81	3	0
1920-1924	88	0	14	65	86	2	0
1925-1929	92	0	1	22	67	25	0
1930-1934	93	0	0	0	24	69	0
1935	93	0	0	2	17	76	19
1936	93	0	0	0	5	69	19
1937	93	0	0	0	3	70	20
1938	93	0	0	0	3	66	24
1939	93	0	0	0	2	59	32
1940*	93	0	0	0	0	53	40
1941*	93	0	0	0	1	53	39
1942*	93	0	0	0	1	59	33
1945*	93	0	0	1	2	54	36
1946*	93	0	0	0	3	60	30
1947*	93	0	0	0	0	54	39

* Charlotte, Gary and Sacramento omitted.

The eight cities of the West South Central states (table 7) (population 2,048,692) report 21 deaths, 11 among residents (there were 27 in 1946, 18 among residents, and 51 deaths in 1945, 33 among residents). This constitutes the lowest number of deaths for this group of cities. The group rate decreased from 2.48 in 1945 to 1.32 in 1946 to 1.02 in 1947. The group as a whole ranks in sixth place, the rates being higher in the Mountain and Pacific group (1.45) and the East South Central group (1.31). Four cities (El Paso, Texas, Fort Worth, Texas, Oklahoma City and Tulsa, Okla.) appear on the honor roll. El Paso, Oklahoma City and Tulsa report no death from typhoid or diphtheria in 1947, and Fort Worth reports none among residents. In three cities (Dallas, Texas, Houston, Texas, and New Orleans) it is stated that one third or more of the deaths from diphtheria occurred among nonresidents (1 of 2 in Dallas, 4 of 6 in Houston and 4 of 6 in New Orleans). Of 12 deaths in New Orleans in 1946, 7 occurred among nonresidents. One city (there were two in 1946 and four in 1945) reports a rate in excess of 2.0 (San Antonio, Texas). In 1947 San Antonio records 7 deaths, 6 among residents (the same as in 1946).

Table 15.—*Total Diphtheria Death Rates for Eighty-Eight Cities, 1923-1947* *

	Population	Diphtheria Deaths	Diphtheria Death Rate per 100,000 of Population
1923	31,060,818	4,078†	13.13
1924	31,722,841	3,439	10.84
1925	32,384,831	3,133	9.67
1926	33,046,827	3,106	9.40
1927	33,708,820	3,493	10.36
1928	34,370,813	3,176	9.24
1929	35,032,806	2,738	7.82
1930	35,719,180	1,827	5.22
1931	35,821,890	1,366	3.81
1932	35,916,317	1,191	3.32
1933	36,032,205	861	2.38
1934	36,160,434	821	2.27
1935	36,318,921	771	2.12
1936	36,549,325	551	1.51
1937	36,751,122	571	1.55
1938	36,956,409	467	1.26
1939	37,160,779	326	0.88
1940	37,309,215	225	0.60
1941	37,309,215‡	209	0.56
1942	37,309,215‡	256	0.69
1943	37,309,215‡	288	0.77
1944	37,309,215‡	252	0.68
1945	37,309,215‡	311	0.83
1946	37,309,215‡	329	0.88
1947	37,309,215‡	197	0.53
Rates for Ninety-Three Cities			
1935	37,025,179	789	2.13
1936	37,241,414	567	1.52
1937	37,459,339	583	1.55
1938	37,680,155	477	1.26
1939	37,900,854	330	0.87
1940	38,060,662	229	0.60
1941	38,060,662‡	213	0.56
1942	38,060,662‡	259	0.68
1943	38,060,662‡	293	0.77
1944	38,060,662‡	263	0.69
1945	38,060,662‡	321	0.84
1946	38,060,662‡	334	0.88
1947	38,060,662‡	200	0.53

* Five cities (Jacksonville, Miami, Oklahoma City, South Bend and Utica) are omitted from this summary because data for the full period are not available.

† Data for Fort Worth lacking.

‡ Census figures for 1940 used.

In 1940 Sacramento was added to the eleven cities included in the Mountain and Pacific group (table 8). The figures for this city have been omitted in the tables for group comparison. The original cities (population 4,186,039) report a decrease in the number of deaths from diphtheria (61 in 1947 and 71 in 1946). This is larger than the number of deaths (39) in 1941. The rate has decreased from 1.70 in 1946 to 1.45 in 1947. The group rate exceeds all other group rates for 1947 (table 16). Of the 61 deaths in 1947, 46 were among residents (52 among 71 in 1946). Three cities (Long Beach, Calif., Sacramento, Calif., and Tacoma, Wash.), with no death from diphtheria in 1947, are on the honor roll (table 11). Long Beach is the only city in this group that records no death from typhoid and diphtheria during the last two years (table 12). Sacramento and Tacoma report no death from either cause in 1947. It is stated that the 1 death from diphtheria in Spokane was among nonresidents. Two other cities (Portland, Ore., and Salt Lake City) record one-third or more deaths among nonresidents (1 of 2 in Portland and 4 of 7 in Salt Lake City). Three cities (Denver, Los Angeles and Salt Lake City) report rates in excess of 2.0. Adjusted to a 1945 census, the San Francisco rate is 0.7 (6 deaths). Adjusted to a 1946 census, the rate for San Diego, Calif., is 0.5 (2 deaths), the Los Angeles rate is 1.8 (32 deaths, 23 among residents), the rate for Oakland, Calif., is 0.2 (1 death). Adjusted to a 1944 special census, the rate for Denver is 2.1 (7 deaths) and that for Portland is 0.5 (2 deaths, 1 among residents).

Of the entire ninety-three cities there was none (three in 1946) with a rate in excess of 5.0 (table 14). This record has attained only in 1940. The number of cities with no deaths from diphtheria has increased from thirty in 1946 to thirty-nine in 1947. The largest number (forty) of cities found in this group was in 1940. For the eighty-eight cities (table 15) for which data are available since 1923, there occurred 197 deaths from diphtheria in 1947 (a new all-time low), 132 fewer deaths than in 1946. The previous low was 209 deaths in 1941. The rate for this group of cities remains for the ninth consecutive year less than 1.0. A new all-time low rate of 0.53 has been established. The rate for the ninety-three cities (0.53) is the same as that for the eighty-eight cities. The actual number of deaths (200) has decreased by 13 over the low of 1941. The decrease over a period of years has been impressive in all groups of cities. In comparing 1947 with 1946 the significant decreases have occurred in the New England, South Atlantic, East North Central and West North Central cities. Only the East South Central cities showed an increase. Diphtheria, like typhoid,

Table 16.—*Total Diphtheria Death Rates per Hundred Thousand of Population for Ninety-Three Cities According to Geographic Divisions*

	Population*	Deaths from Diphtheria		Diphtheria Death Rates				
		1947	1946	1947	1946	1941-1945	1935-1939	1930-1934
New England	2,579,152	15	36	0.58	1.40†	0.39	0.85	3.38
Middle Atlantic	13,129,185	32	50	0.24	0.38	0.19	0.65	2.50
South Atlantic	2,727,985	15	46	0.55†	1.68	0.95	2.18	3.54
East North Central	9,386,378	28	56	0.30	0.60	0.73	1.82	3.66
East South Central	1,286,747	17	13	1.31†	1.01†	1.50	3.37	6.56
West North Central	2,716,484	11	35	0.41	1.29	0.54	1.33	3.22
West South Central	2,048,692	21	27	1.02†	1.32	2.14	3.85	6.55
Mountain and Pacific	4,186,039	61	71	1.45	1.70	1.46	1.71	2.69

* Census figures for 1940 used.

† One third or more of the reported deaths from diphtheria were stated to be in nonresidents.

continues to approach the vanishing point. Health officials continue to encourage protective treatments for infants and preschool children and recommend booster doses at time of school admission and later in life when conditions indicate that it is desirable. Diphtheria can be eliminated through health education and parental understanding by extending programs for the protection of susceptible groups.

Clinical Notes, Suggestions and New Instruments

TREATMENT OF ABSCESSES WITH ASPIRATION AND PENICILLIN

HARRY J. COHEN, M.D.
New York

Incision and drainage is an accepted and fundamental surgical principle in the treatment of abscesses and of purulent collections in the body cavities. The introduction of penicillin has modified this, so that at present drainage of the purulent material by aspiration and replacement with penicillin in isotonic sodium chloride solution has cured the condition in many instances and obviated the need for surgical intervention.

The procedure was first employed in this series at Harlem Hospital, August 1944, in the treatment of a newborn infant in whom numerous discreet nodular infections developed secondary to an infected scalp wound. Although sulfonamide drugs were administered orally for eleven days, the infant's temperature remained elevated, up to 102 F., and new nodules continued to appear. There were many nodules, and they were distributed on the entire back, buttocks, abdomen, thighs and legs. Blood cultures were negative on two occasions. As there was no response to the treatment with sulfonamide drugs, this was discontinued and penicillin therapy was started. The dose was 10,000 units given intramuscularly every three hours. The temperature returned to normal in two days, and the child's condition was much improved. Many of the hardened nodules were absorbed, while others became much larger and fluctuant, typical of subcutaneous abscesses. The surgical service in consultation advised incision and drainage of these abscesses. Since there were so many of them and since they were so widely distributed on the entire body, especially the back, buttocks and thighs, the problem of dressings and nursing care would have been extremely difficult. The conservative treatment of aspiration and replacement with penicillin was therefore deemed advisable. The abscesses were aspirated by means of a large bore needle attached to a syringe, and the purulent material was replaced with a solution of penicillin. Usually one aspiration and treatment with penicillin per abscess cavity was sufficient to cause absorption and healing of the abscess. At the outset the aspirated material showed Staphylococcus albus on culture; later, material of many aspirations was sterile. The temperature remained normal for about one week, and the intramuscular administration of penicillin was discontinued. [illegible] the child [illegible] no scarring of the body.

The procedure as practiced in the preceding instance and in the other cases in this series is described.

TECHNIC

Penicillin is administered for a few days until the infection has become localized. It may be given either orally, intramuscularly in oil and wax or, preferably, intramuscularly in solution every three hours. When fluctuation is evident and the abscess is soft, aspiration is performed by means of a 20 cc. Luer syringe attached to a 1½ inch (3.8 cm.) 18 gage needle. The needle is inserted into the most fluctuant area, and as much of the pus is aspirated as is possible. With the needle in situ, the syringe is detached and another syringe, containing 25,000 units penicillin per cubic centimeter of solution, is then attached to the needle in situ in the abscess cavity. The penicillin is injected into the cavity, causing it to be distended and become cystic again. The needle is removed, and firm pressure is applied for about a minute, to prevent leakage of the penicillin solution from the puncture wound made by the needle. Varying amounts of pus have been removed, in the average abscess about 3 to 5 cc., and this has been replaced by about an equal amount of penicillin solution. From experience, it seems preferable to wait until the abscess is rather soft, even though it may seem ready to open spontaneously; this method has yielded excellent results. The cystic swellin [illegible] to rep[illegible] this is unnecessary, as usually one treatment is sufficient and after about a week the mass is gradually absorbed.

COMMENT

The principle of this treatment is the same as in the direct instillations of penicillin into infected cavities after aspiration as practiced by others. It has been used in infected pleural and peritoneal cavities, bursae, bartholinian abscesses,[1] suppura- [illegible] in the closed treatment of acute [illegible]

The advantages of the treatment are numerous, and it is a valuable addition to the pediatrician's armamentarium. It can be performed in the office or home. Neither local nor general anesthesia is required, as the procedure is not painful. The method is especially useful in children, because it has elim[illegible] to [illegible] thighs and buttocks, exposed to the excreta, and with the older technic it was impossible to keep wounds clean, prevent contamination and secondary abscesses. It has greatly facilitated nursing care, and the children are not subjected to repeated painful dressings. In infections about the face and neck, where the prevention of scar formation is desirable, the cosmetic results have been gratifying. This was seen in two severe infections on the face and in several instances of cervical adenitis, in which no evidences of the previous infection remained after cure. No disadvantages have been encountered except for an occasional urticarial reaction due to sensitivity to penicillin.

Fifteen children suffering from abscesses of various parts of the body were treated by the method outlined. The results were uniformly successful; all were cured, and none of the abscesses required subsequent incision and drainage. The youngest patient was a premature infant, aged 3 weeks, who had a large abscess of one of the buttocks. Two children had multiple abscesses, and they were treated in the same manner. Six of the children suffered from acute cervical adenitis and then presented suppuration. The causative organisms were Staph. albus, Staphylococcus aureus, Streptococcus hemolyti- [illegible] er possible there was [illegible] r sulfadiazine or penicillin. Two patients were encountered that presented themselves too late for preliminary treatment, as the abscesses were ready for drainage. This was performed, and the penicillin instilled into the abscess cavities. The local condition became completely resolved. It is preferable to institute both predrainage and postdrainage systemic treatment, the latter being continued until the temperature is normal for about three days and the local condition shows evidence of the resolution of the abscesses.

SUMMARY

Abscesses of various parts of the body were treated by aspiration of the purulent material, and this was replaced with a solution of penicillin in isotonic sodium chloride solution. Fifteen patients were treated, with excellent results.

975 Walton Avenue.

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1. Goldberger, M. A., and Lapid, L. S.: Office Procedure in Applying Penicillin Therapy to Acute Suppurative Bartholinitis, New York State J. Med. 47: 984 (May 1) 1947.

2. Feffer, H. L., and Hirsh, H. L.: Pneumococcic Arthritis: Report of a Case Treated with Penicillin, Ann. Int. Med. 25: 945 (Nov.) 1946.

3. Higgins, T. T.; Browne, D., and Bodian, M.: A Penicillin Treated Series of Cases of Osteomyelitis in Childhood, Brit. M. J. 1: 757 (May 31) 1947.

From the Pediatric Service of Lebanon Hospital and the Pediatric Service of Harlem Hospital, Dr. Morris Gleich, Director.

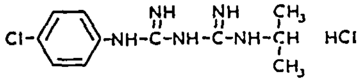
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for Admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

Austin Smith, M.D., *Secretary.*

CHLORGUANIDE HYDROCHLORIDE. Guanatol-Lilly.--N^1-(*p*-chlorophenyl)- N^5-isopropylbiguanide hydrochloride.--$C_{11}H_{16}N_5Cl.HCl$.--M. W. 290.2. The structural formula of chlorguanide hydrochloride may be represented as follows:



Actions and Uses.- Chlorguanide hydrochloride is useful for the prophylaxis, suppression and treatment of malignant tertian (Plasmodium falciparum) malaria and for the suppression and treatment of benign tertian (Plasmodium vivax) malaria with the strains so far studied. The drug is only partly effective in preventing attacks of vivax malaria, since erythrocytic forms appear in the blood a short time after the drug is withdrawn. Other antimalarial drugs such as chloroquine or quinacrine are said to be preferred in the treatment of vivax malaria. Chlorguanide hydrochloride is the drug of choice for the treatment of falciparum malaria.

Chlorguanide hydrochloride disappears from the plasma in about 48 hours after the administration of a single dose of 0.5 Gm. About one half to one third of the drug is excreted by the kidneys. The drug does not accumulate in the body when given in therapeutic doses.

Toxic symptoms are not observed in the usual dosage regimen, but doses of 1 Gm. or more may produce vomiting, abdominal pain and diarrhea. Excessive doses may produce transient hematuria, epithelial cells and casts in the urine. Intramuscular injection of chlorguanide hydrochloride may result in local myonecrosis and inflammatory reactions. High doses may also produce a temporary myelocytic reaction in the blood.

As with other antimalarial agents, the response of various strains of plasmodia to the drug is variable, so that the average dosage schedule which is indicated may be subject to modification in accordance with the response of the strain involved.

Dosage.-A single dose of 0.3 Gm. weekly in the suppression of falciparum and vivax malaria. For the prophylaxis of falciparum malaria, 0.1 Gm. twice a week may be given; this dose is only partially effective against vivax malaria.

A dose of 0.1 Gm. three times daily, or 0.3 Gm. daily, for ten days is usually effective in producing a cure of falciparum malaria. The same dose is usually only partially effective against vivax malaria.

Tests and Standards.-Chlorguanide hydrochloride occurs as odorless, colorless, fine crystals or as a crystalline powder possessing a bitter taste. It is soluble in alcohol, slightly soluble in water and practically insoluble in chloroform and in ether. The pH of a filtered saturated solution is between 5.8 and 6.3. Chlorguanide hydrochloride melts between 248 and 252 C. It exhibits an ultraviolet absorption maximum at 2590 Angstroms when dissolved in ethyl alcohol ($E^{1\%}_{1cm.} = 690 \pm 7$).

Prepare 50 cc. of a saturated solution of chlorguanide hydrochloride in water and divide into five portions in separate test tubes. To one portion add 1 cc. of diluted nitric acid and 1 cc. of silver nitrate T.S.: a white precipitate forms. To another portion add 5 drops of iodine T.S.: an orange-brown precipitate forms. To another portion add 5 drops of potassium ferrocyanide T.S., rendered slightly acid to litmus with diluted nitric acid: a white precipitate forms which is soluble on addition of a few drops of diluted nitric acid. To another portion add 5 drops of a slightly acid solution of potassium dichromate T.S.: a yellow precipitate forms which is soluble in a few drops of diluted nitric acid. To another portion add bromine T.S., dropwise: a yellow precipitate forms which immediately redissolves on mixing; on addition of an excess of bromine T.S. a permanent orange precipitate forms.

Dissolve about 100 mg. of chlorguanide hydrochloride in 25 cc. of water in a separatory funnel and add 10 cc. of tenth normal sodium hydroxide. Extract the precipitated chlorguanide base with 25 cc. of ether. Separate, filter the ether extract, evaporate to near dryness, and dry the residue at 100 C.: the residue melts between 130 and 135 C.

Dry about 1 Gm. of chlorguanide hydrochloride, accurately weighed, at 100 C. for 3 hours: the loss in weight is not more than 0.3 per cent. Ash about 0.5 Gm. of chlorguanide hydrochloride, accurately weighed, in the presence of sulfuric acid: the residue is not more than 0.1 per cent.

Transfer about 0.2 Gm. of chlorguanide hydrochloride to an Erlenmeyer flask; add 50 cc. of water and dissolve the solid. Add 1 cc. of nitric acid and exactly 40 cc. of fiftieth-normal silver nitrate. Add 3-5 cc. of nitrobenzene and swirl the flask to entrap the precipitated silver chloride. Add 3 cc. of ferric ammonium sulfate T.S., and titrate with fiftieth-normal ammonium thiocyanate. Each cc. of fiftieth-normal silver nitrate is equivalent to 0.709 mg. of chlorine. The readily ionizable chlorine content is not less than 11.5 per cent nor more than 12.3 per cent, calculated to the dry substance.

Determine the nitrogen content of chlorguanide hydrochloride by the Kjeldahl method: the nitrogen content is not less than 23.5 per cent nor more than 24.5 per cent, calculated to the dry substance.

Transfer about 0.2 Gm. of chlorguanide hydrochloride to a separatory funnel, add 25 cc. of water and 10 cc. of sodium hydroxide T.S. Extract the precipitated chlorguanide base with successive 30 cc., 25 cc., 10 cc., 10 cc. and 10 cc. portions of ether. Combine the ether extracts, wash with 10 cc. of water and filter the ether solution through a cotton pledget. Evaporate the combined ether extracts in a tared beaker using a stream of warm air. Dry the residue at 100 C. for 1 hour: the weight of the residue is not less than 85.7 per cent nor more than 89.2 per cent, calculated to the dry substance.

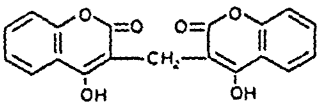
ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Tablets Chlorguanidine Hydrochloride: 0.1 Gm. and 0.3 Gm.

ELI LILLY & COMPANY, INDIANAPOLIS, INDIANA

Tablets Guanatol Hydrochloride: 25 mg., 50 mg. and 100 mg.

DICUMAROL.—3,3'-methylenebis(4-hydroxcoumarin).—$C_{19}H_{12}O_6$.—M. W. 336.286. The structural formula of "dicumarol" may be represented as follows:



Actions and Uses.—"Dicumarol" causes a lengthening of the prothrombin time by decreasing the prothrombin concentration of the blood. Although the exact mode of action is not known, it is assumed that the drug acts on the liver to retard prothrombin production, since the circulating prothrombin present in blood is not affected in vitro by the addition of "dicumarol"; the effect of the drug requires 12 to 24 hours to develop and persists for from 24 to 72 hours after discontinuance of therapy.

"Dicumarol" may be used in the prophylaxis and treatment of intravascular clots. It may be used alone or as an adjunct to heparin in the treatment of postoperative thrombophlebitis and pulmonary embolism, acute embolic and thrombotic occlusion of peripheral arteries and recurrent idiopathic thrombophlebitis.

"Dicumarol" does not affect thrombi or emboli already present, nor does it increase the local blood supply of an area affected by an embolism. The drug can only be expected to retard further intravascular clotting and prevent propagation of the thrombus or embolus.

Since the ultimate outcome of acute coronary thrombosis is to a large extent dependent on extension of the clot and on the formation of mural thrombi in the cardiac chambers with subsequent embolization, "dicumarol" has been used as an adjunct in the treatment of this condition.

Dosage.—On the first day the prothrombin time is determined to insure that it is not abnormally high. One dose of 200 to 300 mg. is given, depending on the size and condition of the patient. On the second day the per cent prothrombin is determined, and a second dose of 100 to 200 mg. of the drug is given only if the prothrombin activity is more than 25 per cent. On successive days 100 to 200 mg. is administered if prothrombin activity is more than 25 per cent.

If prothrombin activity drops below 15 per cent, or if signs of bleeding appear, menadione sodium bisulfite 72 mg. is given intravenously slowly. This may be given along with transfusions of fresh whole blood.

Tests and Standards

"Dicumarol" occurs as a white or slightly buff-colored crystalline powder. It melts in the range 287-293 C. It is soluble in aqueous alkali and in pyridine, slightly soluble in benzene and in chloroform, and practically insoluble in water, alcohol and ether.

Dissolve 0.1 Gm. of "dicumarol" in 10 cc. of sodium hydroxide T.S. and allow the solution to stand: the solution gradually darkens and eventually becomes dark brown.

Dissolve 0.2 Gm. of "dicumarol" in 5 cc. of hot pyridine. Cool, and add 2 cc. of acetic anhydride. After crystallization is complete, filter, wash with ethanol and recrystallize from benzene. The product melts between 249-252 C. with decomposition.

Suspend 0.1 Gm. of "dicumarol" in 10 cc. of water, heat to boiling and filter while hot. Cool the filtrate and add 2 drops of silver ammonium nitrate T.S. to 5 cc. of the clear filtrate: no precipitate forms (*absence of formaldehyde and chlorides*).

Add 1 drop of ferric chloride T.S. to the remaining 5 cc. of filtrate: no color develops (*absence of salicylates and 4-hydroxycoumarin*).

Dry 0.5 Gm. of "dicumarol," accurately weighed, for 2 hours at 100 C.: the loss in weight does not exceed 0.5 per cent.

Dissolve 1 Gm. of "dicumarol" in enough sodium hydroxide T.S. to give complete solution, and dilute to 20 cc. with water. Add 5 drops of 10 per cent sodium sulfide solution: *no more turbidity develops than corresponds to 30 ppm. of lead* (*U.S.P. XIII*).

Ash about 0.2 Gm. of "dicumarol," accurately weighed: the amount of residue is negligible.

Transfer about 0.3 Gm. of "dicumarol," accurately weighed, to a 100 cc. beaker. Add 5 cc. of sodium hydroxide T.S. and then dilute with water to about 50 cc. Acidify with diluted hydrochloric acid, cool in an ice bath and filter while cold through a tared Gooch crucible. Wash with a small amount of ice water and dry at 100 C. to constant weight: the "dicumarol" content is not less than 97.5 per cent or more than 102.5 per cent.

DICUMAROL TABLETS:

Weigh 20 "dicumarol" tablets and grind them to a powder. Weigh accurately sufficient powder to give a *sample equivalent to about 50 mg. of "dicumarol."* Add 50 cc. of distilled water and 10 cc. of diluted ammonia solution to the sample stir and allow to stand 10 minutes with frequent stirring. Filter and wash the filter with water. Acidify with diluted hydrochloric acid, cool in an ice bath and filter onto a tared Gooch crucible wash with a few cc. of ice cold water. Dry to constant weight at 100 C: the "dicumarol" content is not less than 95 nor more than 105 per cent of the claimed amount.

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Tablets Dicumarol: 25 mg., 50 mg. and 0.1 Gm.

THE WM. S. MERRELL COMPANY, CINCINNATI

Tablets Dicumarol: 100 mg.

U. S. trademark 398,198. ("Dicumarol" is the Alumni Research Foundation for the anticoagulant collective trademark registered by the Wisconsin 3,3'-methylenebis(4-hydroxycoumarin).

ASCORBIC ACID-U.S.P. (See New and Nonofficial Remedies 1947, p. 517).

The following dosage form has been accepted:

COLE CHEMICAL CO., ST. LOUIS

Tablets Ascorbic Acid: 25 mg. and 100 mg.

ESTROGENIC SUBSTANCES (WATER INSOLUBLE) (See New and Nonofficial Remedies 1947, p. 343).

The following additional dosage form has been accepted:

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Aqueous Solution Estromone: 20,000 I.U. per cc., 1 cc. ampuls and 5 cc. vials. Preserved with phenol 0.5 per cent with tri-isopropanolamine 0.5 per cent, in solution sodium chloride 0.9 per cent.

U. S. trademark 345,724, May 4, 1937.

SYNTROPAN (See New and Nonofficial Remedies, 1947, p. 240).

The following additional dosage form has been accepted:

HOFFMANN-LaROCHE, INC., NUTLEY, N. J.

Tablets Syntropan: 100 mg.

CONTRACEPTIVE JELLIES AND CREAMS (See New and Nonofficial Remedies, 1947, p. 271).

The following additional dosage form has been accepted:

HOLLAND-RANTOS CO., INC., N. Y.

Koromex Cream: 113 Gm. tubes.

THIAMINE HYDROCHLORIDE-U.S.P. (See New and Nonofficial Remedies 1947, p. 506).

The following dosage form has been accepted:

KREMERS-URBAN CO., MILWAUKEE

Tablets Thiamine Hydrochloride: 3 mg. and 10 mg.

CHINIOFON-U.S.P. (See New and Nonofficial Remedies 1947, p. 186).

The following dosage forms have been accepted:

ERNST BISCHOFF CO., IVORYTON, CONN.

Anaydin *(Powder)* : 25 Gm. and 100 Gm. bottles.

Pills Anayodin: 0.25 Gm., enteric coated with shellac and magnesium stearate.

U. S. Patent 232,215

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following reports. HOWARD A. CARTER, *Secretary.*

DYSONIC HEARING AID, MODEL I, ACCEPTABLE

Distributor: Dynamic Hearing Aids, Inc., 43 Exchange Place, New York 5.

The Dysonic Hearing Aid can be used either with microphone, amplifier and batteries in a single case or with the batteries in a separate case. The case is of drawn aluminum. The upper section carries the microphone and amplifier. Two interchangeable lower sections are provided, one of which carries the power supply of the instrument when used as a single unit. It is replaceable by a light lower section containing connections for separate batteries. It can be used with either crystal or magnetic receivers and for either bone or air conduction.

Dimensions And Weight

Single Unit: 146 by 60 by 25 mm. (5 3/4 by 2 3/8 by 1 inch); 200 Gm. (7 ounces).

Two Piece Unit:

Microphone: 95 by 60 by 25 mm. (3 3/4 by 2 3/8 by 1 inch); 120 Gm. (4.2 ounces).

Batteries: Total weight 285 Gm. (10 oz.).

A Diameter 25 mm., length 95 mm.

B 76 by 64 by 24 mm. (3 by 2½ by 15/16 inch).

Battery Data for Single Unit

Type of Cell	Voltage	Current Drain (Milliamperes)
A Mercury	1.3	55.0
B Carbon-zinc	22.5	0.2
A Carbon-zinc	1.4	62.0
B Carbon-zinc	33.0	0.85

Acoustical Gain

Measurements were made with only a few of the many possible combinations of receivers, volume and control settings, and B battery voltages. Gains in decibels in the sound pressure level in a 2 cc. coupler over that on the face of the microphone for a few typical settings are tabulated below. The B battery was delivering 33 volts, the volume control was three-fourths full on, and the input level was 0.02 dyne per square centimeter. Seven frequencies were tried.

Frequency (Cycles Sec.):	256	512	1,024	1,200	2,048	3,100	4,096	
Crystal receiver								
Tone control 1 dot	30	38	48	55	40	48	45	db.
Tone control 2 dots	26	32	44	51	35	42	38	db.
Tone control 3 dots	26	32	42	49	29	31	26	db.
Magnetic receiver								
Tone control 1 dot	39	43	59	58	56	28	18	db

Spot checks with other combinations showed that the acoustical gain was sufficient to meet the requirements for acceptance.

Approximate values of the maximum pressure levels set up in the 2 cc. coupler with a 33 volt B battery and the magnetic receiver are shown as follows:

Frequency Cycles/Second	Input Level Decibels	Output Level Decibels
500	55	109
1,024	70	122
2,048	70	113

The usual syllable and articulation tests were made with a hard-of-hearing subject, using the single unit arrangement and the magnetic receiver:

Receiver Magnetic	Test Syllables	Test Sentences
Air conduction	94 per cent	100 per cent
Bone conduction	90 per cent	98 per cent

The whispered voice was heard and understood at a distance of 5 feet (152 cm.) by a hard-of hearing subject with an average hearing loss of 45 decibels in the speech range.

The Council on Physical Medicine voted to include the Dysonic Hearing Aid, Model I in its lists of accepted devices.

DICKSON PARAFFIN BATH WITH DRAIN MODELS BB, D2, DD AND E ACCEPTABLE

Manufacturer: Thermo Electric Company, 1012 West Superior Avenue, Cleveland 13.

The Dickson Paraffin Bath consists of a tub enclosed in insulating material which in turn is contained in an outside casing. The tub contains from 8 to 40 Kg. (18 to 90 pounds) of a mixture of paraffin and oil that can be melted and kept warm by an electric heating device. The heating elements are at the bottom of the tub and are covered with a special composition cement baked onto the tub. The elements consist of (A) a melting element of approximately 1,300 watts controlled by a time switch and a high limit control and (B) a maintenance element controlled wholly or in part by a close differential thermostat designed to hold the temperature of the paraffin to within 2 degrees C. of the set temperature.

The tub is mounted either on a stand or in a table. The four models differ in the size and shape of the tank as well as in the type of mounting. The differences are indicated in the accompanying table:

Comparison of Models of the Dickson Paraffin Bath

	Model BB		Model D2		Model DD	
Mounting	Stand		Four caster on base		Stand	
	Mm.	(In.)	Mm.	(In.)	Mm.	(In.)
Over-all height (of tank)	368	(14½)	559	(22)	343	(13½)
Over-all length (of tank)	787	(31)	559	(22)	457	(18)
Over-all width (of tank)	381	(15)	483	(19)	260	(10¼)
Wattage required by element	1,100 watts		1,300 watts		500 watts	
Controls for element	Time switch and high temp. control		Time switch and high temp. control		Toggle switch and high temp. control	
Drain	Optional		Optional		No drain	
Shipping weights	Kg.	(Lb.)	Kg.	(Lb.)	Kg.	(Lb.)
Paraffin bath*	45.3	(100)	59.0	(130)	19	(42)
Stand*	11.8	(26)	—	—	10	(22)
Paraffin*	29.0	(64)	45.3	(100)	In bath	

* Packed to ship.

Model E follows the same specifications as model BB except that the tank is mounted in a massage table. The drain, supplied optionally, is in one end of the bath. It consists of a shutoff cock, an outlet at the front end of the bath, and a special element with special wiring to a thumb switch that insures clearing the drain of solidified paraffin. The drain is a convenience in keeping the bath clear of the sediment and perspiration that settle to the bottom

The apparatus was investigated in a clinic acceptable to the Council and was found satisfactory. The Council on Physical Medicine voted to include the Dickson Paraffin Bath with Drain, Models BB, D2, D3 and E, in its list of accepted devices.

1947 MEARS AUROPHONE, MODEL 98, ACCEPTABLE

Manufacturer: Mears Radio Hearing Device Corp., 1 West Thirty-fourth Street, New York.

This hearing aid, also called the " New Patented Auropac, " is a vacuum-tube type of instrument, with A and B batteries contained in a separate zipper case of black leather. The microphone and amplifier case of moulded plastic is cylindrical in shape and carries a single rotary control for volume and on and off switch. The off position is not marked.

Two receivers were supplied with the instrument sent to the Council investigator for examination.

Dimensions and Weight.—Microphone and amplifier case: 76 mm. (3 inches) in diameter, with 13 mm. (½ inch) connector plug, 25 mm. (1 inch) thick; weight, 128 Gm. (4½ ounces).

Battery case with 22½ volt B battery: 67 by 64 by 25 mm. (2 5/8 by 2½ by 1 inch); weight 142 Gm. (5 ounces).

Battery case with 30 volt B battery: 64 by 76 by 29 mm. (2½ by 3 by 1 1/8 inches); weight 184 Gm. (6½ ounces).

Battery Data

	Voltage	Current	
A battery (zinc-carbon)	1.5 volts	64 to 66 milliamperes	
B battery (zinc-carbon)	22.5 volts	0.2 milliampere	(no sound)
		0.5 milliampere	(squealing)
	30.0 volts	0.5 milliampere	(no sound)
		0.9 milliampere	(squealing)

Acoustical Gain

Measurements of the gain in decibels in the sound pressure level set up in a 2 cc. coupler over the sound pressure level at the face of the microphone were made at nineteen frequencies between 200 cycles and 4,096 cycles for an input level of 50 decibels measured on the B scale of a General Radio sound level meter.

The following table states in decibels the acoustical gain measured for two different B batteries at each of seven different frequencies, when the volume-control was at three-fourths full:

Condition	256	512	1,024	1,200	2,048	3,100	4,096
30 volt B battery, large receiver	51	45	55	56	45	40	35 db.
22½ volt B battery, small receiver	44	35	48	49	35	30	23 db.
30 volt B battery, small receiver	45	39	47	56	47	34	24 db.

The Council on Physical Medicine voted to include the 1947 Mears Aurophone, Model 98, in its list of accepted devices.

MAICO MODEL R S GROUP PHONOGRAPHIC AUDIOMETER ACCEPTABLE

Manufacturer: The Maico Company, Inc., Maico Building, North Third Street, Minneapolis 1.

The Maico Model R S Group Phonographic Audiometer is designed for preliminary screening hearing tests, to meet the need for devices that will save the otologist the time and effort of administering individual tests to large groups in which the expected incidence of hearing defects is low. It is understood that a more complete audiometric test will thereafter be given to those who miss many of the test words.

The instrument consists of a synchronous self-starting motor, a crystal pick-up, an amplifier, a carrying case and one to four trays containing ten to forty magnetic earphones with head bands. It operates from a 115 volt, 60 cycle line and consumes 35 watts.

Each of the four trays of phones, which may be purchased with the instrument, is plugged into a separate output jack. These jacks are connected in such a way that if one tray of phones is disconnected, an equivalent load is placed across the jack terminals so that the output level in the other air receivers will not be affected.

The Model R S Phonograph is designed for use with the Maico Group Hearing Test Record of Fading Numbers, Serial numbers 2109-2110. The test words on these records in each of the eight columns vary in output level from 30 decibels above the threshold of hearing to 3 decibels below the threshold in steps of 3 decibels. Half of the columns are a woman's voice and the other half a man's voice. The calibration of the R S Phone was originally determined by hearing survey tests conducted in Maico's soundproof room on more than 30 persons with normal hearing. Test standards have been set up so that all Maico R S Phonographic Audiometers will have the same calibration within plus or minus 2 decibels when they leave the factory.

The specimen submitted by the firm was examined by a special investigator for the Council, who not only studied its construction but also compared the results it gave with those from two other audiometers in a trial in which 1,000 school children of various ages were used. One of the last-named audiometers was phonographic, the other was of the pure tone type.

The investigator reported that the Maico instrument was constructed sturdily and compactly, that the receivers were of high quality and that the cords, contacts and other accessories were able to stand rugged service He stated that the design showed careful planning to insure consistent performance. He found that any single receiver could be removed easily for repair without tying up a whole tray of receivers or affecting the output of the remaining phones. He noted that the special test recording of a 1,000 cycle tone makes it possible to carry out a quick, rough check of the receivers, and that there is a special variable set screw with which the proper calibration of the equipment can be maintained in the field using the special test record just referred to and a meter supplied by the manufacturer. He remarked that this model has the weakness of not selecting high frequency loss cases which is inherent in all equipment of the phonographic type, but at present this type of screening testing is recognized and in common use; the present model overcomes some conditions which in the past made this type of testing less satisfactory than it could have been.

The Council on Physical Medicine voted to include the Maico Model R S Group Phonographic Audiometer in its list of accepted devices.

THE JOURNAL OF THE
AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street - - Chicago 10, Ill.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Twelve dollars per annum in advance

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SATURDAY, AUGUST 21, 1948

EDITORIAL ANNOUNCEMENT

The compositors returned to work on Monday, June 28. This issue of The Journal has been prepared in part by the use of Vari-Typer machines.

THE PROBLEMS OF VAGOTOMY

Most of the older reports of vagotomy in animals, written before 1900, says Alvarez,[1] are of little value today because experimenters cut the vagi so high in the neck or the thorax that they destroyed fibers supplying the larynx, heart, lungs and esophagus. As a result, the animals promptly died. The work of later experimenters lacked roentgenographic studies or direct observation of the effect of vagotomy on the digestive tract. Pavlov and his co-workers demonstrated that vagotomy in dogs abolishes the cephalic phase of the gastric secretion produced by sham feeding. The French investigators Arthaud and Butte reported in 1889 that their vagotomized animals suffered from anorexia, vomiting, loss of weight and cutaneous lesions. Carlson found that bivagotomy in dogs produced a prolonged decrease in gastric tonus. According to Shay, Komarov and Gruenstein, vagotomy produced so much motor paresis in rats that the animals could be kept alive only on a liquid diet containing peptones instead of proteins. Hartzell in 1929 cut the vagi transthoracically in 6 dogs and subdiaphragmatically in 2. Three of the 6 survived for a study lasting five months. They all showed subacidity. Cutting one vagus nerve produced little effect either in animals or in man. Animal experimentation demonstrated that cutting of the vagi near the diaphragm did not as a rule affect the heart or respiration.

The concept that the hypersecretion in gastroduodenal ulceration is largely neurogenic suggested to Dragstedt the feasibility of treating patients with intractable gastroduodenal ulceration by an operation designed to remove as completely as possible the vagus innervation of the stomach. The most striking effect of this operation on the patient with chronic ulcer was the immediate and often dramatic relief of pain and distress on an unrestricted diet and without medicaments. Delayed gastric emptying and diarrhea have proved to be transitory. The transabdominal approach was later adopted by Dragstedt and most surgeons because it offered an opportunity to inspect the abdominal viscera. By pulling down the lower end of the esophagus, a more or less complete vagotomy could be done.

Since the report by Dragstedt and Owens in 1943, some 425 vagotomies were performed by these workers, altogether some 10,000 in the United States and about 2,000 abroad. The consensus is that vagotomy is a particularly valuable procedure in the treatment of peptic jejunal ulcer. If performed for a duodenal ulcer the operation is best combined with a gastroenterostomy. Gastric ulcer in the opinion of Lahey, Walters and other surgeons should be treated by partial gastric resection rather than by vagotomy. In the experience of Walters and his co-workers at the Mayo Clinic, vagotomy gave results that were "inconstant, variable and unpredictable." While there was relief of pain, the patients suffered much discomfort due to retention of gastric contents. Some of the patients complained of frequent belching, of foul-smelling gas, fulness and bloating after meals, and a few have complained of nausea and diarrhea. Subsequent operations have been necessary in some instances to remove a persistent ulcer or to provide drainage.

Some of the questions that have not as yet been answered by vagotomy are: 1. Will the vagi regenerate in the course of time? 2. Will vagotomy protect man against the production of ulcers? 3. Will vagotomy in which a gastroenterostomy was added as a part of the procedure prevent the formation of jejunal ulcer?

COOPERATION WITH NATIONAL CONGRESS OF PARENTS AND TEACHERS

The National Congress of Parents and Teachers recently asked the House of Delegates of the American Medical Association to request the state medical societies to appoint committees or arrange for representation in conferences in the several states between medical societies, dental societies, health departments, educational agencies and the National Congress of Parents and Teachers, looking toward the improvement of health services and health education for school children.

The communication[1] was received just prior to the Annual Session of the American Medical Association, considered by the Board of Trustees, and introduced into the House of Delegates too late for committee action. A resolution[2] was also introduced into the House of Delegates at one of its later meetings and will be acted on at the Interim Session of the American Medical Association in St. Louis in December 1948.

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[1] Alvarez, W. C.: Sixty Years of Vagotomy, Gastroenterology **10**: 413-441 (March) 1948.

[1] Letter from National Congress of Parents and Teachers, June 1948.

[2] Proceedings of the Chicago Session, J. A. M. A. **137**: 963 (July 10) 1948.

The history of cooperation between the National Congress of Parents and Teachers and the American Medical Association is a long and continuous record of joint effort toward the objectives stated. Since 1925 Dr. W. W. Bauer, Director of the Bureau of Health Education of the American Medical Association, and his predecessor have been members of the National Advisory Committee on the Summer Roundup of Children and its successor, the Committee on Health and Summer Roundup, of the National Congress of Parents and Teachers. For many years the Roundup blanks were printed on the presses of the American Medical Association, and for some of those years half the annual order was donated to the Congress with the compliments of *Hygeia, The Health Magazine*. Cooperation has not halted at the national level, for in many states and numerous local areas medical and parent-teacher groups have cooperated in the examination of preschool children in the Summer Roundup and in providing the health needs which were disclosed by the examination.

Emphasis by the National Congress on the integrity and responsibility of the home has met with warm sympathy from the medical profession, as has insistence by the Congress on the recognition of local autonomy in the furtherance of health and social welfare projects.

When, as seems probable, the House of Delegates adopts the pending resolution, the action will serve as a confirmation and a renewed pledge of cooperation between two associations representing doctors and their patients. In the meantime, action under the established cooperative relationships will continue.

Current Comment

A BIBLIOGRAPHY OF GROUP MEDICAL PRACTICE

The Bureau of Medical Economic Research has recently made available a 41 page annotated bibliography of group medical practice covering 234 items published during the period 1927 to 1947. Each reference is summarized in a few sentences. The 234 items include 127 in medical society journals, 10 in hospital association journals, 2 in publications of governmental agencies and 95 in other publications, mostly in the medical field. The director of the Bureau, Frank G. Dickinson, Ph.D., notes in the preface that most of the references abstracted favor group practice. He writes: "Upon reflection the reader will realize that this would be the inevitable result of our attempts to scan all the literature, as the advocates of change are always more prolific in their writings. The distribution (of the 'pro's' and 'con's') is and must be sharply out of line with the current position of group practice, which claims only slightly more than 2 per cent of the physicians engaged in the active practice of medicine in the United States." This annotated bibliography is a progress report of the Bureau's study of group practice authorized by the House of Delegates at Atlantic City, N. J., June 1947; it is the fourth in a series of Bureau publications, the first and second of which were prepared under the direction of Dr. R. G. Leland in 1933 and 1940.

ALCOHOLICS ANONYMOUS

The increase in alcoholism in the United States constitutes a health problem. Modern medicine regards alcoholism as a sickness whose etiology is to be sought in the personality of the excessive drinker and in his social milieu. Apparently Alcoholics Anonymous is effective in a considerable proportion of cases because of psychologic implications inherent in the method. Ritchie[1] notes that the membership, starting from 100 in 1939, has grown to more than 40,000. Alcoholics Anonymous is a program of rehabilitation created and administered by the alcoholic addicts themselves. The organization is open to everybody without regard to economic status, sex, religion or color (the last with some reservations). The groups are supported by voluntary contributions of their own members. Public solicitation of funds is rejected as dangerous; acceptance of large gifts from any source is considered unwise. The principle of anonymity has an invaluable spiritual significance. The *A. A. Grapevine*, which is the national organ of the Alcoholics Anonymous, serves as a medium of expression and as an instrument for the diffusion of the principles on which the fellowship operates. The basic principle which the alcoholic addict must accept on joining Alcoholics Anonymous is the total abstinence from alcoholic beverages. The attitude of Alcoholics Anonymous toward the alcoholic addict is thoroughly modern so far as it considers alcoholism a sickness and the alcoholic addict a sick man. By accepting the view that he is sick, that his drinking is the manifestation of a deep-seated compulsion, the alcoholic addict is relieved of moral responsibility for his past drinking behavior. The informal group meetings place the alcoholic addict in a social situation in which he has status and prestige; he is accepted as a full-fledged member of an ingroup. The novice is encouraged to strive for but twenty-four hours' sobriety, which of course is a much less formidable and less terrifying prospect than abstinence for life. The acceptance of a "Power greater than ourselves" is considered by the great majority of members as the core of the movement. Ritchie believes that the therapeutic effectiveness of Alcoholics Anonymous comes from its use of a spiritual force to attack the narcissism of the alcoholic addict. This aspect of the movement, many members insist, is to be regarded not as religious but as spiritual. According to the reports emanating from the central office of Alcoholics Anonymous 75 per cent of those who "really try" obtain a cure. This is a high rate of recovery judged by any standard.

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[1] Ritchie, O. W.: A Sociohistorical Survey of Alcoholics Anonymous, Quart. J. Stud. on Alcohol 9: 119 (June) 1948.

ORGANIZATION SECTION

Official Note

PUBLIC RELATIONS NEWSLETTER

The Public Relations Department at American Medical Association Headquarters has developed a new public relations newsletter and exchange which will be sent to all state medical societies from time to time as material accumulates. The public relations newsletter will select the best of what each state medical society is doing in public relations and distribute these ideas to other state societies. Ideas and materials developed in American Medical Association headquarters also will be included in the exchange, the second half of which will be entitled "The PR Doctor" and contain comment describing the exchange material. The complete package constitutes a convenient filing and reference unit for public relation ideas and programs. The presidents, secretaries, journal editors and chairmen of public relation committees of state societies will receive the "PR Doctor" newsletter without the exchange items, as will the trustees, officers and members of the house of delegates of the American Medical Association. The newsletter is expected to be useful to state and county medical societies in delineating trends, activities and current opinion on medical public relation topics.

Washington Letter

(From a Special Correspondent)

Aug. 18, 1948.

Plans for Implementing National Health Assembly

A special steering committee for the National Health Assembly held its first meeting July 28. Without a single dissent, according to Oscar R. Ewing, Federal Security Administrator, the group recommended that it continue to function—on a permanent voluntary basis—as a vehicle for carrying out proposals made by the National Health Assembly held here last May. Cornelius Wood was designated to continue as executive secretary, a position he had filled since the resignation recently of Howard Kline. The committee also authorized negotiations with publishers for printing an edited transcript of the proceedings of the May conference, which was called by Ewing. Other objectives, as agreed at the July 28 meeting, will be to encourage and help local communities to assess their health needs; to stimulate the inception of regional, state and local health conferences with broad representation of lay and professional groups, and to cooperate with public and private organizations. In attendance at the meeting were all members of the steering committee, appointed by Mr. Ewing, except Nelson Cruikshank, American Federation of Labor, who was out of the country. They were: Graham L. Davis, American Hospital Association; Miss Katherine Densford, American Nurses' Association; Dr. Vlado A. Getting, Massachusetts Commissioner of Health; Mrs. Mary Lasker, New York; Dr. George F. Lull, American Medical Association; Mrs. Eugene Meyer, Washington, and Jerry Voorhis, Cooperative League of U. S. A.

Food and Drug Administration Cites Siliform Ampuls and Congo Red Solution

During the week, the Food and Drug Administration urged return of all outstanding stocks of "siliform ampuls" and, in a separate action, cautioned manufacturers of congo red solution that a dye used in its manufacture contains a free color acid which is under suspicion following two deaths and numerous adverse reactions after intravenous administration of the solution. Druggists and physicians were advised to return all supplies of "siliform ampuls" to the manufacturer, Heilkraft Medical Co., Dorchester, Mass., because examination of samples collected on the market revealed that the injection material is not sterile. Preceding the analysis of market samples, a routine examination of the Heilkraft factory disclosed that "siliform ampuls" were being processed without sterilization. Roundup of the product is expected to be difficult, since many of the sales by wholesalers cannot be traced and distribution covers thirty-seven states from Maine to California. Some stocks dating to 1946 have been found on the market. The congo red warning by Food and Drug Administration followed a notification received from one manufacturer that 2 deaths and a number of alarming reactions were recently observed after use of the solution. "While our investigations are still incomplete," said the federal agency, "it appears from the information developed thus far that it is imperative that manufacturers of congo red solutions for injection take every precaution to insure that the free color acid is not present in the ampuled material."

Appoints Medical Advisory Committee

Scheduled to hold its first meeting in August, the Medical Advisory Committee appointed by Chairman Arthur M. Hill of National Security Resources Board consists of the following: Drs. William P. Shepard, San Francisco; A. C. Bachmeyer, Chicago; James C. Sargent, Milwaukee; Edward L. Bortz, Philadelphia; Michael E. DeBakey, New Orleans, and Percy T. Phillips, New York. The group will work in close cooperation with Dr. James A. Crabtree, director of the board's Medical Services Division, which has broad responsibilities in mobilization and maximum utilization of the nation's medical, public health and hospital resources.

Swigart Joins National Blood Program

Appointment of Richard P. Swigart as assistant to the administrator of the National Blood Program has been announced by the American Red Cross. Affiliated with the Red Cross since 1936, Mr. Swigart for the past year has been deputy manager of the North Atlantic Area, with headquarters in New York City. He is a native of Chicago and attended Knox College and the University of Chicago. Recruitment of donors will be one of his responsibilities, under direction of Dr. Ross T. McIntire, director of the National Blood Program.

Study of Eye-Protective Glasses

National Bureau of Standards will soon publish, as Circular C-471, a comprehensive report by Ralph Stair entitled "Spectral Transmissive Properties and Uses of Eye-Protective Glasses" and based on investigations by the author of some 200 glasses intended for antiglare use or for industrial operations where injurious amounts of ultraviolet, luminous or infra-red radiant energy are present.

Senators Debate Health Insurance

Senators Kem (Republican, Missouri) and Murray (Democrat, Montana) were principals in a lively debate in the Senate August 3, the issue revolving about California Governor Warren's espousal of the health insurance principle. Senator Kern delivered a speech stating that he is opposed to "socialized medicine," which he characterized as "a distinct threat to the medical and allied professions as we now know them and to our American way of life." Senator Murray, co-sponsor of the Murray-Wagner-Dingell bill for compulsory national health insurance, reminded Senator Kem that Governor Dewey's Republican running mate, Governor Warren, is a champion of health insurance. The rejoinder was that the Californian has confined his efforts to establishment of state—not national—health insurance, which is "an entirely different thing from establishing a comprehensive, compulsory federal system." The debate is reported on pages 9843 to 9848 of the *Congressional Record* for August 3. The *Congressional Record* for August 4 (pages A-5087 to 5092) contains a speech by Rep. Forest A. Harness (Republican, Indiana) reviewing charges which he has made in the past on numerous occasions against alleged federal propaganda in behalf of compulsory health insurance.

New Members of Mental Health Council Appointed

Newest appointees to the National Advisory Mental Health Council are Drs. Leo H. Bartemeier, associate professor of psychiatry at Wayne University College of Medicine, and Carlyle Jacobsen, dean of the Graduate School, State University of Iowa. The former succeeds Dr. David Levy, of Columbia University, and Dr. Jacobsen takes the seat formerly held by Dr. Edward A. Strecker, University of Pennsylvania.

GOVERNMENT SERVICES

ARMY

COMMITTEE TO STUDY MEDICAL INDEXES

The Surgeon General on July 7 set up a committee of consultants for the study of the indexes to medical literature published by the Army Medical Library. The first meeting of the committee will be held in September. The members are: Drs. Lewis H. Weed, chairman; John F. Fulton, Sanford V. Larkey, Chauncey D. Leake, William S. Middleton, Ebbe C. Hoff, Eugene E. Scott, Mortimer Taube, Morris Fishbein, ex officio, and Colonel J. H. McNinch, ex officio, Mr. Ralph R. Shaw and Miss Janet Doe.

MEETING OF LIBRARY CONSULTANTS

The annual meeting of the Association of Honorary Consultants to the Army Medical Library will be held at the Statler Hotel, Washington, D. C., October 22. The formal meeting of the association will be for one day instead of the customary two. The meetings of the standing committees will be held either the day before or the day following the formal meeting, at the discretion of the chairmen. The spring meeting of the executive committee was held in Philadelphia May 28, with Dr. Chauncey D. Leake, of the University of Texas School of Medicine, presiding.

Dr. Robert L. Swain, chairman, Board of Trustees, United States Pharmacopoeial Convention, has been appointed an Honorary Consultant to the Library by the Surgeon General.

WOMEN'S MEDICAL SPECIALIST CORPS

The 80th Congress authorized the establishment of a Women's Specialist Corps in the Regular Army and a section in the Officers' Reserve Corps. This enactment, signed by the President April 16, 1947, made dietitians, physical therapists and occupational therapists a permanent part of the Regular Army. The policy of the Department of the Army is to procure and train an adequate number of officers in this branch of the service. These officers receive the same pay and allowances as other Regular Army officers of the same rank. The base pay for a second lieutenant is $180 a month plus $60 for rental for those with dependents and $45 for those without dependents, together with an allowance of $42 for subsistence for those with dependents and $21 for those with no dependents. The rental allowance is paid only when quarters on the military reservation are *not provided. The base pay for a lieutenant colonel is $320.83* a month with $120 a month rental allowance for those with dependents and $63 for subsistence for those with dependents. The corresponding figures for those without dependents are $105 and $21 a month. The professional qualifications for such specialists may be obtained from the Office of The Surgeon General, Washington, D. C.

GRADUATE TRAINING FOR MEDICAL OFFICERS

The Surgeon General's Office announces a new list of forty-five medical officers, including two colonels, seven lieutenant colonels, eight majors, eighteen captains and ten first lieutenants, *who have been accepted for graduate training in civilian institutions.* Among those listed with the training to be received are Norman E. Peatfield, Harvard University, public health; Joseph A. Lapiena, Springfield College, Mass., physical education and rehabilitation; Adam J. Rapalski, Johns Hopkins University, public health; John B. Logan, Garfield Memorial Hospital, Washington, D. C., intern training; Anthony V. Torre, Providence Hospital, intern training; George M. DiRienzo, Coney Island Hospital, Brooklyn, intern training; James O. Wall, Charles T. Miller Hospital, St. Paul, Minn., intern training; Louis J. West, University of Minnesota Hospital, Minneapolis, intern training; Alva E. Miller, University of California, psychiatry-neurology; Richard L. Bohannon, University of Southern California; internal medicine; Harold A. Myers, New York Polyclinic Medical School and Hospital, surgery; Adante A. B. D'Amore, Cook County Graduate School of Medicine, surgical technic; Lewis C. Shellenberger, Johns Hopkins University, public health; Earl G. Kingdon, Johns Hopkins University, public health; Spurgeon H. Neel, Johns Hopkins University, public health, and Charles C. Bruce, Johns Hopkins University, public health.

NAVY

POSTGRADUATE TRAINING

The following medical officers have been nominated to attend courses of instruction as indicated:

Comdr. Leonard J. Hahne, in Ophthalmology at Northwestern University Medical School, Chicago.

Comdr. Morton L. Lillie, in Dermatology and Syphilology at the Skin and Cancer Unit of the New York University College of Medicine.

Lieut. Comdr. William C. Cantrell, in Children's Orthopedics at the University of Iowa College of Medicine.

Lieut. Howard W. Hill to a Residency in Surgery at the Naval Hospital, Oakland, Cal.

Lieut. (jg) Adolphus W. Dunn in the Basic Science Course at the Army Medical Center, Washington, D. C.

Lieut. (jg) Tom C. Hardy, MCR, in Anesthesiology at the Cleveland Clinic.

Lieut. (jg) Stephen R. Mills, Jr., a Residency in Internal Medicine at the Naval Hospital, Bethesda, Md.

Lieut. (jg) Robert E. Mitchel, a Residency in Internal Medicine at the Naval Hospital, San Diego, Cal.

Lieut. (jg) Ernest A. Sneddon, a Residency in Anesthesiology at the Naval Hospital, Philadelphia, Pa.

Lieut. (jg) George J. Taylor III, a Residency in Obstetrics and Gynecology at the Naval Hospital, San Diego, Cal.

Lieut. (jg) Sydnor T. Withers, in Dermatology and Syphilology at the Skin and Cancer Unit of New York University College of Medicine.

NEW REGULAR OFFICERS

The following reserve medical officers have transferred to the Medical Corps of the Regular Navy: Comdr. Donald G. MacKinnon, Visalia, Calif., and Lieuts. (jg) Donald R. Davis, Madison, Wis., and Dennis P. McCarty, Delaplane, Va.

PERSONALS

Captains Jesse D. Jewell of Portland, Ore., and Robert H. Collins of Arlington, Va., now on the retired list, have voluntarily requested recall to active duty and will be ordered respectively to the Naval Recruiting Station in Portland and the Naval Recruiting Station in Philadelphia.

Comdr. Alan D. Grinstead of Raleigh, N. C., has recently accepted an appointment as aviation psychologist in the Medical Service Corps of the Regular Navy.

AWARDS AND COMMENDATIONS

Captain Albert R. Behnke

The Secretary of the Navy recently awarded a Letter of Commendation to Captain Albert R. Behnke, MC, Research Executive Officer at the Naval Medical Research Institute, Bethesda, Md. The Letter reads in part as follows: "For exceptionally meritorious service while attached to the Experimental Diving Unit, Washington, D. C., and while participating in experiments conducted at that station during the period 1937 through 1939. Captain (then Lieutenant) Behnke contributed outstandingly to rescue and salvage work of the Navy, by his study and perseverance and courage in experimental diving. His knowledge and leadership in applying the newly developed technic to the science of deep sea diving received international recognition and reflect the highest credit on himself and the United States Naval Service."

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama
Brannon, Wade H..............Anniston
Gibbs, James V............Birmingham
Littlejohn, James T.............Jemison

Arizona
Bates, Raymond R...............Tucson
Horan, Robert V...........Inspiration
Wuerschmidt, M. A..............Tucson

Arkansas
Laws, J. K...................Texarkana

California
Comparette, Homer L...........Hondo
Grady, Roger C...........San Francisco
Logan, L. H.............San Francisco
Reynolds, T. B.............Los Angeles
Rosenberg, B. B...........Beverly Hills
Yettra, M...................Los Angeles

Colorado
Arnold, Chadwick H...Colorado Springs
Fisher, Charles E...............Denver
Johnson, Melvin A..............Denver
Lovitt, W. V. Jr.......Colorado Springs
Williamson, T. L..................Pueblo

Connecticut
Erba, Salvatore M.........New Haven
Goodnough, Frank O...........Fairfield
Liebler, John B.........Old Greenwich
Luciano, M. C...............Bridgeport
Yavetz, L. M.................Waterbury

District of Columbia
Boyd, William D...........Washington
Callender, George R. Jr.....Washington
Doland, Alger B............Washington
Lane, R. A..................Washington
Randall, R. V...............Washington
Smith, Charles R..........Washington
Thompson, Henry Jr........Washington
Williams, J. J...............Washington
Wilson, Thomas M.........Washington

Florida
Dunton, Loren A..................Miami
Folsom, Charles W...............Miami
McQuagge, A. E...............Marianna
Price, Charles D...............Palatka

Georgia
Chesky, Kenneth.................Atlanta
Deese, Ernest F..................Dublin
Gay, Brinton B...................Atlanta
Head, Douglas L. Jr............Augusta
King, James L. Jr................Macon
Lesser, Raymond E...............Athens
Lewis, William E...............Augusta
Paine, Albert J...................Atlanta
Rumble, Lester Jr................Atlanta
Sessions, John T. Jr.............Atlanta
Smith, Ralph B...................Atlanta
Tootle, George S.............Greenville
Watt, Charles H. Jr.........Thomasville

Idaho
Chase, Willam E...............Rexburg
Lowe, W. W.......................Grace
Rodkey, Grant V.........Coeur d'Alene

Illinois
Bacon, Glenn A.............Oak Park
Beem, John R................Gillespie
Hill, Vincent R.............Springfield
Jordan, Paul H. Jr.............Chicago
Keehan, J. E....................Chicago
Kirkland, Wallace W. Jr.......Chicago
Klemptner, Harold E...........Chicago
Lidge, R. T......................Chicago
Rayman, M. S...................Chicago
Rundles, C. H...................Chicago
Scott, O. B......................Chicago

Illinois—Continued
Wicks, W. R...................Chicago
Witanowski, M. F..............Chicago

Indiana
Bannon, William G........Terre Haute
Bickel, John E................Corydon
Conn, Hadley L. Jr............Danville
Houk, Elijah P. S.............Portland
Johnson, James F..........Indianapolis
Kenward, John F.................Gary
Lehman, R. J......................Berne
Mackel, Frederick O............Clinton
Moses, Robert E..........Worthington
Roth, Bertram S................Muncie
Sellers, Francis M..........South Bend
Wolfe, Reinhardt D.........New Albany

Iowa
Bradshaw, Douglas E.........Iowa City
Brooks, Henry F...........Des Moines
Chambers, George H.......Belle Plaine
Davis, Edgar W...................Givin
Ebinger, Edward W.......Fort Madison
Hayes, Roy E...............Maquoketa
Heinmiller, Elmer C.....New Hampton
Loxterkamp, E. O...............Carroll
Miller, George A..............Iowa City
Naryka, Joseph J............Sioux City
Palmer, Howard C..............Kalona
Severson, Wayne L...............Slater

Kansas
Fischer, Edward H.........Kansas City
Lance, John F. Jr.............Pittsburg
Lohmeyer, K. L....................Bern

Kentucky
Abraham, Joseph P...........Falmouth
Ballard, Joseph A................Loretto
Carty, Fugate.................Louisville
Cummings, Patrick W.........Louisville
Grise, Richard F.........Bowling Green
Keeley, John C. Jr...........Owensboro
Kenney, Arthur H.............Louisville
Ripy, H. W...............Lawrenceburg
Rubin, Milton B................Danville
Williams, G. S.................Paintsville

Louisiana
Begley, Grant F...........New Orleans
Bienvenu, Lester J.........St. Martinville
Chapman, William A........New Orleans
Griffith, John K. Jr...............Slidell
Kinnebrew, Collier A...........Homer
Ritter, Kenneth A.............Jeanerette
Worley, John A...........New Orleans

Maine
Cummings, George O. Jr.......Portland

Maryland
Dennis, John M..................Willards
Ebeling, William C. III......Baltimore
Freedman, Marshall A.........Baltimore
Hayden, Richard C.........Chevy Chase
Linthicum, C. M.....Linthicum Heights
Myers, Paul R...................Oxford
Winslow, O. P. Jr.............Baltimore
Woodward, Arthur F.........Rockville

Massachusetts
Angelini, Hugo D................Clinton
Eramo, Lincoln...............Pittsfield
Landing, B. H. Jr...............Boston
McManama, G. B..............Waltham

Michigan
Allard, Ben D.................Bay City
Banghart, Norman L........Battle Creek
Erben, John J. Jr............Union Pier
Garrisi, Joseph A................Detroit
Henderson, Robert P.........Kalamazoo
Hobbs, Donald V................Detroit
Kiriluk, Lawrence B..............Detroit
Law, Robert L............Battle Creek

Michigan—Continued
Michael, Michael J..............Detroit
Nickel, Warren O...............Detroit
Rinkel, R. W....................Detroit
Schultz, A. E......................Ecorse
Wooster, J. J..................Dowagiac

Minnesota
Branham, Donald S.........Albert Lea
Glaede, Warren C...........Minneapolis
Kanne, Earl R................Big Fork
Lober, P. H.................Minneapolis
Wilcox, G. C.....................Virginia
Wisness, O. A..................Willmar

Mississippi
Ellis, Rudy J....................Natchez
Gable, Gerald P.............Eastabuchie
Grantham, Edwin S.........West Point
Justice Thurman T. Jr.......Pascagoula

Missouri
Bates, George C.........Jefferson City
Farrar, John T................St. Louis
Hodge, Robert H...........Kansas City
Ingram, Jack S.................St. Louis
Ladriere, R. J...................St. Louis
Lanier, R. R. Jr.................St. Louis
Leininger, Clarence R. Jr.......Trenton
McVay, J. R. Jr...........Kansas City
Mullarky, Wilbur A........... St. Louis
Mundy, Carroll F...........St. Joseph
Peden, Joseph C. Jr........... St. Louis
Pernoud, Michael F...........St. Louis
Robinson, Arthur W.......Kansas City
Rodes, N. D......................Mexico
Rumbusch, W. T...............St. Louis
Wiegand, H. C.................St. Louis

Montana
Cadwell, Paul M.............Anaconda

Nebraska
Aherns, Herbert G.............Scribner
Beirne, Gilbert A..............Omaha
Butterworth, Nelson St. C.......Norfolk
Coe, John D....................Hastings
De Vol, Russell A.............Belgrade
Douvas, Nicholas G...........Hastings
Gillies, Ray O'H. Jr.............Omaha
Johnson, Marlin J. E...........Bristow
Lane, L. D........................Omaha
Nilsson, Donald C..............Omaha
Raasch, Richard F.........Broken Bow
Rees, Barney B.................Lincoln
Wilson, Carlyle E. Jr............Omaha
Winter, Lewis S. Jr.............Western

Nevada
Bagley, Richard O...............Sparks

New Jersey
Baldini, Howard E.........Union City
Blasi, Clifford B................Newark
Calcagno, Philip L.............Newark
Duffy, William J................Newark
Kiesewetter, D. T.........South Orange
Larkin, Michael J...............Trenton
Rankine, C. A..................Rahway
Salzberg, A. M.................Paterson
Sciano, E. A......................Totowa

New York
Bazemore, James M.........New York
Behrer, Martin R...........New York
Bertrand, John W..............Syracuse
Berman, Michael H.........New York
Blackman, Norman S..........Brooklyn
Blumenfeld, Serge............New York
Blutstein, Bernard.................Bronx
Broderick, Earl G.................Buffalo
Brown, David S...............New York
Bryant, Tracy L.................Syracuse
Buckmaster, Robert E.....White Plains
Collum, Albert G. J. Jr.........Yonkers
Connolly, Robert B.....Port Washington

PHYSICIANS SEPARATED FROM SERVICE

New York—Continued

Connor, Forbes B..........Conyers
Cotter, James J..........Brooklyn
Cronson, Alvin J..........Brooklyn
Cummins, Francis M..........Mineville
Cummiff, Charles L..........Brooklyn
D'Angio, Carl J..........New York
Dewald, Paul A..........Rochester
Dorenus, William P. Jr..........New York
Duggan, John J..........Moravia
Epstein, Ezra J..........Brooklyn
Farley, Frank G..........Syracuse
Gage, Andrew A..........Buffalo
Garcia, Celso R..........Jackson Hts.
Gardner, Luther B..........New York
Given, William P..........New York
Goldberg, Alan L..........New York
Goldey, Harvey..........New York
Gould, Aubrey V. W. Jr..........Great Neck
Grote, William J..........Yonkers
Hamit, Harold F..........Brooklyn
Hammond, Vincent G..........New Berlin
Henderson, George T..........St. George
Higgins, John W..........New York
Katz, Ephraim M..........Bronx
Keegan, J. F..........Rochester
Klutz, William S..........Utica
Koeniger, Peter J..........Woodhaven
Kragen, Arthur C..........New York
Kraus, G..........Bronx
Lando, L..........Spring Valley
Lasher, W. W..........New York
Lavista, E. G..........Brooklyn
Lent, M. H..........Buffalo
Lesser, G. T..........New York
Lichtman, H. C..........Brooklyn
Lipin, T..........Crestwood
Lippsett, H. L..........Brooklyn
McCarthy, John F..........Freeport
McDonald, J. F. Jr..........New York
Macht, E. L. Jr..........Philadelphia
MacNamara, W. A..........Scranton
Mathews, Charles S..........Buffalo
Matthews, J. W..........Williamsport
Meltzer, R. S..........Newburgh
Miller, Stuart J..........Watkins Glen
Mund, Alvin..........New York
Newman, Rchard J..........Yonkers
Norton, James F..........East Aurora
Osterman, Morris..........Brooklyn
Pack, Wilton..........Brooklyn
Randel, W. H. Jr..........Long Island City
Riley, W. P..........Brooklyn
Rosen, W. B..........New York
Rosenberg, C. H..........Buffalo
Roth, G. S..........Syracuse
Ruhstaller, F. D..........Rochester
Schauffler, Harry W. Jr..........Buffalo
Schoenbach, E. B..........New York
Schoer, Harry A..........South Floral Park
Schuman, Bernard J..........New York
Schweikert, William G..........Brooklyn
Segerson, J. A..........Albany
Seldin, D. W..........New Haven
Shaver, Carrol J..........Eggertsville
Shoob, Milton P..........Hicksville
Slater, Stanley L..........Brooklyn
Stewart, James M..........Rochester
Stewart, John S. Jr..........New York
St. James, Alfred T..........Brooklyn
Zimmerman, S. P..........Brooklyn

North Carolina

Dameron, Joseph T..........Star
King, J. T..........Burlington
McLean, I. W. Jr..........Durham

North Dakota

Berger, Phil R..........Perkin
Froke, Leo B..........Arthur

Ohio

Adkins, William N..........Cincinnati
Allman, Joseph W..........Columbus
Ames, William H..........Cincinnati
Call, Arthur M..........Columbus
Clark, Ernest E. Jr..........Cleveland Heights

Ohio—Continued

Conlon, Harold J..........Cincinnati
Cronk, Robert T..........Tulsa
Davies, Dwight H..........Blacklick
Earley, Neal N..........Jamestown
Evans, Arthur T. H..........Wyoming
Fanning, Robert A..........Middletown
Fink, Joseph L..........Toledo
Frey, Harley H. Jr..........Toledo
Gaenge, William G. Jr..........Cincinnati
Graham, Kenneth L..........Columbus
Kerrigan, J. H..........Cleveland
Larsen, W. G..........Lima
Lurie, M. L..........Cincinnati
McClellan, M. R..........Cincinnati
Martin, Donald W..........Columbus
Mazanec, O. A..........Cleveland
Miller, David H..........Marietta
Miller, M. L..........Cleveland
Owens, Francis J..........Youngstown
Patterson, James F..........Xenia
Rohn, R. J..........Columbus
Ruggles, R. L..........East Cleveland
Schieve, J. F..........Cincinnati
Schmidt, R. P..........Akron
Smith, Jack I..........Dayton
Wiseley, A. N..........Lima

Oklahoma

Cashman, Charles A..........Tulsa
Salamy, J..........Anadarko

Oregon

Miller, D. E..........Portland
Semler, L..........Portland

Pennsylvania

Angelo, John J..........York
Arons, Walter L..........Philadelphia
Berry, Ralph H. Jr..........Allentown
Bliven, Floyd E. Jr..........Erie
Briney, Allan K..........Pittsburgh
Brungo, James J..........Pittsburgh
Buyers, Robert A..........Christiana
Clendennen, Earl H..........New Brighton
Cofetta, Philip..........Pittsburgh
Corn, Oscar..........Philadelphia
Coyle, Robert M..........Pittsburgh
Creed, Donald L..........Mount Lebanon
Davis, Stuart M..........Little Marsh
Delone, Charles A. Jr..........Harrisburg
Dibert, Lawrence W..........Roaring Springs
Ditzler, John W..........York
Gabuzda, George J. Jr..........Freeland
Gress, Francis J..........Bethlehem
Henninger, William H..........Tamaqua
Jay, Gilbert D. III..........Philadelphia
Kahn, Ernest..........Easton
Kowalewski, Edward J..........Lititz
Kraul, C. W..........Philadelphia
Kyllonen, Armas S..........Monessen
Laggner, Harold J..........Archbald
Lamp, C. B. Jr..........Monongahela
Lapinsohn, Leonard..........Philadelphia
Laubach, G. B..........Easton
Leworthy, George W..........Pipersville
Ley, J. C..........Pittsburgh
Linsey, Ralph M..........Philadelphia
Lipshutz, H..........Philadelphia
McCutcheon, C. T..........Highland Park
McDonald, R. E..........Erie
Roberts, J. R..........Scranton
Rumbaugh, M. U..........Kingston
Scott, J. S..........Pittsburgh
Weller, William F..........Smithfield
Wellman, Richard H..........St. Petersburg
Wescoe, W. C..........Allentown
White, S. E..........Athens

Rhode Island

Bellin, Leonard B..........Providence
Brenizer, Addison G. Jr..........Providence

South Carolina

Adams, Frederick F. Jr..........McCall
Durant, Julian M..........Manning
Gullick, Herbert D..........Greenville

South Dakota

Hoff, Helmuth E..........Tripp
Jones, Warren L..........Chamberlain
Sunquist, Glenn V..........Mitchell

Tennessee

Chiles, Noah H..........Corryton
Crowdis, James H..........South Nashville
Deberry, James T. Bloomington Springs
Freeman, Murray T..........Nashville
Jackson, Thomas M..........Memphis
Waller, Jesse E..........Murfreesboro
Yeider, W. H..........Madison

Texas

Alliston, Wiley S. Jr..........Ft. Worth
Arnold, William T. Jr..........Hemphill
Kopecky, J. W..........San Antonio
Lewis, D. R..........Paris
Lipscomb, J. L..........Denton
Whiting, E. T..........Abilene

Utah

Anderson, Richard H..........Salt Lake City
Jensen, Wallace N..........Woods Cross

Vermont

Levine, Samuel..........Burlington

Virginia

Anderson, W. W. Jr..........Newport News
Baumeister, Max Jr..........Norfolk
Bishop, William B..........Kenbridge
Boatwright, Robert M..........Danville
Davis, Courtland H. Jr..........Alexander
Ellis, Wilber R. Jr..........Wakefield
Finney, Cecil G..........Richmond
James, George W. III..........Richmond
Lewis, William D. Jr..........Richmond
Wallenborn, Peter A. Jr. Charlottesville

Washington

Anderson, Robert L..........Colfax
Blumhagen, Rex V..........Wenatchee
Boettner, Donald H..........Everett
Braile, Louis E..........Seattle
Bright, Robert B..........Bremerton
Brydges, Bruce B..........Seattle
Cadman, Edward F..........Wenatchee
Carey, Jack R..........Seattle
Dragovich, Jerry J..........Everett
Ferguson, Frank C. Jr..........Spokane
Henderson, Robert S..........Spokane
Lantz, C. R. Jr..........Sumner
Ulrich, Delmont M..........Connell
Westerfield, Richard F..........Chelan

West Virginia

Flynn, Charles S..........Bluefield
Kersey, W. W. Jr..........Bluefield
Lilly, W. B..........Beckley
Weaver, G. M..........Huntington
Wilson, R. S..........Clarksburg

Wisconsin

Anderson, Donald T..........Madison
Averbook, Beryl D..........Superior
Foeste, Arthur A..........Madison
Fountaine, Thomas J..........Elkhorn
Jackson, Robert C..........Superior
Merkow, W..........Madison
Reinhart, J. B..........Merrill

Wyoming

Rhodes, J. R..........Sheridan
Yedinak, Paul R..........Rock Springs

Canada

Shull, Gordon E..........North Ontario

Hawaii

Morgan, Andrew L..........Honolulu

Puerto Rico

Dalmau, Carlos J..........Santurce
Rivera-Gonzalez, G. M..........Hato Rey

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARIZONA

Harlow Brooks Clinical Conference.—The Ninth Harlow Brooks Memorial Navajo Clinical Conference will be held at Sage Memorial Hospital, Ganado, August 30 to September 1. Out of state speakers include: Henry M. Benning, Santa Barbara, Calif., Relationship of Diabetes to Infectious Hepatitis; Harvey E. Billig Jr., Los Angeles, Role of Cervical Sympathetics in Facial Neuralgia; E. Forrest Boyd, Los Angeles, Intestinal Obstruction Due to Gall Stones; Warren H. Cole, Chicago, Hyperthyroidism; Felix Cunha, San Francisco, Case Histories in Gastro-Enterology; Alfred C. Emmel, Mount Vernon, N. Y., Rh Factor in Surgery and Obstetrics; Alfred E. Gallant, Los Angeles, Closed Reduction of Difficult Fractures Involving the Lower Extremity; David P. Findley, Omaha, Treatment of Cervicitis; Benjamin H. Grimm, Sidney, Neb., Problems of a General Practitioner; L. Dale Huffman, Los Angeles, Case of Chronic Adhesive Pericarditis with Calcification; Lucius W. Johnson, San Diego, Calif., The Surgeon in the Hospital; Newell Jones, Los Angeles, Childhood Allergy; Fred L. Knowles, Fort Dodge, Iowa, Fractures of the Os Calcis; Chester H. MacKay, Los Angeles, Nephroptosis or Movable Kidney; Joseph F. Montague, New York, Troubles We Don't Talk About; Thomas B. Noble Jr., Indianapolis, Method for Reduction of Operative Mortality and Postoperative Morbidity Following Cholecystectomy; Daniel P. Quiring, Ph.D., Cleveland, Collateral Circulation, Anatomical Aspects; James P. Rigg, Grand Junction, Colo., The Paranasal Sinuses; Buell E. Sprague, Los Angeles, Sleeve Anastomosis of the Small Gut; Philip Thorek, Chicago, Vagotomy and the Ulcer Problem, and George C. Tyler, Los Angeles, Current Procedures in Treatment of Rectal Cancer.

CONNECTICUT

Award Trudeau Medal.—Rudolph J. Anderson, Ph.D., professor of chemistry at Yale University, has been awarded the Trudeau Medal of the National Tuberculosis Association for outstanding research concerning tubercle bacilli. The presentation was made by Dr. David R. Lyman, superintendent of Gaylord Farm Sanatorium, Wallingford, one of Connecticut's five state hospitals for the care and treatment of tubercular patients.

Annual Clinical Congress at New Haven.—The Connecticut State Medical Society's twenty-third Clinical Congress will be held in cooperation with the Yale University School of Medicine, New Haven, September 14-16. Morning sessions will be held in the auditorium of the law school and afternoon sessions in the New Haven Hospital and Yale Medical School. The subjects for discussion include diabetes, infections of the urinary tract, allergy, deafness, surgery of the hand and surgery in peripheral vascular disease.

ILLINOIS

Personal.—Dr. Donaldson F. Rawlings, Galesburg, has been appointed chief of the Division of Maternal and Child Health, Illinois Department of Public Health, succeeding Dr. Ruth E. Dunham, Chicago, who resigned to accept a commission in the U. S. Public Health Service.

Encephalitis in Cook County.—Seven mild cases of encephalitis have been reported since July 1 in the southwest section of Cook County. Dr. Edward A. Piszczek, county health officer, has asked the Des Plaines Valley Mosquito Abatement district for specimens of mosquitoes with which to make a laboratory check.

Chicago

Research on Poliomyelitis.—The National Foundation for Infantile Paralysis has awarded a research grant of $6,080 to the University of Illinois College of Medicine for the period from July 1 to December 31. The grant will be used for electromyographic studies and studies in electrical stimulation of muscles of patients with poliomyelitis. The studies will be carried out by Dr. Andrew C. Ivy, vice president in charge of the Chicago Professional Colleges, and Dr. H. Worley Kendell, head of the department of physical medicine.

The Morton Memorial.—Northwestern University has received a gift of $70,000 from Sterling Morton of Lake Forest, chairman of the board of the Morton Salt Company. Although no restriction was placed on the gift, it is expected that the trustees will add it to the more than $2,000,000 bequeathed to Northwestern in 1940 by the late Mrs. Joy Morton. Terms of Mrs. Morton's will provided that the bequest be used for medical research and for the erection and endowment of the Morton Memorial Hospital, which the university plans to build on the Chicago campus. Construction of the hospital has been delayed by abnormally high building costs.

Personals.—Dr. Sol. B. Kositchek has retired from the Commonwealth Edison Company's staff after thirty-five years of service. At a luncheon in his honor Dr. Kositchek was presented with a radio, a camera and a basket of thirty-five roses as farewell gifts from his friends.——Dr. Stephen Rothman, professor of dermatology, University of Chicago School of Medicine, delivered four lectures on "Physiology of the Skin" on June 16-18 before graduate students in dermatology at Columbia University College of Physicians and Surgeons, New York.——Major General Paul R. Hawley, formerly Chief Medical Director of the Veterans Administration, now of Chicago, addressed the Biological Sciences and Hospital groups at the recent annual meetings of the Special Libraries Association in Washington on "Social Responsibility for Medical Care."

MARYLAND

Dr. Bronk New President of Johns Hopkins.—Detlev W. Bronk, Ph.D., director of the Eldridge Reeves Johnson Foundation for Medical Physics and professor of biophysics of the University of Pennsylvania, Philadelphia, has accepted the presidency of The Johns Hopkins University, effective Jan. 1, 1949. He will succeed Dr. Isaiah Bowman, president since 1935, now retired. Dr. Bronk went to the University of Michigan as instructor in physiology and while there was awarded a Ph.D. He went to England in 1929 as a National Research Council fellow and on returning became professor of biophysics and director of the Johnson Foundation at the University of Pennsylvania. He was coordinator of research in the Air Surgeon's Office during the war and he has been a member of the Board of Scientific Directors of The Rockefeller Institute for Medical Research. Since 1946 Dr. Bronk has been chairman of the National Research Council.

MASSACHUSETTS

Harvard Enlarges Teaching and Research Programs.—The Department of Public Health Practice of the Harvard School of Public Health will institute, in September, enlarged teaching and research programs in cancer control and in the public health aspects of mental health. The objectives of the cancer control program will be administrative, epidemiologic and statistical research in cancer and the training of cancer control administrators. The project is financed by a $40,000 grant from the U. S. Public Health Service and $6,909 from the Massachusetts Division of the American Cancer Society. The cancer control officers will receive basic public health training followed by specialized cancer teaching under the direction of the cancer control staff of the Harvard School of Public Health and in cooperation with the Cancer Institute at the New England Deaconess Hospital, Boston, the Division of Cancer of the Massachusetts Department of Public Health, the Peter Bent Brigham Hospital, Boston, and the Massachusetts Division of the American Cancer Society. The sum of $230,000 has been received from the Grant Foundation for a five year investigation of certain problems of community mental health and a broadened teaching program. The first community service center and research unit under the project will be established in Wellesley in October. Groups participating in the community mental health program are the department of social relations at Harvard University, the Harvard Medical School, the Massachusetts General Hospital, the Wellesley Community Mental Health Committee and the Harvard School of Public Health.

MICHIGAN

Annual Postgraduate Conference.—The annual Postgraduate Conference of the Michigan State Medical Society will be held in Detroit at the Book-Cadillac Hotel, September 22-24. Among the guest essayists are: Dr. Frank H. Lahey, Boston; Waltman Walters, Rochester, Minn.; Richard W. TeLinde, Baltimore; Haven Emerson, New York; Lester H. Dragstedt, Chicago; Alexander Brunschwig, New York, and Stanley P. Reimann, Philadelphia. There will be extensive exhibits. Doctors of medicine from neighboring states are invited. To insure hotel accommodations for the session, write Dr. E. C. Texter, Chairman of Housing Committee, 1005 Stroh Bldg., Detroit.

Pasteurization Law in Effect.—Michigan's new milk pasteurization law, which became effective July 1, requires that all milk sold to the retail trade, as well as milk, cream, skim milk and other dairy products used in manufacture of butter, cheese and cottage cheese, be pasteurized. A previous law had provided the same safeguard for ice cream. Milk and dairy products sold at the farm where they are produced or used on the farm where they are produced are exempt from the law. The state department of health has prepared an illustrated wall card of instructions for home pasteurization of milk which can be had without charge by writing the department at Lansing 4.

MISSOURI

Jackson County Health Forum.—Seven free lectures will be presented by the Hospital Auxiliaries of the accredited hospitals of Jackson County at the Municipal Auditorium, Kansas City, on the third Wednesday of each month at 8:15 p. m. The program is as follows:

September 15. E. W. Alton Ochsner New Orleans, Gallbladder and Stomach Complaints.

October 20, George E. Shambaugh Jr., Chicago, A New World for the Hard of Hearing.

November 17, Bayard T. Horton, Rochester, Minn., Migraine Headaches.

January 12, Cyril M. MacBryde, St. Louis, Diabetic Treatment.

February 16, Willard O. Thompson and M. Edward Davis, Chicago, Change of Life Problems in Men and Women.

March 16, O. Spurgeon English, Philadelphia, What Is Psychosomatic Medicine?

April 20, Morris Fishbein, Chicago, What Makes a Successful Marriage?

NEW YORK

Study of Hospital Expenses.—The financial difficulties of hospitals and the implications for future hospital maintenance, operation and service will be analyzed during the next year by Columbia University under a contract with the New York State Joint Hospital Survey and Planning Commission under a $60,000 allotment from the state. Columbia will examine the financial structure of the hospital system in New York State, analyze relative costs for various classes of patients and responsibilities of government for financial aid to hospitals, and prepare a report. The study will be directed by Eli Ginzberg, associate professor of economics at Columbia's School of Business. Professor Herbert Klarman of the department of economics at Brooklyn College will serve as assistant director for the study.

New York City

Research Fellowships Available.—Two appointments for research fellows in medicine for studies in the field of metabolic and degenerative diseases are available in the New York Post-Graduate Hospital. Opportunity for ward studies, postgraduate courses and outpatient clinics is included. The salary is $3,000 per annum. Qualifications are graduation from a Grade A medical school and three years' approved hospital training in medicine and allied fields. Male and female applicants are acceptable. Applications should be addressed to Dr. John D. Currence, New York Post-Graduate Medical School and Hospital, 303 East 20th Street, New York 3.

Free Penicillin for Venereal Disease.—Penicillin-oil-beeswax for intramuscular injection is now available from the New York City Health Department to local physicians, without charge, for the treatment of venereal disease. Penicillin will be supplied in recommended dosages after verification of the diagnosis. The department will continue to distribute arsenical drugs and bismuth compound. In order to obtain penicillin or the arsenicals an official case report must be on file with the department of health for each patient given a diagnosis and/or under treatment and contact information submitted on case report forms (417V), which are obtainable from the Bureau of Social Hygiene, Department of Health, 125 Worth Street, New York 13.

PENNSYLVANIA

Publish Case Histories for Clinical Pathologic Conference.—In preparation for the clinicopathologic conferences on the program of the centennial meeting of the Medical Society of the State of Pennsylvania, October 3-7, the six case abstracts to be discussed are being published in the state journal in advance. The Committee on Scientific Work has planned three conferences for the afternoons of Tuesday, Wednesday and Thursday. Publication at this time will enable physicians to become familiar with the case histories and record their own diagnosis before the meetings.

Philadelphia

Honorary Degrees Conferred.—At the Commencement Exercises June 4 of The Jefferson Medical College of Philadelphia, honorary degrees were conferred on the following physicians: Doctor of Science—Dr. John H. Gibbon, Media, professor of surgery and clinical surgery, emeritus, The Jefferson Medical College, and Dr. LeRoy A. Schall, professor of otology and laryngology and head of the department, Harvard Medical School, Boston.

Faculty Promotions.—Dr. Joseph O. Crider, assistant dean, has been promoted to professorship in physiology at the Jefferson Medical College of Philadelphia. A graduate of the University of Virginia Department of Medicine, Charlottesville, 1912, he was from 1913 to 1930 on the staff of University of Mississippi School of Medicine, University, Miss., which he left as dean and professor of physiology and histology. He then joined the teaching staff at Jefferson Medical College as assistant dean and associate professor in the physiology department. Dr. Nicholas A. Michels, associate professor in the anatomy department, has been promoted to professorship in anatomy. He became a member of the teaching staff at Jefferson Medical College in 1929. Andrew Jackson Ramsay, Ph.D., has been promoted from associate professor to professor of histology and embryology. He joined the teaching staff in 1936.

Pittsburgh

Orthopedic Lectures.—Lectures for orthopedic technicians are being given at the Mellon Institute, the University of Pittsburgh School of Medicine and several local hospitals September 20-26. The conference is being sponsored by the department of orthopedic surgery of the University of Pittsburgh School of Medicine, with the assistance of the Sarah Mellon Scaife Foundation Fellowship on Orthopedic Appliances at the institute. The course will be presented through lectures, demonstrations of actual devices on patients, discussions and field trips. A collection of exhibits will be set up by the staff and participants in the conference near the Institute's auditorium. The registration fee is $5.

TEXAS

Visiting Professor Frazier.—Dr. Chester N. Frazier, professor of dermatology and syphilology, Harvard Medical School, and director, dermatology service, Massachusetts General Hospital, Boston, has been appointed visiting professor of dermatology and syphilology at the University of Texas Medical Branch, Galveston. Dr. Frazier will continue to supervise research work on the etiology of cardiovascular syphilis which was inaugurated under his direction at the University of Texas Medical Branch. He will also assist in the supervision of residency training in dermatology and syphilology at the John Sealy Hospital.

Memorial to Dr. Singleton.—Friends of the late Dr. Albert O. Singleton, formerly professor of surgery at the University of Texas Medical Branch, Galveston, have contributed a bronze memorial plaque which will be placed near the entrance to the Special Surgical Unit of the John Sealy Hospital, which has recently been completed as a result of plans made by Dr. Singleton. The Special Surgical Unit is designed primarily for the accommodation of patients requiring plastic or neurosurgery. It contains fifty-six beds, two operating rooms, clinic and x-ray facilities.

UTAH

Annual State Meeting.—The annual meeting of the Utah State Medical Association will be held September 2-4 at Cedar City, under the presidency of Dr. John C. Hubbard, Price. Guest speakers include: Arild E. Hansen, Galveston, Texas, Preventive and Therapeutic "Musts" in Infantile Diarrhea; Ovid O. Meyer, Madison, Wis., Treatment of Subacute Bacterial Endocarditis; Earl D. McBride, Oklahoma City, Differential Diagnosis in Low Back Pain; Edwin J. DeCosta, Chicago, Prolonged Labor; Theodore R. Miller, New York, Symptomatology of Gastric Cancer; Fred W. Wittich, Minneapolis, Emergency Treatment of Allergic Diseases; John F. Patton, St. Louis, Bladder Neck Obstructions in Women and Children; Alfred J. Cone, St. Louis, Difficulties in Swallowing; Gustaf E. Lindskog, New Haven, Conn., Carcinoma of the Lung; Guy V. Pontius, Chicago, Management of Carcinoma of the Colon, and Charles L. Lowman, Los Angeles, Basic Principles of Functional Restoration in Poliomyelitis. Guest speakers will participate in panel discussions in surgery and medicine Thursday afternoon, another in surgery and one in obstetrics and gynecology Friday afternoon. At the annual banquet, September 3 at 7 p. m. in the El Escalante Hotel, Dr. Thad P. Sears, Ft. Logan, Colo., will speak on "Basic Physics and Hazards of the Atomic Bomb."

WYOMING

Appoint State Health Department Director.—Dr. Franklin D. Yoder, Cheyenne, started in his new position as director of the state department of public health August 1. Dr. Yoder finished a year's postgraduate work in public health at the University of California in June. He practiced in Cheyenne from 1940 to 1947, except for three years' service with the Army Air Force during World War II. He is also the new secretary of the Wyoming State Board of Medical Examiners.

GENERAL

Biologic Photographers Meeting.—The Biological Photographic Association, Inc., will hold its annual meeting in Philadelphia, September 8-10, at Houston Hall, University of Pennsylvania. There will be an exhibition of prints, color transparencies and motion pictures in the field, organized symposiums and demonstrations. Further information may be secured from the Secretary, Biological Photographic Association, University Office, Magee Hospital, Pittsburgh 13, Pa.

Plague Infection in Rodents.—According to the U. S. Public Health Service, plague infection was reported in Rio Arriba County, New Mexico, under date of June 8 in a pool of 145 fleas from one prairie dog, shot May 26 near the junction of State Highway 95 and U. S. Highway 84 and also in a pool of 20 fleas from another prairie dog, shot May 27 on a ranch 13 miles west of Parkview. In Douglas County, Washington, plague infection was found in a pool of 196 fleas from 30 meadow mice trapped May 5 about 9 miles north of Farmer.

World Congress on Poliomyelitis.—A world organization to fight infantile paralysis on a global scale was approved unanimously by delegates of the First International Conference on Poliomyelitis held in New York, July 12-17, according to the National Foundation for Infantile Paralysis. Known as the World Congress on Poliomyelitis, it will serve as a clearing house for pooling and channeling to member countries knowledge of the disease and its treatment. A committee of ten from the United States and one each from England, Denmark, the Netherlands, Brazil and Chile, was named to work on details of organization.

Regional Meetings of Pathologists.—The first of two regional postgraduate meetings of the College of American Pathologists will be held at the Baker Hotel, Dallas, Texas, September 6-7. Hematology and blood bank problems will be the major subjects for discussion. Among the speakers will be Dr. Paul A. Owren, Lillehammer, Norway, "Newer Concepts of Blood Coagulation." At the Northeastern Regional Meeting to be held at Massachusetts General Hospital, Boston, September 18, the topics include clinical pathology, physiology, hematology, neuropathology, diagnosis of tuberculosis, virology and problems encountered in the smear diagnosis of cancer.

Centennial of Science Association.—One World of Science will be the keynote of the American Association for the Advancement of Science centenary to be held in Washington D. C. September 13-17. Scientific sessions will be held in the morning and evening hours. The morning scientific sessions include sections on genes and cytoplasm, Tuesday; world health problems, Wednesday, and food and nutrition, Thursday; evening sessions will include addresses on the theory of the nerve impulse; oxygen isotopes in nature and in the laboratory; science, psychiatry, survival; science and UNESCO on Wednesday, and the human frontier and medical research on Thursday.

Mississippi Valley Societies.—The annual meeting of the Mississippi Valley Medical Society will be held at Springfield, Ill., September 29 to October 1, at the Hotel Abraham Lincoln. Wednesday's program will feature lecturers from St. Louis. Speakers at the banquet September 30 include: Drs. Percy E. Hopkins, Chicago; Robert Mueller, St. Louis, and Nathaniel G. Alcock, Iowa City. Round table luncheons are planned for the last two days. There is no registration fee. Dr. Morris Fishbein, Chicago, Editor of The Journal, will give a two hour instruction course in medical writing in the afternoon, September 29, before the Mississippi Valley Medical Writers and Editors Association. Informtion may be secured from Dr. Harold Swanberg, Secretary, 209-224 W. C. U. Building, Quincy, Ill.

Obstetricians, Gynecologists and Abdominal Surgeons. The American Association of Obstetricians, Gynecologists and Abdominal Surgeons will hold its fifty-ninth annual meeting at The Homestead, Hot Springs, Virginia, September 9-11, under the presidency of Dr. Robert D. Mussey, Rochester, Minn. Those speaking by invitation include: Frank R. Lock, Winston-Salem, N. C., Early Diagnosis of Carcinoma of the Cervix with Emphasis on Routine Biopsy; Conrad G. Collins, New Orleans, Ectopic Pregnancy—Mortality and Morbidity Factors; William T. Kennedy, New York, Know the Pelvis; James P. Hennessy, New York, Report on Cesarean Sections, and L. Marshall Harris, Captain (M.C.) U.S.N., Great Lakes, Ill., Role of Penicillin in Obstetrics. The Foundation Prize Thesis will be read by Dr. Barnet Delson, Brooklyn, "Non-Neoplastic Ovarian Cysts—Their Relation to Spiral Arteries in the Human Ovary." The Joseph Price Oration will be delivered by Dr. O'Donel T. D. Browne, Dublin, Ireland, on "The Treatment of Dysmenorrhea by Nerve Section." The banquet will be held September 10 at 7:30 p. m. with Dr. Raymond B. Allen, Seattle, as speaker.

Incidence of Poliomyelitis.—The reported incidence of poliomyelitis in the United States increased from 982 cases the week ending July 31 to 1,215 for the week ending August 4, according to the U. S. Public Health Service. For the corresponding weeks of 1947 and 1946, respectively, 169 and 911 cases were reported. The five year median for the week is 391. Currently, about 43 per cent of the cases were reported in three states: California, 224; North Carolina, 212, and Texas, 82. Increases were also reported in about half of the other states. A total of 5,798 cases has been reported to date, as compared with 1,742 in 1947, 4,171 in 1946 and a five year median of 2,439 for the corresponding period.

The following named states have reported more than 100 cases up to July 31: North Carolina, 1,103; California, 1,027; Texas, 960; New York, 190; Ohio, 177; Iowa, 164; South Carolina, 124; Nebraska, 122; Oklahoma, 119; Florida, 116; Virginia, 113; Illinois, 113, and New Jersey, 103. The total to date for the six New England States is 45 cases. No case has been reported to date in Rhode Island, and only 1 case in Nevada.

There is apparently no indication of extension of the epidemic area in North Carolina—the central and west central parts of the state—although a few scattering cases are being reported in counties outside the epidemic area. To date cases have been reported in 83 of the 100 counties in the state. In Texas the largest numbers of cases have been reported in Harris, Hildago, Cameron, Galveston, Nueces, Tarrant and Bexar counties, with scattering cases beginning to be reported toward the central and northern parts of the state. In California the largest number of cases are being reported in the southern part of the state.

Reports for the week ended August 7 show cases increased from 1,215 to 1,239, the smallest numerical and percentage increase since early in June. Incidence declined in all three of the states reporting the largest number of cases—North Carolina, California and Texas. Only 8 states reported increases of 10 or more. Cases reported to date total 7,039, as compared to 1,967 in 1947, 5,450 in 1946 and a five-year median of 2,913 for the corresponding period.

CORRECTION

Test for Adrenal Cortical Insufficiency.—The second sentence of the summary in the article by Thorn and others in The Journal, July 17, page 1009, should read as follows: "It is suggested that a decrease of 50 per cent or more in the circulating eosinophils or an increase of 50 per cent or more in the urinary uric acid–creatinine ratio indicates adequate adrenal cortical reserve."

Marriages

Walter Spray Rothwell, New Bedford, Mass., to Miss Barbara Chapman of Boston, in New York, March 20.

Thomas Oliver Coppedge Jr., Winston-Salem, N. C., to Miss Mary Raboteau Council of Lake Waccamaw, April 10.

Francis Record Whitehouse, Lynchburg, Va., to Miss Elizabeth Watts of Bryan, Texas, April 2.

Edward William Mullin, Syracuse, N. Y., to Miss Helen Josephine Burke of Brooklyn, May 22.

Barkley Beidleman, Hanover, Pa., to Miss Statia Helen McNeese of Bassfield, Miss., in March.

Allison Reeves Morgan to Miss Constance Marion Nigels, both of Miami, Fla., in April.

Everett C. Sutter, Staten Island, N. Y., to Miss Helen C. Wolfe of Stapleton in May.

Joseph J. Szal, Minersville, Pa., to Miss Mildred Buriak of Shamokin, May 30.

Deaths

Albert Ira Robbins ✠ New Haven, Conn.; born in Malden, Mass., Nov. 22, 1914; University of Vermont College of Medicine, Burlington, 1939; interned at Grace Hospital; began active duty as a first lieutenant in the medical corps, Army of the United States in April 1941; discharged with the rank of captain in September 1944; formerly assistant resident in orthopedics at the Children's Hospital in Boston and fellow in orthopedics at Boston City Hospital; served as resident in orthopedics at the Hospital for Special Surgery, New York; appointed clinical instructor in surgery at the Yale University School of Medicine; assistant director of the Westchester Cerebral Palsy Association in New York; affiliated with the Newington (Conn.) Home for Crippled Children and the Veterans Administration Hospital in Newington; on the staff of the Grace-New Haven Community Hospital; certified by the National Board of Medical Examiners; died April 14, aged 33, of carcinoma of the lung.

William Augustus Downes, Newburgh, N. Y.; born in Crockett, Texas, Dec. 2, 1872; Columbia University College of Physicians and Surgeons, New York, 1895; for many years on the faculty of his alma mater; formerly instructor in anatomy and surgery at Cornell University Medical College in New York; member of the American Surgical Association and the Society of Clinical Surgery; fellow of the American College of Surgeons; served during World War I; at one time surgeon for the New York National Guard; consulting surgeon, St. Luke's, Babies, Memorial and Manhattan State hospitals, the Hospital for Special Surgery, New York Nursery and Childs Hospital and New York Infirmary in New York, the United Hospital, Port Chester and the Stamford (Conn.) Hospital; formerly assistant chief surgeon of the New York Central Railroad; died May 10, aged 75, of coronary occlusion.

William Robert Morrison ⊕ Billings, Mont.; born in Corunna, Ontario, Canada, March 2, 1876; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899; member of the American Academy of Ophthalmology and Otolaryngology; specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology; served during World War I; colonel, medical reserve corps, U. S. Army; served as president of the Montana Reserve Officers Association; past president of the hospital medical staffs of St. Vincent and Deaconess hospitals; consultant in ophthalmology for the Burlington Railroad and the Northern Pacific Beneficial Association; died May 2, aged 72, of pulmonary edema.

Myron William Clift, Midland, Mich.; born in Bay City, Mich., April 14, 1883; University of Michigan Medical School, Ann Arbor, 1905; member of the American Medical Association; fellow of the American College of Physicians; specialist certified by the American Board of Radiology, Inc.; formerly an associate professor of roentgenology at Detroit Medical College; consultant and officer in charge of the Army X-Ray School in Paris, France, during World War I; served on the staffs of the Receiving, Wyandotte and Shirley hospitals in Detroit; for many years chief of radiology at Hurley Hospital, Flint; radiologist at Midland Hospital, where he died May 7, aged 65.

Cornelius Francis McCarthy, Auburn, N. Y.; born on Aug. 15, 1866; University of Vermont College of Medicine, Burlington, 1890; member of the New York State Association of Public Health Laboratories, American Medical Association and of the Syracuse Academy of Medicine; past president of the Cayuga County Medical Society, of which he had been historian; served on the city milk commission for two terms; formerly health officer of Batavia; a member and secretary of the board of managers of Cayuga County Laboratory from 1924 to 1937; on the staffs of Auburn City Hospital and Mercy Hospital, where he died May 5, aged 81, of uremia.

John Calvin Morrison Brust ⊕ Syracuse, N. Y.; born in Syracuse, Oct. 16; 1905; Syracuse University College of Medicine, 1929; associate professor of clinical surgery (proctology) at his alma mater; certified by the National Board of Medical Examiners; formerly a fellow at the Mayo Foundation in Rochester, Minn.; specialist certified by the American Board of Surgery; served in the medical corps of the U. S. Naval Reserve during World War II; assistant proctologist at the University Hospital and Free Dispensary and Syracuse Memorial Hospital; died May 14, aged 42, of a fracture of the skull received in an accident.

Fenton Taylor, New York; born in Orange, N. J., Nov. 22, 1887; Columbia University College of Physicians and Surgeons, New York, 1913; member of the American Medical Association and the New York Academy of Medicine; in 1916 joined the British Army and won the British Military Cross for gallantry in action with the first Leicestershire Brigade in France; later served in France with the American Red Cross and the American Expeditionary Forces, from which he was discharged as a major; on the staffs of Doctors Hospital and the Southampton (N. Y.) Hospital; died May 26, aged 60, of heart disease.

Cornelius O. Anderson ⊕ Concordia, Kan.; Northwestern University Medical School, Chicago, 1903; died April 30, aged 74, of paralysis agitans.

Albert Stewart Barr ⊕ Ann Arbor, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1909; member of the American Academy of Ophthalmology and Otolaryngology; specialist certified by the American Board of Ophthalmology; served during World War I; from 1919 to 1922 on the staff of University Hospital; on the staff of St. Joseph's Mercy Hospital, where he died April 27, aged 65, of melanotic sarcoma.

Charles E. Beck ⊕ Portland, Pa.; Medico-Chirurgical College of Philadelphia, 1893; an affiliate fellow of the American College of Surgeons; past president of the Northampton County Medical Society; president of the Portland borough council for many years; served on the school board, as postmaster and as vice president of the Portland National Bank; affiliated with the Easton (Pa.) Hospital and the General Hospital of Monroe County in East Stroudsburg; died April 29, aged 80, of arteriosclerosis.

Claude Conley Bell, Denver; Denver College of Medicine, 1901; member of the American Medical Association; served during World War I; on the visiting staffs of the Mercy Hospital, St. Luke's Hospital, St. Joseph's Hospital and the Presbyterian Hospital, where he died April 30, aged 73, of coronary thrombosis.

Edmond Elmore Bohlender, Dayton, Ohio; Medical College of Ohio, Cincinnati, 1894; served on the staff of St. Elizabeth Hospital; died April 26, aged 80, of coronary disease.

William Oscar Bonser ⊕ Toledo, Ohio; University of Toronto Faculty of Medicine, Toronto, Canada, 1911; affiliated with the Maumee Valley, Mercy and Toledo State hospitals; died April 22, aged 59, of coronary occlusion.

John Ruskin Bradley, Spencerport, N. Y.; Cornell University Medical College, New York, 1907; died May 3, aged 68.

William M. Bradshaw ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1909; fellow of the New York Academy of Medicine; medical director of the Mutual Life Insurance Company of New York; at one time adjunct attending physician at Bellevue Hospital; died in the Roosevelt Hospital May 1, aged 64, of arteriosclerotic heart disease.

Milledge Thompson Brodie, Charlotte, N. C.; Meharry Medical College, Nashville, Tenn., 1927; school physician of Johnson C. Smith University; affiliated with the Good Samaritan Hospital, where he died April 29, aged 51, of hypertensive cardiovascular disease and cerebral thrombosis.

Herman Bryan, Wooster, Ohio; University of Pennsylvania Department of Medicine, Philadelphia, 1901; for many years a medical missionary in China; died May 9, aged 73, of chronic myocarditis.

William Henry Burke, Middletown, N. Y.; Bellevue Hospital Medical College, New York, 1882; died in the Horton Hospital April 20, aged 88, of a fractured femur received in a fall.

Thomas Jefferson Calhoun ⊕ Carrollton, Texas; University of Texas School of Medicine, Galveston, 1923; member of the American Academy of Dermatology and Syphilology, Southern Medical Association and the Texas Dermatological Society; chairman of the staff of the City-County Hospital in Dallas; served during World War I; died April 11, aged 57, of coronary thrombosis.

Darwin Bryan Childs, Tulsa, Okla.; University of Tennessee College of Medicine, Memphis, 1931; died April 24, aged 41, of phenobarbital intoxication.

Lyman W. Childs, Cleveland; Western Reserve University Medical Department, Cleveland, 1894; past president of the American Association of School Physicians; for many years supervisor of public health in Cleveland schools; in 1943 received the William A. Howell Medal for distinguished service in the field of school health; died in Fort Lauderdale, Fla., April 23, aged 80, of ruptured arteriosclerotic aneurysm of aorta.

Wallace Berwell Christian, St. Louis; Howard University College of Medicine, Washington, D. C., 1905; member of the staffs of the Homer G. Phillips Hospital, where he served as superintendent, St. Mary's Infirmary and the People's Hospital, where he died April 21, aged 74, of heart disease.

William David Chrisman, Eagle Rock, Calif.; Northwestern University Medical School, Chicago, 1896; died in Wadsworth Hospital, Sawtelle, April 21, aged 76, of a hip fracture received in a fall, cerebral hemorrhage and pneumonia.

Amos Watson Colcord ⊕ Clairton, Pa.; College of Physicians and Surgeons, Baltimore, 1893; served as president of the school board and of the Clairton Library Board; formerly surgeon for the Carnegie-Illinois Steel Corporation; died April 30, aged 84, of carcinoma of the stomach.

George James Connor ⊕ Haverhill, Mass.; Maryland Medical College, Baltimore, 1909; chairman of the board of health; associated with Hale Hospital; died in the Phillips House, Boston, April 18, aged 61, of carcinoma of the lung.

Richard Lloyd Cook, Washington, D. C.; University of Virginia Department of Medicine, Charlottesville, 1904; served in France during World War I; formerly senior surgeon in the U. S. Public Health Service reserve; at one time affiliated with the Veterans Administration Hospital in Outwood, Ky., and other Veterans Administration hospitals; served as a member of the Veterans Administration Disability Rating Board; found dead April 26, aged 69.

Frederick Aloysius Coughlin ⊕ Providence, R. I.; Johns Hopkins University School of Medicine, Baltimore, 1908; fellow of the American College of Surgeons; served during World War I; on the staffs of Rogers Williams, St. Joseph's and Rhode Island hospitals; died in St. Francis Hospital in Miami Beach, Fla., April 19, aged 65, of hypertensive cardiovascular disease.

John Stephen Couret ⊕ New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1929; member of the American Society of Clinical Pathologists; on the staff of Hotel Dieu; died April 15, aged 42, of heart disease.

James Scott Covey, Culleoka, Tenn.; Vanderbilt University School of Medicine, Nashville, 1893; member of the American Medical Association; affiliated with the King's Daughters' Hospital in Columbia, where he died April 27, aged 79, of uremia, following an operation.

William Benjamin Crawford, Goldsboro, N. C.; Bellevue Hospital Medical College, New York, 1886; died April 20, aged 87, of arteriosclerotic heart disease.

Michael A. Cunningham, Janesville, Wis.; Rush Medical College, Chicago, 1896; member of the American Medical Association; affiliated with the Mercy Hospital; died April 23, aged 84, of heart disease.

Anna Keith Davenport, Hartford, Conn.; Medical College of the State of South Carolina, Charleston, 1903; Syracuse University College of Medicine, 1917; member of the American Medical Association; died in the Hartford Hospital April 22, aged 77, of carcinoma of the gallbladder.

John Rumsey Davies Jr., ⊕ Philadelphia; Jefferson Medical College of Philadelphia, 1913; specialist certified by the American Board of Otolaryngology; served in France during World War I; affiliated with Children's Heart, Pennsylvania, Chestnut Hill, Bryn Mawr (Pa.) and Abington (Pa.) Memorial hospitals; died in Blue Hill, Maine, April 22, aged 57, of pulmonary thrombosis.

Alvah Clark Dickson, Donelson, Tenn.; University of Nashville Medical Department, 1899; member of the American Medical Association; on the staffs of the Nashville General Hospital, St. Thomas Hospital and the Protestant Hospital, all in Nashville, where he died April 25, aged 70, of cerebral hemorrhage.

Gerry Lewis Esersky ⊕ Brooklyn; Tufts College Medical School, Boston, 1925; member of the American Urological Association; affiliated with the Beth El and Cumberland Street hospitals; died in St. Francis Hospital, Miami Beach, Fla., April 30, aged 47, of heart disease.

Frank J. Filz, Seattle; University of Southern California School of Medicine, Los Angeles, 1903; member of the American Medical Association; formerly a druggist; died April 17, aged 84, of cardiac failure.

Charles Louis Garvin, Palo Alto, Calif.; Cooper Medical College, San Francisco, 1895; served during World War I; formerly on the faculty of the University of Southern California School of Medicine, Los Angeles; died at the Palo Alto Hospital April 28, aged 79, of cerebral hemorrhage.

Reid Gilmore, Schenectady, N. Y.; Albany Medical College, 1900; member of the American Medical Association; affiliated with the Ellis Hospital; died April 28, aged 72, of arteriosclerosis.

David Irwin Glass, Louisville, Ky.; University of Louisville School of Medicine, 1927; member of the American Medical Association; served during World War II; died in St. Joseph Infirmary in April aged 44, of bilateral polycystic disease and uremia.

Clyde Oden Griffin, Lindsay, Calif.; University of Pennsylvania School of Medicine, Philadelphia, 1910; died April 8, aged 61.

Howard Hogan, Dallas, Texas; University of Edinburgh Faculty of Medicine, Scotland, 1933; member of the American Medical Association and of the American Society of Anesthetists, Inc.; served during World War II; formerly medical director of the Nepera Chemical Company, Yonkers, N. Y.; died April 20, aged 48, of carcinoma of the esophagus.

Joseph T. D. Howard, Falls Church, Va.; Georgetown University School of Medicine, Washington, D. C., 1889; at one time affiliated with the Indian Service and Veterans Administration; died April 15, aged 81, of uremia due to cardiovascular renal disease.

Edwin Lee Jones, Medical Inspector, Commander, U. S. Navy, Dallas, Texas; University of Texas School of Medicine, Galveston, 1903; entered the U. S. Navy in 1906 and retired July 1, 1936; died in U. S. Naval Hospital, Houston, April 17, aged 72, of cerebral thrombosis.

William Howard Kingston, Moira, N. Y.; Long Island College Hospital, Brooklyn, 1909; member of the American Medical Association; served as president of the board of education; formerly director of the Farmingdale (N. Y.) Bank and president of the Farmingdale Board of Education; served as health officer of Bombay and Moira; on the staff of the Alice Hyde Memorial Hospital in Malone, where he died April 16, aged 67.

Francis Evelyn Knowles, Coconut Grove, Fla.; College of Physicians and Surgeons, Baltimore, 1893; died in the Jackson Memorial Hospital, Miami, April 19, aged 79, of uremia, following an abdominal operation.

Frederick De Forest Lambert, Tyngsboro, Mass.; Boston University School of Medicine, 1900; Harvard Medical School, Boston, 1901; past president of the Middlesex North District Medical Society; on the staff of Lowell (Mass.) General Hospital; died April 20, aged 70, of coronary thrombosis.

Leonard Templeton Lane, Prichard, Ala.; University of Alabama School of Medicine, 1912; served in France during World War I; died in a hospital at Mobile, April 25, aged 63, of coronary occlusion, arteriosclerosis and diabtes mellitus.

Everard T. Lark ⊕ Columbia, Ill.; St. Louis University School of Medicine, 1902; president of the Monroe County Medical Society; on the staff of the Deaconess Hospital in St. Louis; died April 20, aged 67, of coronary occlusion.

Ota Carita Loud, Palm Beach, Fla., University of Arkansas School of Medicine, Little Rock, 1916; died April 18, aged 57.

John Stoddard McCormick ⊕ Albany, N. Y.; Albany Medical College, 1914; also a graduate in pharmacy; fellow of the American College of Surgeons; attending surgeon at St. Peter's Hospital, where he died April 22, aged 58, of chronic peritonitis and diverticulitis of the colon.

Philip Daniel McGinnis, Joliet, Ill.; Rush Medical College, Chicago, 1900; member of the American Medical Association; past president of the Will-Grundy Counties Medical Society; health officer; served on the staff of St. Joseph Hospital, where he died April 18, aged 72, of uremia.

Herbert Bruce McIntire ⊕ Cambridge, Mass.; University of the City of New York Medical Department, 1882; died April 21, aged 90, of arteriosclerotic heart disease.

Leon Feinson Muldavin ⊕ New York; L.R.C.P., London, and M.R.C.S., England, 1935; assistant adjunct surgeon at Beth Israel Hospital, where he died April 25, aged 37, of acute lymphatic leukemia.

Martin Gillespie Neely ⊕ Birmingham, Ala.; University of Virginia Department of Medicine, Charlottesville, 1925; specialist certified by the American Board of Pediatrics; past president of the staff of the Children's Hospital; for many years chief of the pediatric department of the Employees' Hospital of the Tennessee Coal, Iron and Railroad Company in Fairfield; died April 23, aged 48, of carcinoma of the nasopharynx.

Elmer Hiram Parker, River Falls, Wis.; Chicago Medical College, 1891; fellow of the American College of Surgeons; died in Lake Wales, Fla., April 19, aged 84, of arteriosclerotic heart disease.

Gilman Caldwell Paynter, Falfurrias, Texas; University of Illinois College of Medicine, Chicago, 1943; member of the American Medical Association; interned at the Naval Hospital in Norfolk, Va.; formerly a resident at the Swedish Covenant Hospital in Chicago; served in regular navy during World War II; died May 1, aged 29, of infantile paralysis.

Myron Hopkins Powelson, Zanesville, Ohio; Ohio State University College of Medicine, Columbus, 1926; member of the American Medical Association; entered the Mayo Foundation as a fellow in medicine in April 1929 and left in January 1930; died May 1, aged 43.

David Benjamin Rotman ✠ Chicago; Chicago College of Medicine and Surgery, 1916; clinical professor of psychiatry at the University of Illinois College of Medicine; president elect of the Illinois Psychiatric Society; served during World War I; resident assistant and senior physician at the Chicago State Hospital from 1917 to 1923; director of the Psychiatric Institute, Municipal Court; died May 30, aged 55, of coronary thrombosis.

John Chandler Shirley ✠ Huron, S. D.; Northwestern University Medical School, Chicago, 1911; fellow of the American College of Surgeons; past president of the South Dakota State Medical Association; on the staff of the Sprague Hospital; district surgeon for the Chicago and North Western Railway; local surgeon for the Great Northern Railway; died in St. Mary's Hospital, Rochester, Minn., April 30, aged 63, of hepatic insufficiency and infectious hepatitis.

Ben Durham Spears ✠ Wauchula, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1914; past president of the DeSoto-Hardee-Highlands-Charlotte Glades Counties Medical Society; died April 25, aged 56, of heart disease.

Robert Caldwell Strode, West Branch, Mich.; Washington University School of Medicine, St. Louis, 1905; head of District Health Unit number 2; found dead April 5, aged 69, of acute endocarditis.

Andrew Jackson Strong, Norfolk, Va.; Leonard Medical School, Raleigh, N. C., 1906; affiliated with the Norfolk Community Hospital, where he died April 22, aged 69, of acute cardiac dilatation.

Willard W. Swarts ✠ Three Rivers, Mich.; Medical College of Ohio, Cincinnati, 1896; formerly practiced in Auburn, Ind., where he served as county health officer and secretary of the city board of health; died April 24, aged 75, of cerebral hemorrhage.

John S. Thompson, Gravette, Ark. (licensed in Arkansas in 1903); member of the American Medical Association; died in Bentonville April 28, aged 82, of coronary occlusion.

Silas Terry Yeatts, Floyd, Va.; Lincoln Memorial Univercity Medical Department, Knoxville, Tenn., 1910; president of the Floyd County Medical Society; a member of the board of health; served as mayor and member of the town council; died in a hospital at Roanoke April 27, aged 60, of hypertensive heart disease.

William M. York, Huntington, W. Va.; Eclectic Medical Institute, Cincinnati, 1907; at one time state senator; served as commissioner of finance, health and taxation; formerly practiced in Williamson, where he had been mayor and member of the city commission; died April 23, aged 67, of coronary occlusion.

KILLED IN ACTION

Lieut. Comdr. Herbert C. Brokenshire
(MC) U.S.N.R., 1896-1944

Lieut. (jg) Frank Hight Gerard
(MC) U.S.N.R., 1917-1945

Lieut. George T. Ferguson
(MC) U. S. Navy, 1914-1944

Herbert Cecil Brokenshire, Winchester, N. H.; Cornell University Medical College, New York, 1924; interned at the Methodist Episcopal Hospital in Brooklyn; at one time affiliated with the U. S. Public Health Service; served as a medical missionary in the Philippines, where he was director of the Davao Mission Hospital from 1926 to 1941; served during World War I began active duty as a lieutenant commander in the U. S. Naval Medical Reserve in 1941; reported missing following the capture of Manila in 1941 and later reported a prisoner of the Japanese; awarded the American Defense Service Medal (Base clasp), Asiatic Pacific Area Campaign Medal and Purple Heart; the Bronze Star Medal awarded posthumously; killed in the South China Sea Oct. 24, 1944, aged 48, as the result of the sinking of a Japanese ship on which he was being transported while a prisoner of war.

Frank Hight Gerard, Haverford, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1943; interned at the Hahnemann Hospital in Philadelphia; began active duty as a lieutenant (jg) in the medical corps of the U. S. Naval Reserve, on Oct. 10, 1944; killed in action off Okinawa May 27, 1945, aged 28.

George Theodore Ferguson, Lieutenant (MC), U. S. Navy, Wausau, Wis.; Marquette University School of Medicine, Milwaukee, 1938; interned at the Kansas City General Hospital in Kansas City, Mo.; appointed to the medical corps of the U. S. Navy as a lieutenant (jg) in August 1938; graduated from the U. S. Naval Medical School in 1939; from September 1939 until November 1941 served in China as medical officer on the U. S. S. *Wake,* on the Yangtsze River Patrol, and in the battles of Manila and Corregidor in World War II; captured by the Japanese and held as a prisoner of war for two and one-half years in prison camps in the Philippines; on duty with the Fourth Marines; promoted to first lieutenant; died Oct. 24, 1944, aged 30, when the Japanese prison ship on which he was confined was bombed.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 17, 1948.

Maternity Service Under the National Health Act

When a government, even with the best intentions, tries to regulate the affairs of its citizens from the cradle to the grave, it is sure to make many mistakes. In a letter to the *Times* Sir William Gilliatt, president of the Royal College of Obstetricians and Gynecologists, points out that the childbearing women of this country have been misled by being led to expect that under the National Health Service a physician experienced in obstetrics will be available for all who require medical help during labor. Under the National Health Service Act the maternity services come under three separate administrative bodies: (1) regional hospital boards and boards of governors of teaching hospitals for consultants and maternity nurses in hospitals, (2) local authorities for domiciliary midwives, (3) executive councils for nurses and for practitioners undertaking obstetric work. The college has consistently deprecated this division of control. The care of the pregnant woman, whether at home, at the clinic or in the hospital, is a responsibility which cannot be discharged with the maximum safety, with respect to the two lives at stake, if shared between different administrative bodies. The greater part of our maternity service has been and can safely be left in the hands of the midwives, provided that experienced practitioners are available for antenatal consultations, for abnormalities arising during labor or in the puerperium and for postnatal examinations. The public has been told that every expectant mother can have the services of a physician who undertakes maternity work. But it is doubtful whether this promise can be implemented. If it is, there will be little place for the fully trained midwives, who have borne the responsibility for 75 per cent of domiciliary births. If it is not, the midwives will be still needed, but removal of their responsibility will seriously hamper recruitment to their ranks.

The college has always advocated that there should be a list of practitioners who have had experience in maternity work after qualification to be called in for midwives' emergencies. Practitioners entitled to have their names placed on this list are: (1) those who have held a resident obstetric appointment and (2) those similarly well qualified by long experience in practice. But it appears now that any practitioner can undertake maternity work under the act. Guidance should be given to local committees on the principles of selection of general practitioner-obstetricians for an approved list. None has been given by the Ministry as to the obstetric experience desirable. The president therefore asks that the Ministry of Health should undertake a comprehensive review of the results of the maternity service of the National Health Service.

Science and Socialism

The socialization of medicine is only part of the Government's plan to socialize as many industries as possible. However, English moderation and instinct for a middle course have saved us from some extremes which would probably have materialized in other countries under a socialist government. The government has complete control of the medical profession, but it has compromised on many of the demands made by medical negotiators, even to the dissatisfaction of its more extreme supporters. While taking over all the voluntary hospitals, excepting a few small ones controlled by religious bodies, it has left untouched the autonomy of the medical schools attached to hospitals. Similar restraint is shown in the first annual report of the Advisory Committee on Scientific Policy, which has just been published. This committee was appointed by the government. The general effect of their recommendations on governmental scientific research is that the independence and initiative of the research councils should be preserved, but that executive departments, to whose work science can contribute, should assume a more positive role in the organization and direction of research required for their purposes, and in supervising its application. In some departments, particularly in those responsible for socialized industries, it might be advantageous to appoint an advisory council to assist the minister in formulating departmental scientific policy. No attempt should be made to concentrate responsibility for all governmental scientific research on a minister, for this would be a step in creating a ministry of science and would intensify the old cleavage between science, administration and policy.

With regard to scientific man power, it had been estimated in 1946 that the number of qualified scientists was about 55,000 and that the minimum demand by 1950 would be for 70,000 and by 1955 for 90,000. We could not expect more than 64,000 by 1955 unless the prewar output of 2,500 a year were raised to 5,000. Happily the latest figures from the universities indicate that this level has been reached. These figures apply to pure scientists. The figures are less assuring as to applied scientists.

The Danger to Children from Contact with Tuberculous Persons

The Joint Tuberculosis Council has made a report on the protection of organized groups of children from the risk of infection by adults suffering from tuberculosis. It gives examples of a teacher of children and a woman working in a day nursery who were found to have advanced phthisis. The Council makes the following recommendations: 1. No person with pulmonary tuberculosis should be allowed to accept employment which will involve contact with organized groups of children until the disease has been certified as arrested. 2. All whose duties bring them into close contact with organized groups of children should undergo a medical examination, including roentgen examination of the chest, and should hereafter have a roentgen examination annually while so employed. 3. If any employee is found to be suffering from pulmonary tuberculosis, employment should cease at once and not be resumed until two consecutive medical certificates have been submitted, one certifying that the disease is no longer active and the other that the improvement has been maintained at least six months after the date of the first certificate. 4. When employment is resumed, similar certificates should be submitted at three month intervals for a year and at six month intervals for a further two years.

Prevention of Injury in Air Crashes

The Air Registration Board has had under consideration the problem of how to increase the chances of survival of passengers in air crashes. In the *Journal of the Royal Aeronautical Society* the secretary, Mr. R. E. Hardingham, says that although 90 per cent of accidents are not caused by lack of airworthiness, but by error of judgment or by weather, there is still much to be done in the matter of design. The avoidance of physical injury to the occupants in a crash is of prime importance if there is to be much hope of escape. Head injuries are the commonest, and Mr. Hardingham advocates the provision of seats facing aft. To avoid injuries to pilots he suggests that all instruments should be sunk into a fascia board of smooth metal, and that flush fittings should be used wherever possible to avoid dangerous knobs and projections. Fire is the greatest risk, and bag fuel tanks are much safer than integral tanks. They should be fitted in the wings, as far as possible from the fuselage, but not so far out as to render them likely to be ruptured in a one wheel or sideslip landing. They should certainly not be located where they would be broken by an undercarriage collapse.

Medicopolitical Criticism

A representative referred to the sense of disappointment and frustration shown in considerable correspondence in the *British Medical Journal* and moved that a special committee be set up to obtain full information about the conduct of the profession's case during 1948. The chairman of council replied by attacking the mover and seconder of the motion for bringing it forward without notice. They protested too much when they said that it had not been brought forward in criticism of the council, and they implied that he, as chairman, had not disclosed to the representative body the things that had taken place. He repudiated that absolutely. This call for a postmortem examination could serve no useful purpose. To say that the profession is dissatisfied with the conduct of affairs means merely "that you are dissatisfied with your own action. We are undertaking to cooperate in the service and can only do the best we can for it and the public." After further discussion the motion was lost by a large majority. Though formally only a motion for an inquiry, it represented the dissatisfaction of the section of the association who disapproved of the decision to accept the service. The deputy chairman of the representative body condemned the motion as a heresy hunt, a call for a postmortem examination of the events of the last few months, which would do no good.

ITALY

(From Our Regular Correspondent)

Florence, June 26, 1948.

Medical Treatment of Dysthyreosis

The recent Congress of the Italian Association for Internal Medicine reviewed the medical treatment of dysthyreosis, the presentation of which was trusted to Professors Meneghetti (University of Padua), Patrassi, Beretta and Bastai. Prof. Meneghetti pointed out that new research has been done on the relation between iodine and thyroid. It was observed that after removal of the thyroid, the iodine of the tissues may determine phenomena of hyperthyroidism. From that the supposition was derived that diiodotyrosine may be formed also in the extrathyroid tissues. Research on radioactive iodine has defined the modality of the thyroid secretion as follows: The secreting cell elaborates the diiodotyrosine, which is poured into the follicle, and there the synthesis of the thyroxin and of the thyroglobulin may be accomplished. Successive proteolytic enzymes may divide the thyroglobulin, and the products of this division may pass through the walls of the follicle and be poured into the blood.

Present knowledge of the pharmacology of radioactive iodine holds prospects of its usefulness in hyperthyroidism. The drugs whose antithyroid action has been observed in recent years are numerous, but only a few have a specific action. Three groups may be considered: thiourea and its derivatives (thiouracil and others); aminothiazole and its derivatives; the aminobenzene drugs (para-aminobenzoic acid, sulfonamide drugs and others). The product preferred now is thiouracil, particularly benzyl thiouracil.

Professor Patrassi discussed thyroid hormones. Thyroxin is not the only genuine thyroid hormone. The thyroglobulin of the colloid substance has globulinic structure and condenses in itself various amino acids. The thyroglobulin does not pour over into the blood stream, and it may not, therefore, be considered as the circulating thyroid hormone. According to recent views, there does not exist a unique thyroid hormone, but various active iodized groups, which vary in composition and activity.

The treatment of hypothyroidism centers in the use of total thyroid extracts, especially dry ones, and of thyroxin. The efficacy of the dry extracts is indisputable; the only difficulty is the correct dosage; a good criterion consists in the percentage of the organic iodine. The parenteral route is preferred for the administration of thyroxin. In the treatment of hypothyroidism the dry thyroid is preferred to the thyroxin. The problem of dosage is much disputed, and this applies to the dry thyroid as well as to thyroxin; but firmly established is the principle to cling to the minimum amount required for obtaining the clinical effect, and dosage may be gradually increased until this effect is reached. The thyroid medication may be combined with other hormone preparations if one keeps in mind that other endocrine organs may take part in the genesis of myxedema, and particularly in cases of thyroresistant myxedema. The results of properly practiced thyroid opotherapy are the most brilliant among those obtained in endocrinopathy.

The risk of thyroid medication consists foremost in the production of hyperthyroidism, of anginoid, hypoglycemic and hypoadrenal crises. The person suffering from myxedema, cautiously treated, may survive to a very old age.

Professor Beretta emphasized that hyperthyroidism has a cyclic course, consisting of exacerbations and of remissions which occasionally may be so prolonged as to simulate recovery. Frequently the results of treatment may coincide with this periodicity of thyroid activity; therefore, in order to pass definite judgment on the real efficiency of the treatment one may consider only late results.

One must keep in mind that the basedowian syndrome does not have a single pathogenesis, being associated not only with hyperthyroidism but with various other factors. Consequently, the treatment of toxic diffuse goiter (Basedow's disease) cannot be standardized, but should be oriented according to the pathogenesis; for example, primary hyperthyroidism and thyrotoxicosis of nodular goiter must be treated in a different way than thyrotoxicosis of diffuse goiter.

The medicinal treatment consists essentially of the administration of iodine, of diiodotyrosine, of vitamins and of derivatives of thiourea. These last products bring about a decisive thyroinhibitory action. Although the volume of the goiter and the exophthalmos remained generally unchanged, in nearly all cases treated, a symptomatic remission was obtained which was so pronounced that it might be defined as a clinical recovery. However, two important questions remained: the duration of the remission after the drug was discontinued and the frequency of toxic manifestation with which it may be associated. Of particular interest is the granulocytopenia. The remission may continue for as long as two years, and any recurrences are always sensitive to renewal of treatment. Toxic manifestations do not exceed 2 per cent of the cases treated and have a tendency to become less frequent when less toxic drugs (methylthiouracil, propylthiouracil, thiobarbituric compounds) are used. If the experience of the next few years confirms the results already obtained with the thiourea derivatives, these new drugs may prove as effective as roentgen ray or surgical treatment.

Professor Bastai discussed particularly the so-called myxedema heart and the condition of the vascular system in this disease. Degenerative changes may occur, and these, together with the hypercholesteremia, may explain the possible occurrence of coronary sclerosis or even a cardiac infarct.

The frequent anemic syndrome of hypothyroid patients is due to the fact that the bone marrow is sensitive to the stimulating action of thyroid substances.

To determine rational criteria of treatment, one must distinguish between the various clinical and pathogenetic forms of hyperthyreosis. In mild forms, small doses of iodine for several weeks appear useful (5 to 10 drops of Lugol's solution per day), with weekly intervals between the weeks when treatment is given. In medium severe and grave forms it is necessary to differentiate between toxic diffuse goiter (Basedow) and nodular toxic goiter. According to the speaker, nodular toxic goiter does not respond to medical or roentgen ray treatment; it represents a clear indication for thyroidectomy. The hyperthyroid syndrome of diffuse goiter, on the contrary, is susceptible to efficacious treatment with the derivatives of thiourea, as well as by roentgen ray and by surgery.

Medical Economics

NUMBER OF LIVING PHYSICIANS BY STATES

FRANK G. DICKINSON, Ph.D.
Director, Bureau of Medical Economic Research
Chicago

According to a tabulation from the punch cards being developed by the Bureau's staff,[1] there were 199,755 living physicians in the United States as of about June 1, 1948. Cards have not yet been punched for June graduates of medical colleges. All living physicians for whom cards have been prepared are included in this tabulation by states. It is known that some of them are retired, some are not in practice and some are employed by federal, state and local health agencies. As the Bureau's punch card system nears completion subsequent tabulations will present breakdowns showing the number in each of these groups.

The Bureau started on this operation more than a year ago and hopes to have all the punch cards complete early in 1949. As all the information recorded to date in our punch cards has been taken from the records of the Directory Department, our work cannot move along any faster than the vast clerical operation of the Directory Department in preparing its final copy for the new American Medical Directory. When finally completed, our punch cards will contain some information which will not appear in the Directory and vice versa.

Approximate Number of Living Physicians in the United States, by States, May-June 1948

State	No. Living	State	No. Living
Alabama	2,238	Nebraska	1,625
Arizona	802	Nevada	198
Arkansas	1,750	New Hampshire	727
California	16,069	New Jersey	6,585
Colorado	2,202	New Mexico	508
Connecticut	3,261	New York	30,970
Delaware	439	North Carolina	3,377
District of Columbia	4,130	North Dakota	467
Florida	2,931	Ohio	10,091
Georgia	3,145	Oklahoma	2,206
Idaho	470	Oregon	1,852
Illinois	13,307	Pennsylvania	14,633
Indiana	4,396	Rhode Island	1,039
Iowa	2,933	South Carolina	1,530
Kansas	2,223	South Dakota	517
Kentucky	2,683	Tennessee	3,349
Louisiana	3,080	Texas	7,621
Maine	1,010	Utah	831
Maryland	3,696	Vermont	689
Massachusetts	9,102	Virginia	3,306
Michigan	7,127	Washington	2,811
Minnesota	4,263	West Virginia	1,839
Mississippi	1,525	Wisconsin	3,873
Missouri	5,352	Wyoming	252
Montana	514		
Total			199,755

We present the accompanying table for publication at this time because comparable data on the number of physicians in each of the states have not been published since the 1942 Directory. This table is offered at the present time as an aid to those who have need for over-all data on the number of living physicians in the several states. Owing to unrecorded deaths and interstate migrations in addition to some inevitable duplications and omissions of punch cards prior to a final check, there are a number of small errors of unknown magnitude in this list which will be removed before the punch card system is completed. As additional tabulations and breakdowns will be published as soon as we complete them, we trust that interested readers will postpone any requests for additional data.

At this stage of our operations, one important statistical fact emerges. The (approximate) number of living physicians in the United States is now 17 per cent greater than the 170,163 shown in the 1940 A. M. A. Directory; the population of the United States has increased only 12 per cent since 1940. Because the number in each state as shown in this table is only approximately correct we are not ready to present the increase or decrease in the number of living physicians in each state. This is another way of saying that the total for the United States, 199,755, is a more reliable estimate than the number shown for any one state.

Medical Motion Pictures

FILM REVIEWS

The Diagnosis of Tuberculosis with an Improved Culture Medium. 16 mm., black and white, sound, 722 feet, (1 reel), showing time twenty minutes. Produced in 1948 by and procurable on loan from: U. S. Public Health Service, Communicable Disease Center, 605 Volunteer Bldg., Atlanta 3.

This film presents an improved medium (Loewenstein) for the clinical diagnosis of tuberculosis, which may show growth in two weeks. Minute details of preparation of the medium, of handling of sputum, including its concentration, and of all steps involved are presented clearly and instructively. Impressive, among other features, are the fine reproductions of colonies and the stress on gross colony identification.

Photography is excellent and photomicrography is technically very satisfactory. The narration is fair to good.

This film can be recommended for showing to phthisiologists, bacteriologists, technicians, physicians and medical students. The procedure is simple enough to be employed in any well equipped laboratory.

Demerol and Pudendal Block. 16 mm., color, silent, 550 feet, (1 reel), showing time fifteen minutes (run at sound speed). Prepared in 1947 by Lees M. Schadel Jr., M.D., Department of Obstetrics, with the Cooperation of the Department of Anesthesiology, Hahnemann Medical College and Hospital, Philadelphia. Produced by News Reel Laboratory, Philadelphia, through a grant from the Winthrop Chemical Company, Inc. Procurable on loan or purchase from the author, 918 Medical Arts Bldg., 16th and Walnut Sts., Philadelphia 2.

This film presents a method of producing obstetric analgesia and complete perineal anesthesia by a combination of meperidine and scopolamine, and bilateral pudendal nerve block. The nerve supply to the perineum is reviewed and the landmarks used in blocking the pudendal nerves demonstrated. The technic of injection is well shown and the resulting area of analgesia outlined. The appearance of spontaneous respiratory efforts immediately following delivery would seem to indicate that a minimal degree of respiratory depression of the infant is produced by this method. The film should be of interest to obstetricians, anesthetists, interns and general practitioners. The photography is excellent.

Cervicitis, Etiology, Diagnosis and Treatment. 16 mm., color, sound, 1,700 feet, (1 reel), showing time forty-seven minutes. Prepared in 1946 by Bela C. Balas, M.D. and Herbert E. Schmitz, M.D., Department of Gynecology, Loyola University Medical School, Mercy Hospital, and Cook County Hospital, Chicago. Produced by the Medical Film Guild, New York, through a grant for postgraduate instruction from the A. C. Barnes Co., New Brunswick, N. J. Procurable on loan from: The Medical Film Guild, 167 West Fifty-Seventh Street, New York 19.

This film is an attempt to illustrate the etiology, diagnosis and treatment of cervicitis. The first part of it presents history, importance of cervicitis, symptoms, etiology, pathogenesis, histology, bacteriology, diagnostic measures and classification. This part of the film is rather confusing because the information presented is incomplete in many instances.

Doubtful is the emphasis placed on the importance of cervicitis as a focus of infection in systemic disease and the consideration of pathogenic bacteria as part of the normal vaginal flora, or that leukorrhea is the earliest sign of cervical carcinoma.

The author's classification of cervicitis is quite original, consisting of four conditions: endocervicitis, erosions, eversions and cystic disease. This is confusing because erosions and cystic disease are ordinarily considered to be complications or sequelae of cervicitis. Erosions are often seen in patients who have no other evidence of cervicitis. Eversions are distortions of the cervical structure caused by lacerations.

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[1] The punch cards have the same geographic coverage as the American Medical Directory. The approximate number of living physicians in Canada about June 1, 1948 was 14,015; Alberta 792, British Columbia 1,181, Manitoba 780, New Brunswick, 326, Nova Scotia 587, Ontario 5,649, Prince Edward Island 73, Quebec 4,015, Saskatchewan 607, Yukon 2 and Northwest Territories 3. Labrador had 2 living physicians and Newfoundland 122. There were 1,278 located in United States possessions and territories; 71 in Alaska, 73 in the Canal Zone, 4 in the Mid-Pacific Islands of Guam, Johnson, Midway, and Wake, 468 in Hawaii, 648 in Puerto Rico, and 14 in the Virgin Islands. In addition to these there were 1,279 graduates of American and Canadian schools temporarily located in foreign countries.

The latter part of the film is devoted to therapy, which is divided into four categories: thermal, tamponing (chemical), cautery and surgical. The tampon or chemical treatment of cervicitis with mild silver protein is "sandwiched" around the surgical presentation and takes up about half of the time allotted to therapy. The cautery technic illustrated is too radical and extensive for the general practitioner. It shows various patterns of cautery incision, such as "wagon wheel" and "gridiron." The incisions shown are approximately 0.5 cm. in width and 0.5 cm. apart, making the illustration misleading to a beginner. Puncture cautery and endocervical cautery are shown by photographing actual cautery demonstrations, although the latter are not clearly shown. Little information is given concerning the indications or contraindications for this type of treatment, and nothing is said by way of warning against subsequent and consequent cervical stenosis.

Surgical treatment is presented by photographing two actual Stürmdorf operations; however, the approximating stitches after tying the Stürmdorf stitch are not clearly shown. In one operation only one stitch is used on each side, and in the second operation no stitches are used.

The treatment for the cause of the infection seems to have been overlooked in the film. In many cases the treatment will be unsuccessful unless the cause of the cervicitis is ascertained.

The chart showing the value of mild silver protein in 168 patients does not rule out the possible beneficial effects of more simple treatment or the recovery that one can normally expect when no treatment is administered.

Several statements in the film, such as references to mild silver protein as being effective in a wide bacteriostatic spectrum (whatever this may mean), would be criticised by specialists in the field of gynecology. Also disputed would be the explanation of the effectiveness of mild silver protein: The commentator, with the aid of a schematic presentation, shows a stream of cellular particles soaked with mild silver protein, assuring the audience that they penetrate the surrounding tissue. This is grossly exaggerated. The discharge of particles from a tampon in simple solution may not necessarily be the same as that encountered in the body tissues. Chemical products of the body cells markedly influence free passage of such particles. The statistics given are misleading and prove practically nothing. Mild silver protein was referred to as related to the sulfonamide drugs and penicillin; it is not related either chemically or otherwise to these agents.

This production has a certain documentary value because of the photography illustrating cervical pathologic change. The chief criticism centers on the narration on the controversial subject of focal infection, together with the dubious use of the idea of a bacterial spectrum and of the adjective "bacteriostatic." Penicillin and sulfonamide drugs are not merely bacteriostatic. The picture showing gonococci would satisfy bacteriologists better, perhaps, if some of the organisms were shown as intracellular. The surgical sequence is well illustrated. There is considerable animation at the beginning of the film. The photography is excellent except for the photomicrographs, which are poorly done. This film cannot be regarded as something to provide "postgraduate instruction."

Army Medical Laboratories. F.B. No. 217. 16 mm., black and white, sound, 1,450 feet, (1 reel), showing time forty minutes. Produced in 1946-47 by the War Department. Procurable from the Army Surgeon of the Army area in which the request originates.

This film depicts in detail the organization of the Army Medical Laboratories and includes a brief history of the laboratory activities both in this country and in foreign theaters during World War II. It begins with the Surgeon General's Office and includes the Zone of the Interior, overseas installations and many detailed duties of the various laboratory units.

The film can be used for the purpose of orientation for the physician entering the Army, who can obtain an excellent idea of the scope of the medical laboratories.

Immunization. 16 mm., black and white, sound, 390 feet, showing time eleven minutes. Prepared by: Michael Heidelberger, Ph.D.; Yale Kneeland Jr., M.D., and Harry M. Rose, M.D., Department of Medicine, College of Physicians and Surgeons, Columbia University, New York. Produced in 1917 by and procurable on rental or purchase from: Encyclopaedia Britannica Films, Inc., 1150 Wilmette Ave., Wilmette, Ill.

An attempt is made to explain what immunization is and how protection against infectious disease is attained. Four mechanisms of immunity are shown, namely, the development of naturally acquired immunity, immunity against smallpox with cowpox virus and the method by which antipneumococcus serum is produced and used to bring about passive immunity. The last sequence explains the development of antitoxic immunity against diphtheria.

The film is suitable for senior high school students and adult education groups, assuming, of course, that it is preceded and followed by considerable explanation and elucidation. It is doubtful whether the junior high school student would be able to grasp the concepts of immunity set forth in this highly concentrated form.

The producers are certainly to be congratulated on covering this complex subject by explaining the general mechanism underlying the production of immunity in such an effective and generally accurate way. The photography is excellent, the animation is well done and the narration is clear.

It's in the Bag. 16 mm., color, sound, 550 feet (1 reel), showing time fifteen minutes. Prepared by the Public Health Nursing Division, Texas State Department of Health, Austin. Produced in 1948 by and procurable through the Division of Public Health Education, Texas State Department of Health, Austin.

This film portrays the skills and activities of the public health nurse in the promotion and restoration of health and in the prevention of disease, and use of the nursing bag. The bag serves as a portable workshop for the public health nurse in the performance of her duties, working with parent groups, participating in clinics, making school visits or visits to the home. The technics employed by the nurse are accurate and would be acceptable, dependent on the policy of the agency.

The film may well be used for interpreting the functions of the public health nurse and bag technic to student nurses, postgraduate nurses being trained in public health and for orientation of new staff nurses. If it is to be used with lay groups in helping them to understand community health activities, it should be supplemented by discussion led by a public health nurse.

Questions, discussion and demonstration should be coupled with the use of the film. Although there is a lack of continuity of scenes, this does not detract from the teaching value of the film. The photography and narration are well done.

The following 16 mm., color, silent motion pictures were prepared by Alfred H. Iason, M.D., Adelphi Hospital, Brooklyn. Produced by The Bergman Associates, Brooklyn. Procurable on loan or purchase from the author, 41 Eastern Parkway, Brooklyn.

Pedicled Fascia Lata Transplant for Incisional Hernia. 200 feet, showing time eight minutes. Produced in 1941.

This film shows a fairly good demonstration of the repair of an incisional hernia. The author points out the important anatomic structures as they present themselves. Some of these are not absolutely clear and may have been improved on by more adequate dissection of the rectus sheaths. This would have allowed for direct approximation and closure of the defect, obviating the necessity for the fascia lata pedicle graft transplant to the defect. However, the film should not be condemned on this basis because the technic as illustrated is certainly justified and has given excellent results in large hernias. In parts of the operation, the surgical field is not walled off very well.

In all the films, the author uses excessively large suture material and takes rather large bites with his mattress sutures, thus strangulating a great deal of tissue. The skin closures could be improved, as he leaves a considerable amount of raw surface and a portion of some of the wounds were gaping.

The photography is excellent and the exposure of the surgical field is good. The titles are clear.

Repair of Bladder Hernia. 410 feet (1 reel), showing time seventeen minutes. Produced in 1943.

The repair of two bladder hernias is demonstrated. The bladders are opened and a portion excised. If the bladder diverticulum has been asymptomatic no repair is indicated and the diverticulum can simply be left alone. If it has been symptomatic, it may be better to fix the inguinal hernia and then repair the bladder diverticulum at a later date. However, it is not a gross error in surgical technic if the operations are primarily performed for the bladder diverticulum. A little more care could have been exercised in removing the diverticula and handling the tissues. Since in the procedure demonstrated a loop of bowel could have been caught in the suture, it might have been better to have transfixed the hernial sac open. The last credit title, "Produced by Bergman Associates," is upside down.

Surgery of Direct Hernia. 250 feet, showing time ten minutes. Produced in 1947.

In this motion picture, the author demonstrates the opening of the transversalis fascia and the direct sac for treatment of a direct hernia. If this is the new treatment, the claim is not justified. The author states that all direct hernial sacs should be opened; however, this is questionable. Many surgeons are of the opinion that small sacs can be inverted and that instances of recurrence are no higher. This film gives a good demonstration of one method of fixing a direct hernia.

Modification of Wyllys-Andrews Operation for (Left) Inguinal Hernia. 350 feet, showing time fifteen minutes. Produced in 1939-1941.

The film opens with some excellent colored charts of the anatomy involved. The author demonstrates fairly well the entire method of herniotomy and points out the important anatomic structures as they appear in the operative field. The film could be improved if an adequate explanation of the Wyllys-Andrews operation were incorporated in the film and the modification were made clearer.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: *Written.* Various Centers, Jan. 21, 1949. Final date for filing application is Oct. 1. *Oral,* Philadelphia, Oct. 10. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

American Board of Internal Medicine: *Written.* Oct. 18. Asst. Sec., Dr. W. A. Werrell, 1 W. Main St., Madison 3, Wis.

American Board of Neurological Surgery: *Oral.* Chicago, June 1949. Final date for filing application is Jan. 1949. Sec., Dr. W. J. German, 310 Cedar Street, New Haven, Conn.

American Board of Obstetrics and Gynecology: *Part I.* Various Centers, Feb. 4, 1949. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 1.

American Board of Ophthalmology: *Oral.* Chicago, Oct. 6. *Written.* Various Centers, January 1949. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

American Board of Otolaryngology: *Oral.* Chicago, Oct. 5-8. New York City, Spring, 1949. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

American Board of Pathology: Chicago, Oct. 8-9. Final date for filing application is Oct. 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

American Board of Pediatrics: *Oral.* Seattle, Sept. 10-12. Atlantic City, Nov. 17-19. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines, Iowa.

American Board of Plastic Surgery: Examinations are given in June and November of each year in the hometown of applicants. Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

American Board of Radiology: Nov. Final date for filing application is Sept. 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W. Rochester, Minn.

American Board of Surgery: *Written.* Various Centers, March 1949. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman 225 S. 15th St., Philadelphia.

American Board of Urology: Chicago, Feb. 12-16, 1949. Final date for filing application is Sept. 1. Sec., Dr. Harry Culver, Route #13, Sunnyside Rd., Minneapolis 4.

BOARDS OF MEDICAL EXAMINERS

Alabama: *Examination.* Montgomery, June 28-30, 1949. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

Alaska: * *Examination.* Juneau, Sept. 7. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

Arkansas: *Eclectic Examination.* Little Rock, Nov. 4. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

California: *Oral.* Los Angeles, Nov. 20-21. *Written.* Sacramento, Oct. 18-21. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

Connecticut: * *Examination.* Hartford, Nov. 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven.

District of Columbia: * *Reciprocity.* Washington, Sept. 13. Sec., Commission on Licensure, Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.

Georgia: *Examination.* Atlanta, Oct. 12-13. *Endorsement.* Atlanta, Oct. 14. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

Illinois: Chicago, Oct. 5-7. Supt., Dept. of Registration and Education, Mr. Fred W. Ruegg, Capitol Bldg., Springfield.

Indiana: *Examination.* Indianapolis, June 1949. Sec., Board of Medical Registration & Examination, Dr. Paul R. Tindall, 416 K. of P. Bldg., Indianapolis.

Iowa: * *Examination.* Des Moines, Dec. 6-8, *Endorsement.* Des Moines, Oct. 4. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

Kansas: Topeka, Dec. 15-16. Sec., Board of Medical Registration & Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

Louisiana: *Examination.* New Orleans, Dec. Sec.-Treas., Dr. R. B. Harrison, 1507 Hibernia Bank Bldg., New Orleans 12.

Maine: Portland, Nov. 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

Maryland: *Examination.* Baltimore, Dec. 14-17. *Endorsement.* At the discretion of the Board. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore.

Minnesota: Minneapolis, Oct. 19-21. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

Montana: Helena, Oct. 4-6. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

Nevada: Carson City, Nov. 1. Sec., Dr. G. H. Ross, Industrial Bldg., Carson City.

New Hampshire: * Concord, Sept. 9. Sec., Board of Registration in Medicine, Dr. J. S. Wheeler, Room 107, State House, Concord.

New Jersey: *Examination.* Trenton, Oct. 19-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New Mexico: * Santa Fe, Oct. 11-12. Sec., Dr. V. E. Berchtold, 141 Palace Ave., Santa Fe.

New York: *Examination.* Various Centers, Sept. 27-30. Sec., Dr. J. L. Lochner, Jr., 23 South Pearl St., Albany 7.

Ohio: *Examination.* Columbus, Dec. *Endorsement.* Columbus, Oct. 5. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

Oregon: * *Examination.* Portland, Jan. 1949. *Endorsement.* Oct. 15-16. Final date of filing application is Oct. 1. Exec. Sec., Mr. Howard I. Bobbitt, 608 Failing Bldg., Portland.

Pennsylvania: *Examination.* Philadelphia, Jan., 1949. Act. Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

Puerto Rico: *Examination.* Santurce, Sept. 7-11. Sec., Mr. Luis Cueto Coll, 22 Purada, Box 3717, Santurce.

Rhode Island: * *Examination.* Providence, Oct. 7-8. Chief, Div. of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

South Carolina: *Endorsement.* Sept. 6. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

Texas: Fort Worth, Nov. 4-6. Sec.-Treas., Dr. M. H. Crabb, 1305 Amicable Bldg., Waco.

Virginia: *Examination.* Richmond, Dec. 3-4. *Endorsement.* Dec. 2. Sec., Dr. K. D. Graves, 30½ Franklin Road, Roanoke.

West Virginia: Charleston, Oct. 4-6. Comm., Public Health Council, Dr. N. H. Dyer, State Dept. of Health, Charleston.

Wisconsin: * Madison, Jan. 11-13, 1949. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls, Wis.

Wyoming: *Examination.* Cheyenne, Oct. 4. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

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* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: Juneau. Last week in Aug. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

Arizona: *Examination.* Tucson, Sept. 21. Sec., Mr. Francis A. Roy, Univ. of Arizona, Tucson.

Arkansas: *Examination.* Little Rock, Oct. 5. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

Colorado: *Examination.* Denver, Sept. 15-16. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 3.

Connecticut: *Examination.* Oct. 9. Exec. Asst., Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

District of Columbia: *Examination.* Washington, Oct. 18-19. Sec., Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.

Florida: *Examination.* Gainesville, Nov. 6. Final date for filing application is Oct. 25. Mr. M. W. Emmel, University of Florida, Gainesville.

Iowa: Des Moines, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

Michigan: *Examination.* Ann Arbor and Detroit, Oct. 8-9. Sec., Miss Eloise LeBeau, 1510 West Allegan St., Lansing.

Minnesota: *Examination.* Oct. 5-6. Sec.-Treas., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

Nebraska: *Examination.* Omaha, Oct. 5-6. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009 State Capitol Bldg., Lincoln.

Oklahoma: Spring of 1949. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Oregon: *Examination.* Portland, Sept. 4. Sec., Basic Science Examining Committee, Dr. C. D. Byrne, Univ. of Oregon, Eugene.

South Dakota: *Examination.* Vermillion, Dec. 3-4. Sec., Dr. G. M. Evans, Yankton.

Tennessee: *Examination.* Memphis & Nashville, Sept. 20-21. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

Wisconsin: *Examination.* Madison, Sept. 25. Final date for filing application is Sept. 18. Sec., Prof. W. H. Barber, Scott & Watson Sts., Ripon.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Right of Osteopath to Issue Certificate of Commitment to State Mental Institutions.—The plaintiffs, regularly licensed practitioners of medicine, filed suit for an injunction to restrain the secretary of welfare from authorizing the entry of mental patients to state, semistate or licensed hospitals for mental diseases on certificates of persons licensed under the Act of 1909 to practice osteopathy but not licensed under the medical practice act of 1911. From a decree denying the relief asked, the plaintiffs appealed to the Supreme Court of Pennsylvania.

Under the mental health act of 1923, which requires that the commitment of a mentally ill person to a hospital for mental diseases shall be on certificate of two qualified physicians, it is provided that the term, "qualified physician," shall mean ". . . a physician who . . . has been licensed to practice medicine in this state. . . ." Is a duly licensed osteopath a "qualified physician" within the meaning of this statute? A study of the pertinent legislative enactments and court decisions, said the Supreme Court, clearly reveals that the licensure of physicians for the practice of medicine and for the practice of osteopathy, as originally established and ordained by the legislature and as continued down to present day, rests on two separate, distinct and independent systems.

Prior to 1909 court decisions in the state definitely indicated a distinction between the practice of osteopathy and the practice of medicine. In 1909 the osteopathic practice act was enacted, and it provided, among other things, "that nothing contained in this act shall be construed as affecting the so-called practice of medicine." Thus, said the Supreme Court, the legislature plainly indicated its positive intent that those licensed thereunder were not licensed to practice *medicine* as that term had been judicially recognized and was then statutorily employed. Two years later the medical practice act of 1911, which in effect was a codification of existing statutory law relative to the practice of medicine, was enacted. Section 13 thereof provides: "The provisions of this act shall not apply either directly or indirectly, by intent or purpose to affect the practice of . . . osteopathy." Here, again, the legislature affirmatively evidenced its manifest policy and intent that the licensure of osteopaths or osteopathic physicians should not carry with it the right to practice medicine. Continuing, the Supreme Court said that with this statutory law relative to the practice of medicine and the practice of osteopathy thus developed in this state, there arose in 1921 the case of Commonwealth v. Dailey, 75 Pa. Sup. 510, in which the question presented was "whether an osteopathic physician duly licensed by the Osteopathic [State] Board is entitled under the law to engage *in* the general practice of medicine." In answering that question in the negative the superior court said: "Osteopaths are empowered to diagnose and treat diseases by employing osteopathy. Their privileges are not affected by the acts relating to the practice of medicine; but the right to practice medicine is not conferred upon those licensed under the Act of 1909, and its supplements, relating to osteopathy; and the fact that materia medica, therapeutics and other branches taught in medical schools are also imparted at the osteopathic college cannot extend the right of osteopaths to practice medicine."

Within two years of the foregoing clear and unmistakable judicial pronouncement the legislature passed the mental health act of 1923, wherein, as already stated, a "qualified physician" is specifically defined as ". . . a physician who . . . has been licensed to practice medicine in this state. . . ." What else could the legislature have possibly meant than that an osteopath or osteopathic physician is not qualified to certify a mentally ill person for commitment to a mental hospital?

Such, concluded the Supreme Court, must have been the legislature's understanding of its cognate statutes in the premises when it came to enact the statutory construction act of 1937. In that act there is clearly evidenced an intent that an already existing distinction between the practice of medicine and the practice of osteopathy was meant *to* be continued. Thus, Section 601 declares that an "osteopath" is "an individual licensed under the laws of this Commonwealth to practice osteopathy" and that a "physician" is "an individual licensed under the laws of this Commonwealth to engage in the practice of medicine and surgery in any or in all of its branches."

It happens, however, that in 1941 the legislature amended Section 1 of the medical practice act of 1911 by adding thereto two paragraphs the effect of which was to enlarge the field of "medicine and surgery" so as automatically to constitute "osteopathy" a branch of the practice of medicine. From that, the learned court below concluded: ". . . one designated a physician and licensed [under the Act of 1909] to diagnose and treat all types and conditions of diseases, albeit by osteopathic methods, is nevertheless licensed to practice a healing art and thus licensed to practice medicine." That deduction is not only a *non sequitur* but also an obvious anachronism, said the Supreme Court. The question here is what the legislature meant in 1923 by the phrase, "licensed to practice medicine in this state," as used in the mental health act of that year. The inescapable answer is that osteopaths were not so licensed, no more than were dentists or pharmacists whose licensure and regulation, just as in the case of the osteopath, is by virtue of respective independent statutes and not by the determinative medical practice act. The increased and increasing use of materia medica and therapeutics by osteopaths or osteopathic physicians and their continued encroachment on the field of medicine by the expansion of their theories, studies and practices must not be allowed to obscure the sole question in this case. The act of 1941 is in no sense an amendment of the mental health act of 1923, nor was it intended to be. Indeed, the latter act's definition of a "qualified physician" never has been amended.

In support of the claim that an osteopath is qualified to act as a committing physician under the mental health act, the defendant points to the fact that there is in this state an osteopathic hospital for "mental health patients . . . under the supervision of the department of welfare" and "licensed" by the Commonwealth. The issuance of a license for the particular hospital, said the Supreme Court, is readily understandable when it is borne in mind that the department of welfare of the Commonwealth, in reliance on opinions of the Attorney General has been treating osteopathic physicians and their institutions as if osteopaths were duly licensed under the medical practice act of 1911 to practice medicine. With those opinions, we manifestly do not accord. Yet, the fact is that it is those very opinions on which the defendants fundamentally base their present contention. We are unaware, however, of any instance where opinions of executive or administrative officers have been considered binding on the judiciary when called on to decide a justiciable controversy.

Nor is the fact that osteopaths have been permitted by various statutes to perform certain functions which, historically, have attached to the practice of medicine (e.g., the signing of death certificates) of any materiality to the present question, continued the court. A legislative grant to certain groups of the privilege of performing specific medical services does not carry with it a right to the unrestricted privilege of practicing medicine as defined by the medical practice act of 1911. Section 12 of the osteopathic act, which requires osteopathic physicians to observe and be subject to "all state and municipal regulations relating to the control of contagious diseases, the reporting and certifying of births and deaths, and all matters pertaining to public health . . .", was amended by the Act of July 11, 1923, so as to provide that osteopathic physicians and surgeons should act in such regard "the same as physicians of other schools" and so as to provide further that such reports "shall be accepted . . . by the officers, boards, bureaus or departments of the state . . . to whom the same are made, with the same force and effect as reports or certificates issued by physicians of other schools. . . ." These amendments neither amended nor purported to amend the mental health act in the slightest particular.

In the final analysis, the Supreme Court concluded, what the defendant urges us to do is to formulate legislative policy rather than interpret already expressed legislative intent. It is not within our province arbitrarily to fasten on the legislature a new nomenclature. Our duty is to interpret the presently germane statutes according to the usual and ordinary meaning of their plain and unmistakable words and terms. Accordingly, the Supreme Court reversed the decree of the trial court in favor of the defendant and remanded the case with instructions to grant the injunction requested. *Palmer v. O'Hara, Secretary of Welfare, et al, 58 A (2d) 574 (Pennsylvania, 1948).*

Workmen's Compensation Acts: Employee's Refusal to Undergo Spinal Puncture.—This was action to recover an award under the workmen's compensation act for injuries sustained during the course of the claimant's employment. From an adverse judgment, the claimant appealed to the Supreme Court of South Carolina.

The claimant received a back injury in compensable circumstances and was paid compensation for about six months. Some time during this period he was examined by a specialist to whom the employer had sent him and who reported in part: "I suspect that this man has a ruptured intervertebral disk. He should have a spinal myelogram performed in order definitely to establish or rule out this diagnosis. If a ruptured disk is demonstrated, then it should be removed surgically." The claimant refused to submit to the spinal puncture, and payments were therefore terminated pursuant to the section of the workmen's compensation act providing: "If the employee refuses to submit himself to or in any way obstructs such examination requested by and provided for by the employer, his right to compensation and his right to take or prosecute any proceedings under this article shall be suspended until such refusal or objection ceases, and no compensation shall at any time be payable for the period of compensation, unless in the opinion of the industrial commission the circumstances justify the refusal, or obstruction."

At the hearing before the Hearing Commissioner, medical testimony on behalf of the claimant was expressly invited but was not forthcoming. Only the claimant testified. He was entirely uneducated, unable to read and write and dependent on manual labor for support of himself and family. He said that he was afraid of the puncture and afraid "to be worked on in the spinal part anywhere at all"; further, that he knew of persons who had been disabled as the result of such, and a friend, he said, had died from a "spinal shot." The court of common pleas found that the claimant's refusal of the diagnostic treatment was not well founded and that the carrier was justified in discontinuing payment of compensation. On appeal to the Supreme Court, the claimant's counsel argued that the conclusion of the Commission (which ordered payments resumed) was one of fact which the court could not disturb if there was supporting evidence, and it was contended that the claimant's testimony of his information of other cases which resulted disastrously was some evidence to justify his refusal to submit to a spinal puncture, which was particularly conclusive in the absence of express medical testimony that the recommended procedure was not dangerous. The myelogram, said the Supreme Court, is commonly known as a spinal puncture, by means of which a specimen of the spinal fluid is withdrawn for examination. This, of course, is used for the purpose of diagnosis and is not surgery or treatment as those terms are ordinarily used. To a layman, the court continued, much of medical science is mystery, but not so a spinal puncture. It is common knowledge that it is not at all unusual. It is apparent from the record, the court continued, that the suspension of compensation payments to claimant really resulted from his unfortunate ignorance and misinformation, but the law cannot be molded to meet his standard; instead it must be made to fit the traditional average reasonably prudent man of ordinary courage. The Supreme Court was accordingly of the opinion that the claimant should have submitted to the spinal puncture for the purpose of diagnosing his true ailment, and the judgment of the court of common pleas requiring that payments of compensation be discontinued was therefore affirmed.—*Wardlaw v. J. G. Ridgeway Const. Co., 46 S. E. (2d) 662 (S. C., 1948).*

Compensation of Physicians: Sending Collection Letters to Patient's Employer.—The plaintiff sued for damages for an invasion of her right of privacy and for libel and, from a judgment for the defendants, appealed to the appellate court of Indiana.

The plaintiff had been a patient of the defendant physician and had received services valued at $65 over a space of time. This sum having remained unpaid for about five years, the account was placed in the hands of a collection agency. Subsequently the collection agency, on behalf of the physician, sent a series of letters to the plaintiff's employer advising him of the debt and asking his assistance in collecting it. The plaintiff contended that this action was both a libel and an invasion of her right of privacy. The defendants contended that the facts alleged were insufficient to sustain an action either for libel or for an invasion of any right of privacy.

As a complaint for damages resulting from libel the plaintiff's statement is clearly insufficient, said the court. The words complained of are not libelous *per se,* and there is no allegation of special damages. The general rule is expressed thus in 33 Am. Jur., Libel and Slander, section 60: "As respects a charge of failure to pay debts, without imputation of insolvency, it seems to be settled that a writing containing the mere statement that a person who is not a trader or merchant, or engaged in any vocation wherein credit is necessary for the proper and effectual conduct of his business, owes a debt and refuses to pay, or owes a debt which is long past due, is not libelous *per se* and does not render the author or publisher of such statement liable without proof of special damages."

Continuing, the court said that it seemed clear that the plaintiff really was not complaining of a libel but rather of an invasion of her right of privacy through the conduct of the defendants in giving unwarranted publicity to her failure to pay a debt and attempting thereby to coerce her into paying it. Whether or not her complaint is good on such a theory presents a more difficult question, said the court. If the plaintiff's complaint pleads a case for the invasion of her right of privacy, it lies solely in the fact that the defendants, in an effort to collect a bill, brought the matter to the attention of the plaintiff's employer through a series of letters in which the employer's aid was solicited and the facts and circumstances of the indebtedness were detailed. In the course of routing said letters to the employer's appropriate executive officer, they were read by numerous clerks or other office employees. It must be borne in mind, said the court, that an employer has a natural and proper interest in the facts relative to debts owed by his employees. He is subject to the expense and inconvenience of defending himself in garnishee proceedings wherein a percentage of his employees' wages may be taken to apply on such debts, and thus additional and burdensome bookkeeping entries may be imposed on him. He has the right to hire only those who pay their debts and may take a pardonable pride in the reputation of his employees in that respect. He is not in a category with the general public which cannot have any legitimate interest in a purely private matter between a creditor and a debtor. For these reasons, said the court, an employer has a right to know the status of the financial obligations of his employees, and, while we cannot say that a creditor owes an employer a duty in that regard, it is difficult to follow a course of reasoning that concludes that an employee's right of privacy has been invaded by giving his employer information which he has a right to have. In other words, an employee has no right of privacy, as against his employer, in the matter of the debts he owes and a creditor who gives such information to the employer, unaccompanied with slanderous, libelous, defamatory or coercive matter, incurs no liability in so doing. The fact that in the usual course of business the communication may pass through the hands of clerks or stenographers does not alter the rule. The situation is somewhat analogous to that of a privileged communication which does not lose its character through such process. Accordingly the judgment in favor of the defendant physician and the defendant collection agency was affirmed.—*Patton v. Jacobs, 78 N. E. (2d) 789 (Ind., 1948).*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1936 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, Cincinnati

31:277-386 (March) 1948

Early Development of Filtration Operations for Glaucoma. W. H. Crisp. -p. 277.
Retinal Detachment: Survey of Etiology and Results of Treatments on Phakics and Aphakics. C. H. Bagley. -p. 285.
*Value of Injecting Saline into Vitreous as Adjunct to Diathermy Operations for Retinal Detachment. E. G. Grafton Jr. and J. S. Guyton. -p. 299.
Integrated Implants and Artificial Eyes for Use After Enucleation and Evisceration. W. L. Hughes. -p. 303.
Oxycephaly with Optic Atrophy: Report on Results of King Operation. J. V. Lisman. -p. 311.
Some Methods of Lid Repair and Reconstruction. V. Displacement of Canthi. S. A. Fox. -p. 317.
Eye Injuries from So-Called Noncasualty War Gases: Report of Cases. G. I. Uhde. -p. 323.
Procedure to Facilitate Intracapsular Forceps Extraction of Intumescent Cataracts. L. Daily Jr. and R. K. Daily. -p. 328.

Saline Injections in Retinal Attachment.—According to Grafton and Guyton reattachment of the retina was obtained in 69 per cent of eyes in which the retina looked flat at the close of operation. In contrast, reattachment was obtained in only 26 per cent of eyes in which the retina was appreciably elevated at the close of operation. During recent years at the Wilmer Institute saline solution has frequently been injected into the vitreous at the close of the diathermy operation in order to force subretinal fluid out of the eye and if possible reposit the retina against the choroid. The present study represents an evaluation of the possible beneficial effects of these saline injections. In a series of diathermy operations for retinal detachment, including 159 first operations and 40 second operations, saline solution was injected into the vitreous in most instances in which the retina remained elevated at the conclusion of diathermy application and scleral punctures. The percentage of reattachment in these eyes was as high as the percentage of reattachment in those eyes where saline injections were not necessary to cause flattening of the retina. The authors believe saline solution (or air) should be injected unless the retina flattens almost completely without the necessity of such a procedure.

American Journal of Surgery, New York

75:415-528 (March) 1948

Observations of Burn Scars Sustained by Atomic Bomb Survivors: Preliminary Study. M. A. Block and M. Tsuzuki. -p. 417.
*Tumors of Carotid Body. R. A. Donald and G. Crile Jr. -p. 435.
Effect of Intestinal Gases upon Balloons of Intestinal Decompression Tubes. M. O. Cantor, E. R. Phelps and R. H. Esling. -p. 441.
Survey of Some Aspects of Appendicitis. J. Y. McCullough. -p. 453.
Beaded Wire in Treatment of Slipped Epiphysis of Head of Femur. P. T. Schlesinger and H. T. Hansen. -p. 457.
Modified Indirect Inguinal Herniorrhaphy. D. Weiss. -p. 465.
New Test in Diagnosis and Surgical Treatment of Varicose Veins. Two Hundred Vein Ligations Evaluated. J. G. Slevin. -p. 469.
*Treatment of Varicose Ulcer. W. M. Cooper. -p. 475.
Treatment of Carcinoma of Breast. D. W. Robinson. -p. 481.
Trauma to Region of Bursa Anserina. C. J. Sutro. -p. 489.
Comparative Evaluation of Effects of Talcum and New Absorbable Substitute on Surgical Gloves. J. J. Eberl, W. L. George, L. F. May Jr. and J. Henderson. -p. 493.
Surgical Complications of Intestinal Tuberculosis as Seen at Necropsy. S. A. Kornblum, C. Zale and S. Aronson. -p. 498.

Tumors of Carotid Body.—Donald and Crile observed 5 patients with tumors of the carotid body at the Cleveland Clinic. Irradiation has been almost universally unsuccessful against tumors of the carotid body. Surgical treatment is difficult because of inaccessibility of the tumor, which in many instances extends beneath the mandible to present in the pharynx or tonsillar fossa, and because of hemorrhage. The most satisfactory approach has been through a wide incision over the long axis of the tumor with careful sharp dissection along the cleavage plane separating the mass from the adherent large vessels. Ligation of the common carotid artery is not to be undertaken lightly; a high mortality results from such a procedure. Complications such as hemiplegia and aphasia are caused by cerebral ischemia. Damage to the jugular vein, the recurrent laryngeal nerve, hypoglossal nerve, facial nerve or sympathetic trunks has occurred in 24 per cent of 148 patients who underwent operation. It was necessary to ligate the common carotid artery in approximately 50 per cent of the patients, producing a mortality rate of 30 per cent. About 50 per cent of the survivors suffered permanent cerebral damage. Periodic compression of the artery for several weeks prior to operation might feasibly stimulate collateral cerebral circulation and decrease the complications resulting from ligation. The carotid artery should not be sacrificed unless its ligation is necessitated by uncontrollable hemorrhage. If patience and care are used, most tumors of the carotid body can be removed without damaging the carotid artery. In 1 of their cases the tumor of the carotid body metastasized to the bones.

Treatment of Varicose Ulcer.—Varicose ulcer is most often located in the region of the medial malleolus. It is in this region that the hydrostatic pressure and stagnation of fluid is most severe when the great saphenous vein is varicosed. In addition, the exposed ankle is prone to minor traumas which frequently initiate the ulcer. When large varicose veins with demonstrable reverse flow are present, it has been Cooper's practice to operate early rather than late. This frequently shortens the period of pain and disability. When dermatitis and eczema are present, elevation and the application of wet dressings usually clear up the condition. "Domeboro tablets" offer a convenient method of preparing Burow's solution. One crushed tablet dissolved in 1 pint (473 cc.) of water makes a stable, buffered and nonirritating Burow's solution of 1:20 strength. When infection or epidermophytosis is present as a complicating factor, wet dressings of potassium permanganate solution 1:5,000 may prove effective in preparing the area for subsequent "daxalan" and Dome boot therapy. "Daxalan" is a rigidly standardized, uniformly colored, aged crude coal tar product of the formula: crude coal tar 2.88; zinc oxide 5.37; starch 53.75 and sufficient petrolatum to make one hundred parts. The Dome paste boot is a modified Unna's paste boot. When the skin has been cleansed, a thick application of "daxalan" ointment is made directly to the ulcer and the surrounding skin. Talcum powder is then sprinkled on the surface of the ointment application and a smooth, evenly applied Dome boot is then placed on the limb from the toes to the knee. The patient is usually ambulant after the boot application and is encouraged to remain so. The boot is cut after one week, the ulcer and surrounding skin cleansed and a second application of "daxalan" ointment, talcum powder and Dome boot is made. The same routine is repeated until the ulcer is firmly healed. One hundred and forty-seven subjects with chronic leg ulcers were treated by the "daxalan"-Dome boot technic. The maximum period required to effect a cure was ten weeks and the minimum, two weeks. Sensitivity or allergy to "daxalan" was encountered in only 2 patients. A patch test should be done on each new patient.

Arkansas Medical Society Journal, Fort Smith

44:217-234 (March) 1948

Early and Late Postoperative Ambulation. J. H. Pinson Jr. and G. M. Webb. -p. 217.
Few Things I Saw on My Trip to Atlantic City and American Medical Association. J. H. McCurry. -p. 219.
Arkansas Health Plan. C. R. Henry. -p. 223.

44: 235-252 (April) 1948

Consideration of Physiology of Hypertension. A. H. Lawton. -p. 235.
Report of Case of Diabetic Gangrene Treated with Vitamin C and Histidine. F. Richardson. -p. 238.
Medical Aspects of Essential Hypertension. D. Rowland. -p. 239.

Florida Medical Association Journal, Jacksonville

34:509-520 (March) 1948

Management of Heart Disease. C. F. Roche. -p. 509.
•Murine Typhus: Treatment of Small Series of Cases with Para-Aminobenzoic Acid. H. Fuller. -p. 517.

Para-Aminobenzoic Acid in Murine Typhus.—Fuller reports observations on the efficacy of para-aminobenzoic acid in 11 patients over 30 years of age, in whom diagnosis of typhus was proved. The effective drug level in murine typhus is above 10 mg. per hundred cubic centimeters of blood. The authors believe that they have been far too cautious in administering the drug, for not once was a blood level of 10 mg. reached. In a patient treated more recently an initial dose of 8 Gm. and then 4 Gm. every two hours day and night thereafter were given, and drug levels of 11 and 14 mg. were obtained. This is what is now believed to be the effective range in endemic typhus. The patients received only half or a little more than half of this amount. Para-aminobenzoic acid should be given with sodium bicarbonate or other alkali to keep the urine alkaline. Administration of the drug should be discontinued if crystallization occurs. The drug should be given for forty-eight hours after the temperature has reached the normal. Sulfonamide drugs should not be given during the course of treatment with para-aminobenzoic acid. The effect of sulfonamide compounds is inhibited in vitro by even small doses of para-aminobenzoic acid. If complications arise that require the use of other drugs, penicillin or streptomycin should be used. The authors gained the impression that para-aminobenzoic acid shortens the duration of typhus.

Indiana State Medical Assn. Journal, Indianapolis

41:277-376 (March) 1948

Medical Management of Thyrotoxicosis. W. S. Middleton. -p. 295.
Nontuberculous Pulmonary Diseases: Their Relation to Bronchial Obstruction. P. H. Holinger. -p. 301.
Abdominal Pregnancy with Report of 2 Cases. F. E. Hagie. -p. 305.
•Treatment of Asphyxia by Firemen. O.E. Spurgeon. -p. 307.

41: 377-468 (April) 1948

Surgical Aspects of Carcinoma of Thyroid Gland. F. B. Ramsey. -p. 395.
Anesthesia in Abdominal Surgery. E. B. Tuohy. -p. 398.
Treatment of Long Bone Defects by Bone Grafts. C. Scuderi. -p. 400.
Immunization--Doctor's Responsibility. J. W. Jackson. -p. 402.

Treatment of Asphyxia by Firemen.—Spurgeon says that for many years fire departments have had some sort of apparatus to resuscitate persons who have drowned or who have become asphyxiated with gas or who have ceased to breathe for some other reason. In almost all cases firemen arrive on the scene before the physician, and often long enough before to make the difference between success and failure. The apparatus called inhalator delivers oxygen and carbon dioxide under moderate controlled pressure and may be used in conjunction with artificial respiration by the manual method. The respirator delivers carbon dioxide and oxygen under pressure. This apparatus can be regulated to produce inflation of the lungs and then suction, to remove the air from the lungs. This apparatus performs artificial respiration mechanically. The author is of the opinion that fire departments should be encouraged to respond to cases of asphyxia and that physicians should give the department cooperation, but unless a physician also responds to the call and cooperates with the firemen a patient will occasionally be lost who could have been saved. In certain cases more than artificial respiration is required if a life is to be saved. It is important to determine the causes of the cessation of respiration, but it is unwise to send a patient to the hospital whose respiration has ceased. Artificial respiration should be given immediately.

Journal of Immunology, Baltimore

58: 223-335 (March) 1948.

Immunochemistry of Toxins and Toxoids: IV. Preparation of Purified Diphtherial Toxoid for Clinical Use. L. Pillemer, Ruth G. Wittler, Frances L. Clapp and J. N. Adam Jr. -p. 223.
Comparison of Effect of Various Salt Concentrations on Agglutination of Red Cells by Influenza A Virus and Antibody. Frances C. Lowell and Marguerite Buckingham. -p. 229.
Effect of Environmental Temperature upon Resistance to Pneumococcal Infection Under Sulfadiazine Therapy and upon Body Temperature and Oxygen Consumption During Infection. J. McB. Junge and S. M. Rosenthal. -p. 237.
Precipitin Production in Chickens: III. Variation in Antibody Response as Correlated with Age of Animal. H. R. Wolfe and Eleanor Dilks. -p. 245.
Studies on Inhibition of Agents of Murine and Feline Pneumonitis by Penicillin. M. D. Eaton. T. F. Dozois, A. Van Allen and others. -p. 251.
Complement Fixation with Soluble Antigens of Plasmodium Knowlesi and Plasmodium Lophurae. B. D. Davis. -p. 269.
•Preparation and Properties of Purified Rickettsial Suspensions. M. R. Castaneda. -p. 283.
Attempt to Produce Protection Against Mosquitoes by Active Immunization. I. N. Dubin, J. D. Reese and Lois A. Seamans. -p. 293.
Antirickettsial Effect of Thionine Dyes: II. Mode of Action of Thionine Dyes in Combatting Experimental Infections of Mice with Rickettsia Orientalis and Rickettsia Mooseri. J. P. Fox and O. L. Peterson. -p. 299.
Serologic Studies on Infectious Mononucleosis and Other Conditions with Human Erythrocytes Modified by Newcastle Disease Virus. A. S. Evans and E. C. Curnen. -p. 323.

Purified Rickettsial Suspensions.—Castaneda points out that the cultivation of typhus rickettsiae in the lungs of animals is a convenient method for obtaining antigenic material in amounts sufficient for human immunization. Separation of the considerable amount of impurities from the organisms has been difficult. The author describes a new method for the purification and concentration of typhus rickettsiae cultivated by the "lung method." The material thus obtained may be used for various serologic tests such as agglutination, complement fixation and opsonization. A suitable dilution of the stock suspensions may be used for the preparation of monovalent and bivalent vaccines which have been widely tested in the immunization of human beings. For emergency work an oil protected bivalent vaccine to be administered in a single dose is now being tested. The highly purified rickettsial suspensions have been successfully used to detect allergic reactions in typhus-immune persons, with results which have indicated their value in epidemiologic surveys.

Journal of Neurophysiology, Springfield, Ill.

11:59-150 (March) 1948. Partial Index

Electroencephalogram in Experimental Concussion and Related Conditions. J. W. Ward and S. L. Clark. -p. 59.
Observations on Sensory Paralysis Produced by Compression of Human Limb. D. C. Sinclair. -p. 75.
Observations on Electrical Stimulation of Pain Fibres in Exposed Human Sensory Nerve. R. E. Pattle and G. Weddell. -p. 93.
Anatomic Basis for Alterations in Quality of Pain Sensibility. G. Weddell, D. C. Sinclair and W. H. Feindel. -p. 99.
Site of Action of Acetylcholine. M. A. Rothenberg, D. B. Sprinson and D. Nachmansohn. -p. 111.
Effect of Nicotine on Spinal Synaptic Conduction and on Polarisation of Spinal Cord. A. van Harreveld and G. A. Feigen. -p. 141.

J. of Veneral Disease Inform., Wash., D. C.

29: 91-124 (April) 1948

Syphilitic Relapse vs. Reinfection. I. L. Schamberg and H. P. Steiger. -p. 92.
*Rapid Treatment of Early Syphilis: Progress Report December 1947. J. R. Heller Jr., R. W. Bowman and Eleanor V. Price. -p. 103.
Delta Plantation Case-Finding Survey in Leflore County, Mississippi. A. L. Gray, Mary S. Ferguson and R. S. Hibbets. -p. 106.
Venereal Disease Educational Program in Nebraska. Florence M. Walt. -p. 111.

Rapid Treatment of Early Syphilis.—This report by Heller and his associates is the ninth in a continuing series of progress reports evaluating the effectiveness of various forms of rapid therapy for early syphilis. Treatment and follow-up data have been furnished by fifty state and locally sponsored rapid treatment centers. This report is limited to schedules utilizing penicillin, either alone or combined with oxophenarsine hydrochloride, with oxophenarsine and a bismuth compound or with fever therapy. The schedule with the lowest cumulative retreatment rate (4.3 per cent) and the highest rate of seronegativity (80.8 per cent) is the schedule employing 3,400,000 units of aqueous penicillin given in injections of 40,000 units at two hour intervals. The relative safety of schedules that use penicillin alone as compared with schedules that combine oxophenarsine hydrochloride with penicillin is shown by the following facts. There were no fatalities when penicillin was used without oxophenarsine. The severe reaction rate in 1,000 treated patients was only 6.3 for aqueous penicillin used alone and 3.1 for penicillin in oil and beeswax. A total of 16 treatment deaths occurred when oxophenarsine hydrochloride was used with penicillin; the rate was 1 death for every 5,900 patients treated with oxophenarsine combined with aqueous penicillin and 1 death for every 30,300 patients treated with oxophenarsine combined with penicillin in oil-beeswax. Hemorrhagic encephalitis was the principal cause of death in methods utilizing oxophenarsine combined with penicillin.

Maine Medical Association Journal, Portland

39: 25-52 (Feb.) 1948

Medical and Hospital Care of Veterans Under Veterans' Administration. W. Adams. -p. 25.
Professional Audit to Control Efficiency. F. T. Hill. -p. 32.

39: 53-78 (March) 1948

Some Medical Aspects of Geriatrics. E. H. Drake. -p. 53.
Endocrine Factors in Sterility of Female. K. A. Laughlin. -p. 57.
Clinico-Pathologic Exercise: Medical Case Presented at Eastern Maine General Hospital, Bangor. J. E. Porter. -p. 60.

Minnesota Medicine, St. Paul

31: 225-336 (March) 1948

Cooperation Between Physician and Cancer Society. A. E. Cardle. -p. 249.
*Vagotomy in Treatment of Idiopathic Ulcerative Colitis and Regional Enteritis. C. Dennis, F. D. Eddy and D. Westover. -p. 253.
*Gastric Neurectomy (Vagotomy) in Treatment of Duodenal Ulcer: Anatomic Considerations. W. F. Bradley. -p. 256.
Recent Advances in Treatment of Cardiovascular Diseases. C. N. McCloud Jr. -p. 259.
Recognition of Some Cardiac Emergencies and Their Treatment. W. O. B. Nelson. -p. 261.
Treatment of Congestive Heart Failure. B. Sommers. -p. 264.
Genesis of Rheumatic Fever. W. W. Spink. -p. 267.
*Incidence of Pulmonary Embolism After Venous Sclerosing Therapy. F. L. Smith and M. A. Johnson. -p. 270.

Vagotomy in Ulcerative Colitis and Regional Enteritis.—Dennis and his associates performed vagotomy in 22 patients with idiopathic ulcerative colitis and in 1 case of functional diarrhea. One patient died of cardiac complications without completion of the vagotomy. Two patients are worse, 3 are unchanged, 14 have improved and 3 have not been operated on long enough for evaluation. Two of the excellent results occurred in patients who also had regional enteritis. Patients with longstanding disease and those who had much fibrosis of the bowel wall seem to have done less well than those in the acute phase and those having good bowel elasticity. It is still difficult to say which patients will be unchanged or injured by division of the vagus nerves. The authors emphasize that vagotomy should not be employed promiscuously, but only where serious study and evaluation of the method are the aims.

Anatomic Aspects of Gastric Neurectomy.—Bradley reports on 100 dissections made at necropsy. The gastric nerves arose from the esophageal plexus at about the level of the bifurcation of the trachea. The right and left gastric nerves coursed caudad and terminated on the stomach. There were certain qualitative variations that permitted classification of the dissections into four groups. The first group of 64 dissections was characterized by the fact that all branches between the gastric nerves and from more remote sites joined to form common trunks on the right and left sides of the esophagus somewhere between the superior aspect of the diaphragm at the esophageal hiatus and 6 cm. above the diaphragm. In the second group of 7 dissections there were so many intercommunications between the main trunks of the gastric nerves that a plexus was formed on a major portion of the anterior surface of the esophagus. The third group of 21 dissections was characterized by the fact that the long discrete trunks had neither additions of fibers nor intercommunications below a point 6 cm. above the diaphragm. In the fourth group of 8 dissections no consistent or uniform course or pattern was found. In some instances well formed trunks were evident from which, somewhere near the diaphragm, a well-defined branch left a main trunk, coursed laterally in the thorax and became lost before leaving the thorax. Another variation was that of a failure of the numerous branches of the esophageal plexus to form a common trunk. In this group were found nerves with a course and distribution which might cause difficulty for the surgeon who attempted to section the gastric nerves. In 92 per cent of the dissections distinct right and left gastric nerves could be identified at the esophageal hiatus. In 8 per cent the arrangement of one or both gastric nerves was abnormal and irregular. Identification of such nerves in the performance of gastric neurectomy would require thoracic approach.

Pulmonary Embolism After Venous Sclerosing Therapy.—Smith and Johnson say that in the period 1927 through June 30, 1947, 11,700 patients were given sclerosing treatment for varicose veins at the Mayo Clinic. In 17 of these pulmonary embolism developed, an incidence of about 1.4 per thousand. There was only 1 death from pulmonary embolism. Anticoagulant therapy has proved adequate when venous clotting appears likely or nonfatal pulmonary embolism occurs, and occasionally operation is resorted to in addition. A thorough preliminary history and examination are essential in cases in which sclerosing treatment is planned.

New England Journal of Medicine, Boston

238:385-420 (March 18) 1948

Late Reactions to Metallic Foreign Bodies. T. W. Botsford and D. R. Freni. -p. 385.
*Capillary Fragility and Diabetic Retinitis with Note on Use of Rutin. R. Rodriguez and H. F. Root. -p. 391.
Fatal Intestinal Obstruction Following Injection Treatment of Inguinal Hernia. K. B. Lawrence. -p. 397.
*Incidence of Multiple Lesions in Primary Syphilis. I. W. Kuhl and H. Boggs. -p. 399.
Diabetes. E. P. Joslin, L. P. Krall, C. C. Bailey and others. -p. 401.
Malignant Lymphoma, Lymphoblastic Type. -p. 408.
Active Duodenal Ulcer. -p. 409.

Capillary Fragility and Diabetic Retinitis.—Rodriguez and Root report measurements on capillary fragility of 156 diabetic patients. They used the petechial index of Gothlin. Forty per cent of 100 unselected diabetic patients showed an increased capillary fragility. This abnormality was found in practically all patients with diabetic retinitis, whether or not hypertension was present. In 11 cases hypertension was present with increased capillary fragility, but no retinal damage was observed. In 56 selected cases with retinitis no patients showed a normal petechial index. The petechial index was increased in 47 and borderline in 9. The incidence of increased capillary fragility was related to the duration of the diabetes more clearly than to the age of the patient; 41.4 per cent of 82 patients with retinitis were under 40 years of age, and increased capillary fragility was observed as early as the age of 21 years, but with long duration of diabetes. Rutin was administered to 70 patients with retinitis and increased capillary fragility. The initial dose was 20 mg. three times a day, and this was increased to 40 or 60 mg. three times a day in 20 cases. (A dosage of 300 to 400 mg. daily may be used.) Increased capillary fragility can be brought to normal with the use of rutin in sufficient dosage, although no patient with retinitis was improved. Increased capillary fragility occurs in diabetic patients as an early evidence of generalized arterial disease and is closely correlated with the development of retinitis and later nephritis.

Multiple Lesions in Primary Syphilis.—Kuhl and Boggs say that one of the most popular misconceptions of the medical profession is that primary lesion of syphilis is always single. They found at the Kanawha Valley Medical Center that 38.5 per cent of 652 patients with diagnosis of primary syphilis had multiple lesions. In 190 seronegative dark-field-positive untreated cases of primary syphilis 43.2 per cent of patients had multiple lesions. Persons with multiple primary lesions tend to come for treatment earlier than those with single lesions. There is no recognized tendency for one sex to have multiple primary lesions more frequently than the other. Extragenital primary lesions are more frequently single than genital primary lesions.

North Carolina Medical Journal, Winston-Salem

9: 61-116 (Feb.) 1948

Management of Occupational Dermatoses. D. G. Welton. -p. 61.
Roentgenologic Consideration of Unilateral Exophthalmos. R. J. Reese, G. J. Baylin and F. Moran. -p. 66.
Changing Concepts in Treatment of Toxic Goiter. R. O. Lyday. -p. 74.
Sterilization of Mentally Handicapped in North Carolina. W. P. Richardson and C. J. Gamble. -p. 75.
Use of Forceps in Obstetrics. W. L. Thomas. -p. 78.
Radiologic Diagnosis of Pericolitis and Pericolonic Masses. A. Tuggle and T. A. Murrah. -p. 81.
Irradiation for Lymphoid Hyperplasia and Allergic Bronchial Asthma. B. B. Pool, J. A. Harrill and J. P. Rousseau. -p. 84.
Large Congenital Defect of Abdominal Wall with Eventration. H. M. Schiebel. -p. 86.

9: 117-172 (March) 1948

Unilateral Rupture of Cervical Disk. G. L. Odom and F. V. Kristoff. -p. 117.
Thoracolumbar Syndrome as Common Cause of Backache. J. E. Jacobs. -p. 122.
Radiologic Diagnosis of Patent Ductus Arteriosus. J. P. Rousseau and S. W. Gibbs. -p. 126.
X-Ray Findings in Artificial Pneumothorax. R. H. Hackler. -p. 129.
Cesarean Section in Interest of Mother. J. T. Williams. -p. 137.
Paroxysmal Cold Hemoglobinuria: Report of 2 Cases. R. G. Fleming and B. L. Heffner. -p. 142.
Alcoholic Beverages and Alcoholism. F. R. Taylor. -p. 145.
Laboratory Services for Private Practitioner. F. H. Richardson. -p. 149.

Proc. of Staff Meet. of Mayo Clinic, Rochester, Minn.

23: 81-104 (Feb. 18) 1948

Resection in Pulmonary Tuberculosis. O. T. Clagett and W. D. Seybold. -p. 81.
*Use of Serum Albumin in Cases of Cerebral Edema: Preliminary Report. E. M. Gates and W. McK. Craig. -p. 89.
Effect of Tetra-Ethyl-Ammonium Chloride on Blood Pressure Before and After Sympathectomy for Hypertension. H. S. Brown, E. V. Allen and W. McK. Craig. -p. 94.

Serum Albumin in Cerebral Edema.—According to Gates and Craig, cerebral edema can seriously interfere with the recovery of a patient who may have undergone a technically successful operation for an intracranial tumor. This report is based on 31 cases of intracranial tumor or injury of the head in which a 25 per cent solution of dry serum albumin was administered intravenously to relieve cerebral edema. It was possible to evaluate the results of this treatment in 20 cases. Improvement occurred immediately after the administration of the serum albumin in 8 of the 20 patients. Four patients were improved, although the improvement did not occur immediately. The serum albumin did not produce untoward reactions. Administration of serum albumin should be considered after surgical operations for intracranial tumor in which cerebral edema is suspected and to prevent cerebral edema after injury of the head.

Rocky Mountain Medical Journal, Denver

45:281-344 (April) 1948

Viral Pneumonia. W. S. Middleton.—p. 285.

Importance of History and Physical Examination in Recognition of Cancer. H. J. Morgan.—p. 290.

Male Infertility: Diagnostic and Therapeutic Problems. H. H. Lamberson.—p. 296.

Life and Death Phenomena in Cancerous Cells. N. Dobrovolskaia-Zavadskaia.—p. 298.

Cancer Problem. A. W. Oughterson.—p. 301.

Use of B. H. Vaccine in General Allergic Conditions. R. M. Fulwider, E. Forrest, E. R. Lamberson and D. K. Mathews.—p. 306.

Affiliated Hospital Plan of New Mexico Denied Blue Cross Endorsement. J. F. Conway.—p. 310.

Surgery, Gynecology and Obstetrics, Chicago

86:385-512 (April) 1948

*Pulmonary Resection for Abscess of Lung. R. P. Glover and O. T. Clagett.—p. 385.

Bronchial Arteries. Anatomic Study of 150 Human Cadavers. E. W. Cauldwell, R. G. Siekert, R. E. Lininger and B. J. Anson.—p. 395.

*Use of Sulfadiazine as Preoperative and Postoperative Measure in Hyperthyroidism. J. H. Mulholland, J. A. Lawler and Elaine P. Ralli.—p. 413.

*Acute Pneumocholecystitis. C. J. Heifetz and H. R. Senturia.—p. 421.

Surgical Treatment of Chronic Anal Fissure. R. Turell.—p. 434.

Repair of Hypospadias with Free Inlay Skin Graft. F. Young and J. A. Benjamin.—p. 439.

Causalgia: II. Signs and Symptoms, with Particular Reference to Vasomotor Disturbances. H. B. Shumacker Jr., I. J. Speigel and R. H. Upjohn.—p. 452.

Dicumarol Prophylaxis Against Venous Thrombosis in Women Undergoing Surgery. G. V. S. Smith and W. J. Mulligan.—p. 461.

Cartilaginous Tumors of Hand. J. G. Shellito and M. B. Dockerty.—p. 465.

Studies on Vagotomy in Treatment of Peptic Ulcer: I. Use of Insulin in Testing for Completeness of Vagotomy. I. F. Stein Jr. and K. A. Meyer.—p. 473.

Role of Transvaginal Roentgentherapy in Treatment of Carcinoma of Cervix. J. A. Del Regato.—p. 480.

Contributions of Animal Experimentation to Treatment of Surgical Shock. D. B. Phemister.—p. 487.

Combined Perineal and Abdominal Operation for Repair of Rectal Prolapse. J. E. Dunphy.—p. 493.

Obstetrics in Small General Hospital. C. E. Conner.—p. 499.

Pulmonary Resection for Abscess of Lung.—Glover and Clagett say that during the ten year period from January 1937 through December 1946 pulmonary resection has been performed in 37 cases of pulmonary abscess at the Mayo Clinic. These cases were taken from a large number in which resection was performed for pulmonary suppuration. They represent only those in which the diagnosis from the onset was that of pulmonary abscess. The patients were well before the present illness. In 20 cases abscess occurred during the course of an infection of the respiratory tract, usually stated as being pneumonia. In 11 cases the abscess followed the administration of an inhalation anesthetic agent, most frequently in operations about the mouth, such as tonsillectomy, extraction of teeth and drainage of sinuses. In 5 cases a foreign body was found in the resected specimen. In 1 case the abscess followed an injury to the thoracic wall, in which a segment of rib had pierced the lung, causing hemoptysis, infection and cavitation but not hemothorax. . The average elapse time from diagnosis to resection was eighteen months, the extreme being eleven years. There were 2 cases of partial resection, 16 of lobectomy, 3 of bilobectomy and 16 of pneumonectomy. In the 21 cases in which a conservative resection (lobectomy or less) could be performed, there was 1 death. In the remaining 20 cases the results were good. In contrast, of the 16 cases in which total pneumonectomy was performed, a good result was obtained in only 7, and in 3 of these it was delayed considerably by complications. There were 6 deaths attributable to operation and 3 late deaths resulting from abscess of the brain. The authors believe that if the optimal time for surgical intervention is recognized and there is quick action, the problem of chronic pulmonary abscess will be eliminated. Until such a time pulmonary resection is the treatment of choice for suppuration of long standing. Bronchographic follow-up of patients treated by open drainage reveals that a significant number are left with residual parenchymal and bronchiectatic changes. Pulmonary resection should therefore take preference over open drainage.

Sulfadiazine in Hyperthyroidism.—Mulholland and his co-workers say that in September 1941, as a measure intended to prevent infection, sulfonamide therapy was instituted following thyroidectomy whenever the temperature rose to 101 F. Sulfonamide therapy was so satisfactory in controlling the temperature and associated infection that it was decided to give the drug before operation in an effort to prevent postoperative infection. Each patient received 8 Gm. of sulfadiazine by mouth in divided doses in the twenty-four hour period before operation The sulfadiazine was continued after operation, 4 Gm. daily, for two to four days. It seemed possible on the basis of reports that by the use of sulfadiazine dual effects were being obtained, i. e., antithyroid and anti-infective. This method of therapy has now been used on a total of 75 patients. In addition to the usual preoperative therapy with strong iodine solution U. S. P., most of the patients received 8 Gm. of sulfadiazine in the twenty-four hours before operation. The postoperative course in these patients was not attended by any severe reaction and the temperature and pulse rate were well controlled. In patients not receiving the sulfonamide compound before operation, the drug was given after operation when the signs suggestive of thyroid crisis occurred; i. e., rapid heart rate, restlessness and a rise in temperature to 101 F. In every instance the temperature and heart rate decreased and the patient's condition improved. The effect of the sulfadiazine occurred within twelve hours of its administration. In this group of patients treated with sulfadiazine and strong iodine solution there were no deaths, whereas in a similar group of 75 patients receiving strong iodine solution and operated on there were 4 deaths.

Acute Pneumocholecystitis.—Heifetz and Senturia define pneumocholecystitis as an acute infection of the gallbladder characterized by the production of gas within the lumen of the gallbladder. The term acute pneumocholecystitis seems preferable to pyopneumocholecystitis, since there is no certainty that in all cases there is pus in association with gas. The name emphysematous cholecystitis also lacks inclusiveness, since the emphysematous pericholecystic infiltration of gas is not invariably present. Besides the Clostridium perfringens, other gas-forming organisms may exist in the bile tract. For the most part they seem to exist as harmless saprophytic inhabitants. Examination of the literature of the last forty-five years has uncovered only 8 bona fide cases of acute pneumocholecystitis. These 8 cases are reviewed and 2 cases diagnosed preoperatively are added. Although one would suppose that acute pneumocholecystitis is a fulminating and invariably fatal disease, this was not true. The picture is one of persistent acute pain in the upper part of the abdomen, usually after previous attacks of pain associated with the gallbladder. Tenderness and rigidity are prominent features, and when the rigidity permits, the gallbladder and occasionally the liver edge can be felt. This picture is not unlike that of other cases of acute cholecystitis or empyema of the gallbladder. There is, however, a tendency for the inflammatory signs to persist, and failure of the attack to resolve would lead to gangrene and perforation. The presence of gas in an acutely inflamed gallbladder is an incidental finding, although its presence makes for additional problems. Surgical therapy alone is effective. Polyvalent gas antiserum, sulfonamide drugs, penicillin and roentgen therapy are of questionable value. Routine scout roentgenograms of the gallbladder area in clinical cholecystic disease will aid in the recognition of this distinctive form of acute cholecystitis.

Yale Journal of Biology and Medicine, New Haven

20:321-432 (March) 1948

Chemical Carcinogenesis and Experimental Chemotherapy of Cancer. E. Boyland.—p. 321.

Immunochemistry of Mouse Tissue Components: II. Comparative Antigenic Composition of Homologous and Heterologous Mouse Tumor Transplants. Esther S. Maculla.—p. 343.

Studies on Coagulase-Reacting Factor: I. Reaction of Staphylocoagulase with Components of Human Plasma. M. Tager.—p. 369.

In Vitro Assay for Trypanocidal Activity. B. A. Rubin.—p. 381.

Experimental Studies in Vascular Repair: III. Morphologic Observations of Normal Vasa Vasorum. R. I. Lowenberg and H. B. Shumacker Jr.—p. 395.

Influence of Vitamin A Deficiency on Gross Efficiency of Growth of Rats. J. Mayer and W. A. Krehl.—p. 403.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

21:105-156 (March) 1948

Mammary Cancer: Place of Surgery and of Radiotherapy in Its Management: I. Study of Some of Factors Which Determine Success or Failure in Treatment. G.E. Richards. -p. 109.

Presentation and Analysis of Results of Radiotherapy. J.W. Boag. -p. 128.

Calcification in Suprarenal Neoplasms. E. Samuel. -p. 139.

Stomach in Femoral Hernia: Report of Case. P. Cave. -p. 143.

Gastric Ulcer of Greater Curvature: Report of 2 Cases. R.J.C. Campbell. -p. 146.

Journal of Laryngology and Otology, London

62: 63-138 (Feb.) 1948

Turning Test with Small Regulable Stimuli: I. Method of Examination: Cupulometria. A.A.J. Van Egmond, J.J. Groen and L.B.W. Jongkees. -p. 63.

Id.: II. Normal Cupulogram. J. Hulk and L.B.W. Jongkees. -p. 70.

"Permanent" Deafness Due to Gunfire. G. Reid. -p. 76.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

55: 1-124 (Feb.) 1948. Partial Index

Composition of Blood of Women During Pregnancy and After Delivery. H. Hoch and J.R. Marrack. -p. 1.

Action of Intravenously Injected Sex Hormones and Other Substances on Blood Flow in Human Endometrium. A.A. Loeser. -p. 17.

Amenorrhea Traumatica (Atretica). J.G. Asherman. -p. 23.

Gross Hypertrophy of Pregnant Uterine Cervix Simulating Cancer. A. Hill. -p. 31.

Unusual Case of Infection of Sixteen Weeks' Extra-Uterine Pregnancy. J.L. Boldero. -p. 47.

Acute Rheumatism in Pregnancy. Florence McKeown. -p. 50.

Testosterone Propionate in Inoperable Carcinoma. J. Wyatt. -p. 53.

Intracranial Hemorrhage in Newborn. C. Saunders. -p. 55.

Acute Inversion of Uterus Treated by Huntington's Operation. Mary A.M. Bigby, Perla Greeves and R.A. Kinch. -p. 62.

*Effect of Pregnancy on Translucence of Mammary Gland. L. Halberstaedter. -p. 65.

Translucence of Mammary Gland and Pregnancy.—In examining several hundred women with suspicious lumps in the breast by means of Cutler's transillumination method, Halberstaedter found that the method was a helpful supplement to the routine physical technic of the examination of the breast. It is especially useful in the early stages of malignant tumors. He found that it was impossible to use this method during pregnancy, since the breasts lost their translucence and became gradually more opaque. He endeavored to find out at what stage after conception translucency of the breast first begins to diminish and how far this sign can be used as proof of pregnancy and as a method of differentiating between certain pathologic processes and pregnancy. He observed that during the first six weeks of pregnancy the breasts are still clearly translucent. In the period between six to ten weeks the translucency begins to diminish. After ten weeks the fading of the translucency is easier to determine, and after twelve weeks the breasts are with only a few exceptions opaque. The author concludes that a decrease of translucency of the breast may indicate pregnancy. This sign can be useful as a quick and easy method of differentiating between pregnancy and other processes, but only if it is clearly positive.

Journal of Pathology and Bacteriology, Edinburgh

59: 519-746 (Oct.) 1947. Partial Index

Normal Red-Cell Survival in Men and Women. Sheila T. Callender, E.O. Powell and L.J. Witts. -p. 519.

New Salmonella (Salm. Fayed) Which Caused Fatal Endocarditis in Man. E.S. Anderson, H.J. Anderson and Joan Taylor. -p. 533.

Liver Atrophy Produced by Chronic Selenium Intoxication. G.R. Cameron. -p. 539.

Experimental Serum Carditis and Its Relationship to Rheumatic Fever. E. Florence McKeown. -p. 547.

Relationship Between Rheumatic Carditis and Subacute Bacterial Endocarditis. Yvonne MacIlwaine. -p. 557.

Nature and Significance of Cementing Substance in Interstitial Connective Tissue. T.D. Day. -p. 567.

Age Changes in Lymph Nodes. F.A. Denz. -p. 575.

Adrenal Cortex in Essential and Renal Hypertension. J.A. Fisher and T.F. Hewer. -p. 605.

Hepatic Alkaline Phosphatase: Histologic and Microchemical Studies on Liver Tissue in Normal Subjects and in Bone Disease. Sheila Sherlock and Very'an Walshe. -p. 615.

Lancet, London

1: 313-352 (Feb. 28) 1948

*Tuberculous Cervical Adenitis. H. Bailey. -p. 313.

Essential Pathology of Kwashiorkor. J.N.P. Davies. -p. 317.

Nose and Skin Carriage of Staphylococcus Aureus in Patients Receiving Penicillin. Brenda Moss, J.R. Squire and Elizabeth Topley. -p. 320.

Properties of Bovine Serum Heated with Formaldehyde. C.E. Boesen, V. Larsen, and Aa. Kjerbye Nielsen. -p. 325.

Retropharyngeal Lipoma: Report of a Case. J.C. McFarland. -p. 327.

Calcium Content of Skin in Lupus Vulgaris Treated with Calciferol. K.M. Tomlinson. -p. 327.

Tuberculous Cervical Adenitis.—Bailey reviews the rise of surgical treatment in the period between 1885 and 1908 and its subsequent fall and replacement by heliotherapy and roentgen treatment. During the last twenty years treatment with roentgen rays has declined in favor, since it is not without serious disadvantages. It converts the skin into leather and produces underlying fibrosis. Occasionally roentgenologic burns are encountered. On rare occasions malignant disease follows irradiation. Tonsils, adenoids and carious teeth are the chief portals of entry for the tubercle bacillus into the cervical lymphatic system. Bailey describes the four progressive stages of tuberculosis in the cervical lymphatic system and discusses treatment by aspiration, giving particular attention to the causes of the high proportion of bad results following aspiration. Curettage is not divorced from the disaster of disseminating tuberculosis. The procedure should be abandoned. Surgeons familiar with thyroid surgery and many progressive otorhinolaryngologists are especially adaptable to this work. Any surgeon with a good knowledge of the anatomy of the neck can quickly become adept, provided he has the time and patience to undertake the dissections. Diseased tonsils and especially adenoids should be removed by an otorhinolaryngologist or a surgeon especially trained in the removal of adenoids. Provision should be made for adequate convalescence up to two or three months in an institution with a nurse especially trained in the correct method of dressing open wounds.

New Zealand Medical Journal, Wellington

47:1-80 (Feb.) 1948. Partial Index

Onset of Pneumonic Influenza in 1918 in Relation to Wartime Use of Mustard Gas. G.M. Richardson. -p. 4.

Arthritis and Working Ability. C.B. Heald. -p. 17.

*Metal Fume Fever. J.W.E. Raine. -p. 24.

Metal Fume Fever.—According to Raine, metal fume fever is applied to a number of conditions and embraces such entities as brass founders' ague, smelter shakes, zinc chills, brass chills and founders' fever. It can be caused by several different substances, one of which is zinc oxide. The author presents the history of an electric welder, aged 37, who reported on Sept. 3, 1947 that during the previous two days he had been engaged in welding galvanized iron beds on a ship. He inhaled a large quantity of fumes. On the morning of September 2 he had a headache, nausea, a colicky upper abdominal pain and a severe cough with slight hemoptysis. On examination, shortness of breath was observed and a roentgenogram of the chest revealed widespread abnormal shadows in the left midzone and a similar condition in the upper lobe of the right lung. During the next ten days the temperature and pulse rate gradually fell to normal. The patient was discharged on September 19, feeling well and having a normal chest on roentgen examination.

Practitioner, London

160:1-80 (Jan.) 1948. Partial Index

How a Nutrition Survey is Carried Out. J.R. Marrack. -p. 13.
Proteins and Amino Acids in Health and Disease. A.M. Thomson. -p. 28.
Nutrition in Pregnancy. D. Baird. -p. 34.
School Child and His Diet. R.E. Smith. -p. 41.
Depressive Personality in General Practice. W. Lester. -p. 53.
Influenza and Its Viruses. F.A. Knott. -p. 58.
Current Therapeutics: I. Folic Acid. L.J. Davis. -p. 60.

160:81-174 (Feb.) 1948. Partial Index

Viruses and Disease in Man. C.H. Andrewes. -p. 82.
Mode of Transmission of Virus Disease. F.O. MacCallum. -p. 90.
Immunization Against Virus Diseases. A.W. Downie. -p. 101.
Chemotherapy of Virus Infections. G.M. Findlay. -p. 108.
Viruses and Cancer. W.E. Gye. -p. 124.

160: 175-258 (March) 1948. Partial Index

After-Treatment of Anterior Poliomyelitis. H.J. Seddon. -p. 175.
Injuries of Knee. R. Barnes. -p. 183.
Dislocations of Elbow. J.C. Cherry. -p. 191.
Tuberculosis of Bones and Joints. S.A.S. Malkin. -p. 196.
Amputations. J. Charnley. -p. 206.
Low Backache, Sciatic Pain and Herniated Nucleus Pulposus. G.F. Rowbotham and N. Whalley. -p. 212.

Transactions Royal Soc. Trop. Med. and Hyg. London

41: 427-574 (Jan.) 1948

Sleeping Sickness of an Unusual Type in Sierra Leone and Its Attempted Control. R.D. Harding and M.P. Hutchinson. -p. 481.
Complement Fixation Test for Diagnosis of Relapsing Fever. B. Wolstenholme and J. H. S. Gear. -p. 513.
Effect of Diet and Helminthic Treatment on African School Children. O. D. MacNamara. -p. 519.
•Folic Acid in Severe Nutritional Anemia: Report of 5 Cases. G. A. B. Cowan. -p. 525.
Chylomicron Count in Normal Subjects and Patients with Sprue. L. P. R. Fourman. -p. 537.
Growth of Protozoa in Tissue Culture. V. Leishmania Donovani. F. Hawking. -p. 545.
Studies on Liver Damage in Acute Malaria. J. Kleeberg and D. Birnbaum. -p. 555.
Splenectomy in Tropics. A. C. Lovett-Campbell. -p. 567.

Folic Acid in Nutritional Anemia. Cowan asserts that severe anemia is responsible for much ill health in Malaya and that the death rate is high. The causes include malaria, intestinal infestation with worms, malnutrition and chronic infection. Of 142 cases investigated in detail, in 24 the red blood cell count was less than 1,000,000. Analysis of these 24 cases showed that nutritional macrocytic anemia accounted for 9, dimorphic anemia for 14, and iron-deficiency anemia for 1 only. A nutritional factor apart from iron was thus concerned in 23 cases. In 5 of these 23 cases treatment was with oral synthetic folic acid. The response to treatment was satisfactory in all instances, and dramatic in 2 cases of dimorphic anemia. The author concludes that the drug has life-saving potentialities when used for moribund patients with dimorphic anemia--an attribute of prime importance in Malaya, where nutritional anemia is responsible for many deaths. The value of the drug is further enhanced by the fact that red cell concentrates for transfusion are virtually unobtainable in Malaya.

Tubercle, London

29:1-24 (Jan.) 1948

Accommodation for Tuberculous. F. Heaf. -p. 2.
State of Employment Among 724 Males (aged 15 years and over) on Tuberculosis Register. R. Hardy. -p. 8.
Tuberculosis in Singapore. B. R. Sreenivasan. -p. 12.

29:25-48 (Feb.) 1948

•Examination for Tubercle Bacilli by Gastric Lavage and by Laryngeal Swab: Comparative Study. A. G. Hounslow and G. Usher. -p. 25.
Aspiration Type of Congenital Tuberculosis: Further Communication. W. Pagel and S. Hall. -p. 32.
Bovine Tuberculosis--Incorporating Review of John Francis' Book. J. N. Ritchie and J. T. Stamp. -p. 34.

Gastric Lavage and Laryngeal Swab in Detection of Tubercle Bacilli.—Hounslow and Usher describe the technic of cultural examination of gastric washings and of laryngeal swabs. A comparison is made between the two methods. Results of examining 193 patients by 193 lavages and 329 swabs (taken on the same or consecutive days), are presented, together with a series of 23 patients whose gastric washings were inoculated on three Löwenstein slopes. The results seem to favor three laryngeal swabs. The authors stress that this type of examination not only is less unpleasant to the patient than gastric lavage but involves less time and skill on the part of the nursing and laboratory staff. The results of three consecutive laryngeal swabs are as good as, and probably better than, a single gastric lavage. Laryngeal swab examination is a reliable, practicable, simple method of examining pulmonary secretions for tubercle bacilli; it is suitable for routine use both in hospitals and outpatient clinics, for diagnosis and in the management of pulmonary tuberculosis.

29: 49-72 (March) 1948

Streptomycin and Tuberculosis: Review. E. Mordasini. -p. 49.
Hypersensibility to Tuberculin in "Susceptibles" to Tuberculosis. S. L. Cummins. p. 59.

Acta Chirurgica Scandinavica, Stockholm

96:297-392 (Feb. 28) 1948. Partial Index

Significance of So-Called Reaction of Decompression in Chronic Retention of Urine. A. Homb. -p. 297.
Intussusception as Complication After Appendectomy: Report of Case. C. Holm. -p. 308.
•Two Cases of Affection of Vascular System Treated by Bilateral Adrenal Medullectomy. D. H. Boggild. -p. 317.
Treatment of Local Pyogenic Infections with Anticoagulants (Heparin). P. Sandblom, G. Ekstrom and O. Quist. -p. 323.
•Seminal Vesiculitis as Acute Abdominal Disease. G. af Geijerstam. -p. 329.
•Case of Adrenal Pheochromocytoma Clinically Diagnosed and Cured by Operation. N. Alwall and H. B. Wulff. -p. 337.
Splenic Tissue in Scrotum. E. Sartor. -p. 388.

Adrenal Medullectomy in Disorders of Vascular System.—Of the 2 cases reported by Boggild, the first concerned a man with severe spontaneous gangrene in all extremities; the second concerned a woman, aged 18, who had severe frostbite with chronic vascular changes (blue legs). In both cases sympathetic ganglionectomy failed to produce satisfactory results and a bilateral adrenal medullectomy was performed. An oblique incision is made under the seventh rib, which is mobilized by subperiosteal resection of 1 cm. of the bone close to the processus transversus. It is then easy to enter and identify the upper pole of the kidney. The operator should work along this until the nearest edge of the adrenal is found. An incision is made and a blunt instrument inserted. The adrenal gland is transformed into a cavity which is then excochleated with a small uterine curet. During this procedure a good deal of the cortex will be removed in addition to the medulla, but enough can be left to preserve life. The surgical operation produced favorable results in 2 patients.

Seminal Vesiculitis.—Geijerstam reports 4 cases of seminal vesiculitis, 3 of which simulated acute appendicitis. In 2 cases appendectomy was performed. The fourth case had been diagnosed as renal calculus. The author points out that four main sites of referred pain of seminal vesiculitis exist: the lower abdomen, the course of the ureters, the course of the vas and the epididymis, and the sacral region. As symptoms from the genitourinary system are often lacking, the correct diagnosis may be difficult, especially when the abdominal referred pain is predominatingly on the right side. Many surgeons fail to include seminal vesiculitis in the differential diagnosis when acute abdominal symptoms are present; this may explain why seminal vesiculitis is so frequently mistaken for appendicitis or ureteral colic. The author stresses the importance of a careful sexual and urologic history. Although other observers regard gonorrhea as the most frequent cause, the author found no evidence of this disease in his 4 cases. The diagnosis of seminal vesiculitis is corroborated by rectal examination, which should be made with the patient erect or in knee-elbow position. If the vesiculitis is of infectious origin, sulfonamide drugs and penicillin should be given. Barbiturates may be administered if excessive sexual irritability has to be counteracted. Hot sitz baths, hot rectal irrigations and heat to the perineum often give comfort and diminish the pain.

Adrenal Pheochromocytoma.—Alwall and Wulff report the case of a man, aged 43, who was completely invalided for four years on account of attacks of pallor, perspiration, trembling and, during the last year, spells and symptoms similar to those in ulcer cases. The clinical diagnosis of pheochromocytoma was verified by roentgen examination. A large adrenal tumor on the right side was found. Reexamination of pictures taken four years previously revealed an adrenal tumor. After the tumor was successfully removed surgically the symptoms disappeared completely.

Praxis, Bern

37:123-140 (Feb. 19) 1948. **Partial Index**

Clinical Pictures Masking Bronchopulmonary Cancer. A. P. Noef. -p. 123.

•Importance of Calcium in Treatment of Delirium Tremens. Z. Klimo. -p. 135.

Calcium in Treatment of Delirium Tremens.—Klimo gained the impression that support of the circulation is of greatest importance in the treatment of delirium tremens, since death in delirium seems to be largely a result of failure of circulation. It has been proved in experiments that the calcium content of the blood is of vital importance for cardiac function. Furthermore, calcium is valuable in pneumonia that may complicate delirium and has a favorable effect on the nervous system. These considerations induced the author to resort to the parenteral administration of calcium in 29 patients with delirium tremens. The patients were given daily from 40 to 60 cc. of a calcium preparation intravenously and intramuscularly. For the intravenous administration a 20 per cent calcium preparation was used and for intramuscular administration a 10 per cent solution. Calcium therapy was combined with the administration of vitamin B_1 and ascorbic acid and with small doses of cardiac stimulants. In most patients improvement became evident on the second day of treatment. The condition of the circulation and the hypovitaminosis deserve primary attention in delirium tremens. Soporific drugs are contraindicated.

Revista Médica de Chile, Santiago

76:1-48 (Jan. 1948). **Partial Index**

•Primary Cancer of Gallbladder and of Biliary Ducts. A. Urzúa and M. Matus. -p. 17.

Simple Orthopedic Apparatus in Treatment of Poliomyelitis Sequels. E. Diaz Borden. -p. 25.

Primary Cancer of Gallbladder and of Bile Ducts.—Urzúa and Matus report 22 cases of cancer of the gallbladder and 2 cases of cancer of the bile ducts. All patients except 1 were women. Most patients were between the ages of 60 and 70. Cancer and lithiasis coexisted in 17 cases. The early symptoms are those of gallbladder disease. The advanced period is manifested by aggravation of the gallbladder symptoms, appearance of a palpable tumor and rapidly progressive emaciation. In this stage no treatment is available. The life expectancy in this stage is about nine to ten months. Early surgical intervention in all cases with clinical symptoms of biliary lithiasis as prevention of cancer is advisable.

Semaine des Hôpitaux de Paris

24:343-368 (Feb. 14) 1948. **Partial Index**

•Dermatitis Provoked by Mineral Oils. A. Tzanck, E. Sidi and S. Dobkevitch. -p. 343.

Significance of Medical Bronchoscopy in Hospital Service For Adults. A. Breton and J. Mereau. -p. 347.

Relationship of Narcoanalysis or Psychotherapy Under Anesthesia to Psychoanalysis. J. A. Chavany, M. Bouvet and D. Hagenmuller. -p. 353.

Dermatitis Due to Mineral Oil.—According to Tzanck and his co-workers, the use of mineral oil (liquid petrolatum) for industrial purposes, for therapeutics in dermatology and for cosmetic purposes has increased considerably. Cutaneous manifestations differing in their clinical aspect and in their significance may result from each of these different types of use. A group of cases of acneform dermatitis is described in which manifestations are of a collective character occasionally simulating an epidemic. The impurity of the oils used in the manufacture of brilliantine, for the therapeutic creams on an anthracene basis or for lubricating purposes, may be responsible for the occurrence of oil pustules. These cutaneous lesions may be prevented by the use of purified or aseptic oils and by washing with soap and by changing clothing. The second group is one of eczematous dermatitis with individual manifestations due to sensitization. The latter may be aggravated by contact with the sensitizing substance combined with repeated microtrauma of occupational origin. The manifestations require change of occupation. Precautionary measures are of no avail, and recovery results only from avoidance of contact. Four cases of Riehl's melanosis in workmen and 2 cases in women after the use of beauty creams are reported. Ulcers, precancerous keratosis and cancer of the skin belong to another group of disorders which are caused by petroleum or tar.

Book Notices

What Comes of Training Women for War. By Dorothy Schaffter, for the Commission on Implications of Armed Services Educational Programs. Cloth. Price, $3. Pp. 223, with 8 illustrations. American Council on Education, 744 Jackson Place, Washington 6, D. C., 1948

This volume will be source material for all time on the facts of the women's branches of the Army, the Navy, the Air Forces, the Marine Corps and the Coast Guard. This book contains a concise statement of how many women served, how they were trained and their response to military life.

The wartime women's military services were the Women's Army Corps (WAC), the Women's Reserve of the Naval Reserve (Women Accepted for Voluntary Emergency Service, abbreviated as WAVES), the Women's Reserve of the Coast Guard Reserve (SPAR), the Marine Corps Women's Reserve (MCWR), the Army Nurse Corps, and the Navy Nurse Corps.

The Women Airforces Service Pilots (WASP) and the Cadet Nurse Corps of the United States Public Health Service should not, strictly speaking, be included, because these two services were not militarized. However, the WASP was like the women's military services in all other respects, and the work of the Cadet Nurse Corps was so closely related to that of the Army and Navy Nurse Corps that separation for purposes of description would have presented an inaccurate picture, and after consideration it seemed proper to include them.

This well organized book is divided into three parts and contains 11 chapters. Illustrations and tables enhance the value of the volume, which attempts to present a case from the point of view of services and of those who served. It points out that there can be no question but that the experiences of approximately one third of a million American women in the military services during World War II will have profound, long range effects on the position of women in America. Therefore, in these days of tremendous events, a thorough study of this volume is recommended for all who are concerned with planning for the future of our nation.

Members of the medical and nursing professions will be particularly interested in Part Three, entitled "Women in Medical, Nursing and Related Services." The author points out that American women have served as nurses to care for our wounded in every war since the Revolution, but that they first became a definite component of the Army when the Army Nurse Corps was created by Congress in 1901. Since the establishment of the Corps more than 100,000 nurses have been members.

This volume was not planned to glamorize the services. The opinions and assertions are private ones of the author and according to the foreword are not to be construed as official or as reflecting the views of the War Department or the Navy Department, or the military or naval services at large.

The Challenge of Parenthood. By Rudolf Dreikurs, M.D., Professor of Psychiatry, Chicago Medical School, Chicago. Cloth. Price, $3.50. Pp. 334. Duell, Sloan & Pearce, Inc., 270 Madison Ave., New York 16, 1948.

This book by a well known psychiatrist of the Adler school should be read by parents and by pediatricians as well. The book is one of the most sensible and practical of the numerous publications in this field. It is not so much a cold scientific analysis of the various abnormalities of behavior as an expression of warm understanding of the problems of childhood.

The book is divided into three sections. The first is a discussion of the psychologic background, describing the difficulties of the parents, their love, anxiety and often sense of inferiority, while the child struggles for superiority in the face of hardships of environment, and often neglect. In the second section the writer discusses the methods of maintaining the mental health of the child, such as keeping an orderly household, avoiding conflict and offering encouragement. He warns against the various mistakes, of which there are many: "spoiling," "lovelessness," "anxiety," "nagging," and many more. Then he elaborates specific situations such as *nursing, weaning and toilet training* and the innumerable questions that develop between infancy and adolescence. The last section is devoted to the difficult child. The author emphasizes the importance of understanding the underlying processes leading to the difficulty. Many of the child's reactions are based on his desire to attract attention. He may employ an active and aggressive technic but often accomplishes his end by a more subtle and passive approach. Coincidental with this drive may be the feeling of inadequacy, desire for revenge and striving for power.

The book ends with a brief description of the work of the Chicago Individual Psychology Association, of which the author is the medical director.

The only criticism that one might make is that the book, like most of those in this field, devotes itself chiefly to the child. Not so much consideration is given to the bewildered parents. However, if parents really understand the child their own troubles would diminish.

It is impossible to comment specifically on the countless valuable suggestions offered by the author. Suffice it to say that the author's main theme is, "Leave the child alone." In this respect the book should have the hearty endorsement of all pediatricians. That has been their theme for years. In fact, in its plea for sympathy for the child and for understanding, the book expresses the very spirit of pediatrics.

Health of Arc Welders in Steel Ship Construction: A Survey Made in Cooperation with United States Maritime Commission and United States Navy. By Waldemar C. Dreessen, Senior Surgeon, United States Public Health Service, and others. *From Industrial Hygiene Division, Bureau of State Services.* Prepared by direction of the Surgeon General. Public Health Bulletin No. 298, Federal Security Agency, United States Public Health Service. Paper. Price, 55 cents. Pp. 200, with 31 illustrations. Supt. of Doc., Government Printing Office, Washington 25, D. C., 1947.

This bulletin presents the results of investigations concerning the health of shipyard workers conducted during 1944 in seven shipyards located on the Atlantic, the Gulf and the Pacific coasts. The study was conducted cooperatively by the United States Public Health Service, the United States Maritime Commission and the United States Navy Department. The immediate reason for the undertaking was the increasing number of complaints of respiratory symptoms from shipyard workers.

The project included both environmental and medical surveys. Analyses were made of the fumes and gases contaminating the air of work places. Approximately 1,767 samples for iron and total fume were taken, 278 samples for zinc, 25 for lead and 2,019 for the oxides of nitrogen. In general, the concentrations of welding fume and gas recorded were relatively low. Some type of ventilation was available at all yards studied. Although the ventilation was of varying effectiveness, extreme degrees of atmospheric contamination were infrequent.

During the medical survey, 4,650 workers were examined. Approximately 1 out of every 4 persons was a nonwelder, the medical findings of this group serving to control the clinical data observed for welders.

Relatively few significant clinical symptoms which might be ascribed to occupational exposure were found. Among these were a respiratory symptom complex, arc welder's siderosis, cardiovascular hypotonia of slight degree, and rather characteristic occupational stigmas of certain arc welders, resulting from burns of hot slag or molten metal. Detailed blood studies failed to demonstrate any marked blood dyscrasias among welders. Gastrointestinal complaints were infrequent and there was no evidence found that welding fumes, under the existing conditions, predisposed to pulmonary tuberculosis. In general, the clinical findings were minimal.

The symptom complex involving the upper respiratory tract noted occurred slightly more frequently among welders than nonwelders: The clinical picture included pharyngitis, rhinitis, sinusitis and sometimes tracheobronchitis. These were ordinarily mild and nondisabling and undifferentiated in most respects from conditions of the upper respiratory tract induced by allergic or other irritant toxic agents or by infections.

The conclusion states that the great variation in the nature of the welder's work precludes reasonable estimates of weighted fume exposures, but safety and ventilating practices in the shipyards surveyed seem to have aided materially in holding occupational diseases at low levels of significance.

Junior Speaks Up. By Irving R. Abrams, B.S., M.D., Associate Attending Physician, Cook County Children's Hospital, Chicago. Cloth. Price, $2.50. Pp. 164. The Macmillan Company, 60 Fifth Ave., New York 11, 1948.

This book is authentic and useful as far as the information contained in it is concerned, provided that the reader is willing to put up with the annoyance of being talked down to and the excessive wordiness involved in the device adopted of trying to make a motion picture scenario out of advice about care of the infant. The result is neither an amusing style, as is apparently intended if one may judge from the comment on the jacket, nor a practical handbook of advice to young parents.

The characters are Mr. and Mrs. Worrimore (the parents), Dr. Bodybuilder, Junior (the real object of the book) and, for some reason that this reviewer is unable to fathom, an additional character in the "person" of Junior's shadow, who acts as a sort of interlocutor to Junior's Mr. Bones. The result is a lengthy, stilted, forced and definitely not funny production which is longer than it needs to be because the information is buried in so much extraneous matter. The parents appear more stupid than seems necessary, and many of Junior's conversations with Shadow are far too adult to be convincing. It is too bad that the forced effort to be humorous has spoiled what would otherwise have been a useful contribution to health education for young parents. The frequent references by Dr. Bodybuilder to the fact that the answers to questions by young parents are all found in his book "How to Raise Good Babies" is wearisome and in bad taste.

The Brain of the Tiger Salamander, Ambystoma tigrinum. By C. Judson Herrick. Cloth. Price, $5. Pp. 409, with 113 illustrations. University of Chicago Press, 5750 Ellis Ave., Chicago 37, 1948.

This book by the dean of American neuroanatomists contains much more than the title indicates. Its first, more general part, gives an over-all view of the brain of this amphibian, and discusses the physiologic and morphologic implications. It is well suited to the nonspecialist. Indeed, it is one of the most brilliant and lucid introductions to comparative neurology ever written. The basic plan of the vertebrate brain and how it works (chapter VI) and the changes which the different parts of the brain underwent during phylogenesis and which culminated in the development of the cerebral cortex (chapter VII) are described succinctly and clearly, and the value of morphologic studies for a broader understanding of man is discussed (chapter VIII).

The second part contains a detailed analysis of the fiber tracts and cell masses in the brain. This documentary material will be appreciated by the experienced worker in the field of neuroanatomy. Apart from the ordinary methods, silver preparations, including impregnations after Golgi, have been used.

There is a bibliography of ten pages which includes a list of the author's previous papers. The figures, all pertaining to the brain of the tiger salamander, are mostly line drawings; most of them are new. The book should be widely read, not only by specialists!

Child Care Questions and Answers: Over 400 Questions Most Often Asked by Parents. Compiled and Answered by the Children's Welfare Federation of New York City. General Chairman: John Fitch Landon, M.D. Cloth. Price, $2. Pp. 159. Doubleday & Company, Inc., Garden City, N. Y., 1948.

A panel of twenty-nine experts in child care under the direction of Dr. John F. Landon, attending pediatrician of the Roosevelt and Woman's Hospitals, New York, have given authoritative and simple answers to over four hundred questions that trouble and perplex parents. The questions were compiled and the book prepared under the auspices of the Child Health Committee of the Children's Welfare Federation of New York City. Questions and answers cover many of the simpler phases of growth, development, nutrition, emotional reactions and medical care of special senses, broken down into appropriate chapter headings for easy reference. Both questions and answers are couched in language easily understandable to the parent with average or less than average education and are designed to be as helpful to the parent as to the child.

The section on emotional guidance appears particularly good and tends toward the development of an easier philosophic relationship between parent and child. Sample, question 261: "How can a parent be patient at 5 o'clock?" Answer: "Realize that it is 5 o'clock and that is why you are not patient. This in itself will help."

In general, all chapters contain much information that will be helpful to parents, as the questions are compiled from those most frequently asked by parents and guardians about children in the 1 to 6 year age group. The questions are selected from a group submitted to the Children's Welfare Federation by over two hundred child health and welfare agencies in New York City for which the Federation acts as a coordinating organization.

A Textbook of Clinical Neurology with an Introduction to the History of Neurology. By Israel S. Wechsler, M.D., Clinical Professor of Neurology, Columbia University, New York. Sixth edition. Cloth. Price, $8.50. Pp. 829, with 162 illustrations. W. B. Saunders Co., West Washington Square, Philadelphia 5, 1947.

This well established and extensively used textbook of neurology has come through in a new edition, the sixth, and a review of its contents reveals that extensive revision has indeed taken place. The greatest changes are seen in the sections on therapy, where the remarkable achievements of the sulfonamide drugs and penicillin are documented in the various diseases such as purulent meningitis, brain abscess and syphilis of the nervous system. Apparently the book went to press before a record was established for the application of streptomycin in some diseases. Perhaps this is just as well, since a long period of test is necessary before one is justified in including a new drug as standard treatment, especially in a textbook which is used by medical students.

Much of the old has been retained in the book, although the author has made a strong attempt to eliminate the clinical pictures which are not too often encountered now. One would perhaps desire more emphasis on early symptoms or mild manifestations of some of these diseases. The chapter on electrical examination is essentially the same as that in the earlier editions, and this section perhaps could be improved by including some of the newer methods of electrical diagnosis which utilize tetanus ratios and electromyography.

In general, however, the "Textbook of Clinical Neurology" by Wechsler remains the friendly, interesting and easily read volume which every medical student and practitioner can utilize to advantage. It is actually almost encyclopedic in its contents, and one has only to know neurology to realize how much has been packed between the two covers.

Nouvelles techniques de traitement des fractures: Méthodes orthopédiques, réduction dans les cadres de traction, synthèses à minima; brochages, enclouages. Par H. Godard et R. Michel-Béchet. Préface du Professeur J. Leveuf. Paper. Price, 1500 francs. Pp. 406, with 206 illustrations. G. Doin & Cie, 8 Place de l'Odéon, Paris 6e, 1948.

This book covers many of the new technics employed in the treatment of fractures, including orthopedic methods such as reduction by traction, splints and intramedullary metallic pins, and nails. Some interesting experimental work on the physiology and biology of repair of fractures and osteogenesis after pinning and nailing is described; also a complicated apparatus and plaster for disjointed symphysis pubes instead of wiring through the obturator foramina.

The technic of Merle D'Aubigne, which we know as Dickson's, is illustrated. Fractures of the patella are given 2 pages. The French have little time for surgical repair and advise patellectomy.

The treatment of delayed consolidation and pseudarthrosis is discussed under the headings: medical; heterogenous bone graft; convalescent serum (Imbert); injections of colloidal suspensions, hormone therapy; intrafocal injections; testicular injections; splenic extracts; acidification; autohemotherapy; sympathectomy; Beck operation; morcellation of Kirschner, and the use of os purum.

Detoxication Mechanisms: The Metabolism of Drugs and Allied Organic Compounds. By R. Tecwyn Williams, Ph.D., D.Sc., Senior Lecturer in Biochemistry, University of Liverpool, Liverpool. Cloth. Price, $5.50. Pp. 288. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, 1947.

The principal title of this book is misleading, since the bulk of the discussions relate to the metabolism of various drugs and chemicals. Furthermore, many of the reactions which drugs undergo in the body and which are classed as detoxication mechanisms actually result in the formation of substances more toxic than the parent compound. Thus the sulfonamide compounds are converted to the acetyl derivatives, ethylene glycol is converted to oxalic acid, and methyl alcohol is converted to formaldehyde and formic acid.

This volume represents an excellent and exhaustive compilation of the available knowledge on drug metabolism. The arrangement of subject matter is by chemical classification and the chemical phases of the subject are emphasized. An excellent bibliography is included. This book should be on the shelf of all biochemists, physiologists and pharmacologists.

Public Health Law. By James A. Tobey, Dr.P.H., LL.D. Third edition. Cloth. Price, $4.50. Pp. 419. The Commonwealth Fund, 41 E. 57th St., New York 22; Oxford University Press, Amen House, Warwick Square, London, E. C. 4, 1947.

This is a third edition of a work initially published in 1926. It has been expanded to include recent alterations in governmental organization and administration, important legislative trends and approximately two hundred and fifty new court decisions relating to various aspects of public health law. It is designed to make readily available to health officers and others engaged in public health activities authentic information for their guidance. The author has had training in the fields of both public health and law. That fact is reflected in the contents and arrangement of the book, and its quality entitles it to a wide circulation. In the preface to this edition, the author expresses the hope that the book may continue to serve a useful purpose in the interpretation of law to the public health officer and of public health to the lawyer and the judge. There is justification for that hope.

Theory and Practice of Body Massage. By Frank Nichols. Cloth. Price, $4. Pp. 213, with 150 illustrations. Milady Publishing Corporation, 3721-23 White Plains Ave., New York 67, 1948.

This is primarily an instruction book for persons of limited education who aspire to become operators of massage parlors. It attempts to cover a wide range of medical subjects, such as anatomy and physiology, classification and physiologic effects of massage, art and practice of massage, hydrotherapy, therapeutic and "reducing" exercises, advice on constipation, use of depilatories and diets, and ends with a few pages on "professional ethics." Hardly worth a review in a medical journal.

Safety for the Household. U. S. Department of Commerce, National Bureau of Standards, Circular 463. Paper. Price, 75 cents. Pp. 190, with illustrations. Supt. of Doc., Government Printing Office, Washington 25, D. C., 1947.

This is a paper-bound volume prepared by the United States Bureau of Standards and designated as Circular 463, published by the United States Department of Commerce. As indicated in the title, it deals with safety in the home, starting out with statistics, suggestions for instruction to children, comments on organized safety and a list of publications for the householder. It then deals in turn with chemical hazards, which include acids and caustics; cosmetics, drugs and medicines; fumigants, disinfectants and insecticides; paints, varnishes, lacquers and enamels; polishing and cleansing materials, and refrigerants. Contamination of food and water also is discussed. Next come chapters on electrical hazards, fire hazards, gas hazards, lightning, mechanical devices, yards and gardens, miscellaneous hazards and suggestions for building a home. There is a chapter on first aid and some statistical tabular material relating to the accident hazard.

Law and the Practice of Nursing. By Nettie D. Fidler, R.N., B.A., Assistant Professor of Nursing, School of Nursing, University of Toronto, Toronto. In collaboration with Kenneth G. Gray, K.C., M.D., B.Sc. Cloth. Price, $2. Pp. 106. The Ryerson Press, 299 Queen St., W., Toronto 2, 1947.

Much of the contents of this readable little book relates to Canadian law and practices and for that reason will not be of particular value to the nursing profession in the United States except perhaps to permit a comparison of the conditions in the two countries. The authors have included chapters on the patient, physician and nurse relationship, on the relationship of the nurse to the hospital, on the laws of Canada, both federal and provincial, relating to drugs, on the duties of nurses relating to the mentally ill and to public health activities and concludes with an account of the development of the organized nursing profession in Canada.

Woman's Inside Story. By Mario A. Castallo, A.B., M.D., F.A.C.S., Associate Professor of Obstetrics and Gynecology, Jefferson Medical College, Philadelphia, and Cecilia L. Schulz, R.N. Cloth. Price, $3. Pp. 203, with 16 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1948.

This book of some 200 pages, written for the laity, is the first book of its sort that the reviewer is willing to advise his own patients to buy. The senior author has obviously had an extended experience in obstetrics and gynecology and has tried to answer the many questions asked by patients. Medical terms are omitted, and it is written in a language that the patient can understand. In eleven chapters, ovulation, fertilization, childhood, puberty, sex life, marriage, tumors, menopause, sterility, venereal disease, etc., are adequately covered. It is a book that should be read first by the girl in her early teens and then every decade.

Medizinische Terminologie: Wörterbuch der gesamten Medizin und der verwandten Wissenschaften. Von Dr. Med. Rudolf Abderhalden. Cloth. Price, 32 Swiss francs. Pp. 1213. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; Benno Schwabe & Co., Klosterberg 27, Basel 10, 1948.

"Medical Terminology," compiled by R. Aberhalden, is a medical dictionary comparable to our standard texts. It is not as all inclusive as, for example, Dorland's, and with a single exception contains no illustrations. It appears to fill an important place in the German medical literature, for, as the author points out, there have been no German medical dictionaries published for a number of years. A novel feature from the point of view of a German author is the inclusion in the dictionary of terms belonging to the related sciences such as physiology, physics, botany and physiologic chemistry in particular. Although limited in scope, the dictionary impresses one as a valuable contribution to German medical literature.

Dictionnaire de spécialités pharmaceutiques 1948. [Including] Nomenclature de spécialités pharmaceutiques classés par laboratoires. (Parties 1 et 2). Par Louis Vidal. Twenty-fourth edition. Boards. Pp. 2114; 68. Office de Vulgarisation Pharmaceutique, 11, rue Quentin-Bauchart, Paris, 8e, 1948.

The last edition of this book on pharmaceutic specialties appeared in 1946. Obviously it is of most interest to those who desire information on the composition, source of supply and other pertinent information on drugs sold abroad. It cannot in any possible sense be called a therapeutic guide but would be useful for those who try to maintain complete libraries, for those who from time to time have inquiry concerning the identity of foreign preparations and for those whose clientele includes persons recently from European areas.

Union internationale thérapeutique. Journées thérapeutiques de Paris 1946. Sous la présidence du Professeur M. Loeper et du Dr L. Bory. Fer, voie pulmonaire en thérapeutique (les aérosols). Paper. Price, 980 francs. Pp. 475, with illustrations. G. Doin & Cie, 8 Place de l'Odéon, Paris 6e, 1948.

This is a series of articles and discussions divided into two parts, the first being devoted to the use of iron, the second to aerosol administrations. The articles are in French, but embrace a fairly extensive list of topics. While the book will be of limited value to most members of the medical profession, it may have some usefulness for those who attempt to maintain complete libraries.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

"DICUMAROL"

To the Editor:—If the determination of prothrombin time is the only measure for dosage of "dicumarol" in coronary thrombosis, no patient who is treated at home can be given this drug. A determination which could easily be made is the coagulation time. Is there any correlation between prothrombin time and coagulation time? At what coagulation time should "dicumarol" therapy be discontinued? My object is to be able to give "dicumarol" during the first eight or ten days when there is danger of mural thrombi, instead of not at all.

Max Kunreuther, M.D., Bronx, N.Y.

ANSWER.—Although recent reports indicate that the administration of "dicumarol" following a myocardial infarction may reduce the incidence of complications due to intravascular thrombosis, final proof awaits further statistical evidence. Daily determination of the blood prothrombin clotting time is necessary if "dicumarol" is to be used, as the dose of the drug depends on the extent of increase of the prothrombin clotting time. The whole blood coagulation time, even when accurately measured in a water bath at 37 C. by the Lee and White technic, does not reflect alterations in prothrombin time within the recommended therapeutic range. In fact, prolongation of the whole blood coagulation time does not occur unless the prothrombin activity is below about 10 per cent of normal. For this reason, measurement of the coagulation time is valueless in assessing the action of "dicumarol." Blood for the determination of prothrombin time may be drawn in the home—(4.5 cc. of blood mixed with 0.5 cc. of 0.25 per cent sodium citrate solution)—if no longer than one hour is allowed for transportation to the laboratory.

Q FEVER

To the Editor:—An employee of a local packing plant has cryptogenic fever. To eliminate Q fever from the differential diagnosis, we would like to have a complement fixation test for Rickettsia burneti. Where can we do this, and what are the special procedures? How long can blood agar be kept and still retain its efficency for bacterial cultures?

John P. Darling, M.D., Mason City, Iowa.

ANSWER.—The complement fixation test is the only practical procedure for the diagnosis of Q fever. Requests for such tests may be made of the National Institute of Health, Bethesda, Md. Simultaneous tests made on two serums, one taken during the acute stage of the disease and one after recovery, are desirable. A definite rise in antibody titer is diagnostic. Where paired serums are not available, a significant titer in a convalescent serum sample is usually diagnostic.

No definite time limit can be set, beyond which blood agar loses its efficiency. Freshly prepared blood agar supports maximum growth. Thereafter, there is a gradual decrease with time in the number of organisms which grow in colonies. Poorly viable strains may be lost on twenty-four hour old mediums, whereas easily grown organisms may multiply on mediums several weeks old. Drying of the mediums is a factor; plates kept sealed last longer. For special work blood agar plates should not be over twenty-four hours old; for routine work they are frequently kept up to a week.

ROUTINE OOPHORECTOMY

To the Editor:—Is Crossen's advice to do routine oophorectomy when laparotomy is done on women past 43 or 44 years of age generally accepted?

A. C. Eitzen, M.D., Hillsboro, Kan.

ANSWER.—Gynecologists differ in their attitude concerning the removal of normal ovaries at the time a hysterectomy is done. Most of them believe in routine removal of the ovaries after a specific age, and this age is usually 45 years. However, a few gynecologists remove ovaries routinely as early as 40 years of age. Some specialists do not remove normal ovaries in any woman who is still menstruating, regardless of her age. The reason for removal of normal ovaries at the time of hysterectomy, or laparotomy for other purpose, in women in their forties is elimination of the possibility of development of cancer because malignant neoplasms of the ovaries have a frightful mortality.

LIGHTNING PAINS

To the Editor:—I have a patient who is tabetic and is troubled with "lightning pains." What is the best treatment?

S. E. Reynolds, M.D., Morehead, Ky.

ANSWER.—It is necessary to know the status of the spinal fluid of the patient, because among persons whose spinal fluid is active the probabilities are that 60 per cent of them will derive some relief from the lightning pains after treatment, in the sense that the pains will be less severe and the attacks will recur less often. In a tabetic patient in whom examination of the spinal fluid reveals no abnormality, irrespective of whether the return of the fluid to normal is the result of treatment or occurred spontaneously, the treatment of lightning pains is unsatisfactory. Vitamin B, administered both by mouth and by injection, has been of value in certain cases; likewise, some patients note that after an excess of sugar in their diet they will experience exacerbation of the pains, whereas others believe that the eating of excess amounts of meat tends to increase the frequency of occurrence of the pains. The presence of secondary infection—such as severe focal infection in tonsils or prostate gland, the common cold or any similar intercurrent infectious process—invariably aggravates the pains. The same may be true in certain persons in changes of weather. Frequently they can forecast a change in the barometer twenty-four hours in advance of the event, because of the attacks of pain they may experience.

Penicillin is of some help to these patients, to the extent that possibly a fourth of them derive some benefit from this agent. Other forms of antisyphilitic treatment, such as fever therapy and intraspinal treatments, have not been of so much help to patients whose spinal fluid has become normal as to those whose spinal fluid is active. Attempts to overcome the pains by the injection of various substances along the neural pathways have not been attended with success.

ACUTE GLOSSITIS

To the Editor:—A patient of mine has acute glossitis. He is about 50 years of age, and until one year ago never had difficulty of any sort. His tongue becomes extremely sore along the borders, and the tip of the tongue becomes tender. Examination reveals that the tongue is a beefy, fiery red along its anterior two thirds. The edge is more intensely red than the center. Results of routine laboratory procedures reveal that the blood and urine are normal. A gastrointestinal roentgen examination reveals normal conditions. Gastric analysis showed a mild hypochlorhydria. Ingestion of large doses of vitamins orally, including large doses of nicotinic acid, gave no relief. However, injection of 1 cc. of liver extract (10 units per/cc.) gives him relief within two to three hours. The pain in his tongue disappears, as does the inflammation. The tongue remains well for about three weeks, at which time inflammation recurs. His diet seems adequate, and he certainly does not have pernicious anemia or sprue. Apparently there is a failure to absorb an essential factor from the diet. Incidentally, an attempt to maintain him on folic acid did not prevent recurrence of the glossitis. It appears that only liver is useful, as massive doses of vitamin B complex intravenously and intramuscularly failed completely. Please discuss this problem.

J. J. Stark, M.D., Belpre, Ohio.

ANSWER.—Simple uncomplicated glossitis, as described, could have many possible causes. In an apparently healthy person the cause would probably be either a deficiency or a local irritant. Infection, an allergy or a neurogenic basis would probably not produce such a pure and discrete condition. From the information given, the glossitis would seem to be due to a deficiency, probably the lack of an unknown specific factor present in liver extract. Liver extract is composed of numerous chemical substances, the identity and action of which are not all known at present. Patients with evidence of a deficiency may fail to respond to certain factors (folic acid) but many respond to liver extract itself. There may even be differences in response to various methods of administration (Watson, J., and Castle, W. B.: *Am. J. M. Sc.* **211**:513-530 [May] 1946).

Several types of deficiency may produce an apparently identical glossitis. Lack of any of several members of the vitamin B complex, of certain unidentified factors and even of iron may be responsible and have been demonstrated to clear the glossitis, as well as an associated anemia, when administered.

The chance that there is an absorption defect is remote, especially when the intestinal function, roentgenologic status and gastric acidity are not abnormal. The acidity could well be rechecked, however, to be sure that the glossitis is not a preanemic occurrence.

Local irritants should be excluded as potential causes of the glossitis. Smoking, dental abnormalities, mouth washes, irritant foods and alcoholic beverages may produce low grade inflammation of the tongue, and the last-named may result in a deficiency (through diet).

It would seem from the history that the various vitamin B preparations have had an adequate trial and that the response to liver extract is not coincidental. (Nicotinamide should be *given in 50 to 100 mg. doses by mouth each day for three weeks.)* It would be valuable to know whether liver extract and whole liver by oral administration is effective in clearing the glossitis. It might be well to keep cirrhosis of the liver in mind and to be sure that the man's diet is actually adequate.

If all the points which have been suggested prove to be without value, tell the patient that he has an unusual condition and that he will need to continue treatment, as well as observation, for an indefinite period.

SYPHILIS

To the Editor:—A white man about 25 years of age with a positive reaction to serologic tests for syphilis was given several injections of penicillin while in the service, was released and was advised to see a physician in his home town. He has had some treatment but not with any regularity—possibly twelve injections of an arsenic preparation intravenously and about twenty-five of a bismuth compound intramuscularly. When he consulted me he had impregnated a girl and I have given both of them active treatment. To date both have had ten injections of 300,000 units of penicillin in oil and wax daily, twelve of neoarsphenamine 0.6 Gm. and twelve of a bismuth compound. Recheck serologic tests after this course give a strongly positive reaction for the man and slightly positive for the girl. By law in Ohio they are denied a marriage license. Am I right in authorizing the judge of the probate court to issue this certificate? How much more treatment should be given this couple?

M.D., Ohio.

Answer.—The history of the syphilitic infection and data on the original diagnosis would be helpful. In the presence of a negative history and normal physical conditions an occasional positive response to serologic tests is encountered as the result of nonspecific infections. Does this man present any physical findings now suggestive of syphilis besides the positive serologic tests? A spinal puncture should be done and the fluid carefully examined, including a Wassermann test. If the spinal fluid is positive he should be treated with malaria or hyperpyrexia and simultaneous intravenous penicillin. This treatment should be followed by aqueous intramuscular penicillin injections (50,000 units every three hours, total 5,000,000 units) and titrated blood serologic tests.

The pregnant girl should be observed for physical findings of syphilis and titrated serology tests. If the man has a positive spinal fluid, the girl should receive aqueous intramuscular penicillin (total 5,000,000 units) during the second or last trimester of pregnancy. Twelve biweekly intravenous injections of oxophenarsine hydrochloride (0.04 Gm.) and six intramuscular injections of an insoluble bismuth compound should be added to the course of penicillin. If the man has a negative spinal fluid test and negative physical findings, a course of aqueous intramuscular penicillin injections for the girl would suffice during the last trimester of pregnancy. A postpartum spinal puncture on the mother should be done. A serologic test on the cord blood and a monthly blood test on the infant should be carried out. With the foregoing precautions you would be justified in authorizing the judge of the probate court to issue a marriage certificate.

ANTHRALIN CREAM

To the Editor:—I have used anthralin cream (Abbott) 0.1 per cent for psoriasis, off and on for several years. I never have more than one or two small lesions usually over the tibia. Usually about one week's applications twice daily clear up the psoriasis. Now a lesion about 0.5 cm. in diameter has not entirely disappeared after three or four weeks of application. This lesion is pale and looks as if it will shortly clear up. Is anthralin carcinogenic and have human beings contracted cancer of the skin from its use? How long can one safely use it against psoriasis?

M.D., California.

Answer.—As far as can be determined, there are no known instances of human carcinoma in which anthralin has been shown to be an exciting or associated etiologic agent. However, it would be exceedingly difficult to prove conclusively that anthralin or any other similar agent was responsible for inducing malignant changes in cutaneous lesions unless such changes occurred frequently in association with anthralin medication.

There is a theoretic possibility that anthralin could, after long-continued application, induce metaplasia. Anthralin is closely allied chemically to anthracene. It is an irritant and its therapeutic action is based on its ability to stimulate epithelial proliferation. Regardless of this theoretic possibility, anthralin has not been demonstrated to have carcinogenic properties by actual animal experiments or by clinical experience.

THROMBOPHLEBITIS

To the Editor:—A man aged 40 has recovered from extensive thrombophlebitis involving the superficial veins of one leg, including the great saphenous vein. The patient is a barber, and after four or five hours of work 3 plus pitting edema of the lower part of the extremity develops. What is the prognosis in regard to spontaneous reconalization of the thrombosed veins with subsequent improvement in the circulation? What therapeutic measures can be exhibited to improve the return circulation? What are the possible complications, and what measures can be undertaken to prevent their occurrence?

M.D., Illinois.

Answer.—The physician always needs to consider the cause of thrombophlebitis in superficial veins. Insufficient evidence is included in the query to determine what the cause might be in the specific case under consideration. Thrombophlebitis occurs spontaneously; it affects varicose veins and it occurs in thromboangiitis obliterans, polycythemia vera and as a result of carcinoma, chiefly of the stomach, bronchus and pancreas. It is probable in the case under consideration that the thrombophlebitis was due to varicosities. Inasmuch as there is a substantial degree of swelling of the extremity when the subject is on his feet for long, it is probable that the femoral or the femoral and iliac veins were occluded by a thrombus. It is rare to have any substantial degree of edema from occlusion of a long saphenous vein by a thrombus.

The steps which should be taken in consideration of the history of this patient are (1) an attempt to determine the cause of the thrombophlebitis and (2) adequate support to the extremity to control the edema, in order to prevent the consequences of chronic venous insufficiency (edema, varices, chronic indurative cellulitis and stasis ulcer). The type of support which should be worn is determined entirely by its adequacy. If the ordinary cloth-elastic bandages available on the market prevent swelling, they are adequate; if they do not, a pure gum rubber bandage may be needed.

PHARYNGEAL OBSTRUCTION

To the Editor:—Please suggest further methods of investigation for the following case: A single white man aged 64 was in good health until six months ago, when he experienced difficulty in swallowing solid food. This has become gradually worse, and now he has severe pain requiring sedation with opiates. Pain starts in the throat in the region of the hyoid bone and radiates upward to the lower jaw, antrums and temples. He is existing on milk drinks and soups but has lost over 35 pounds (15.9 Kg.). There is no cough or hemoptysis. Tests including a gastrointestinal series, fluoroscopy, bronchoscopy, roentgen examination of chest, neck and sinuses, Wassermann and brucellosis agglutination are so far negative. Several laryngoscopies have not proved of help. Electrocardiographic tracings and the basal metabolic rate are both within normal limits. He has a few carious teeth, which are being removed one at a time.

W. F. Crosby, M.D., Sterling, Mass.

Answer.—The history suggests the following possibilities: (1) malignant tumor (the combination of obstruction and pain are most readily explained on this basis); (2) bulbar palsy (the history of obstruction is fairly characteristic for a bulbar palsy, but the pain is not easily explained on this basis); (3) chronic inflammatory disease with ulceration, and (4) foreign body, diverticulum with foreign body or benign stricture (remote possibilities).

The following procedure is suggested:

1. Additional details should be obtained from the history regarding the rapidity of onset and the progress of the obstruction, as well as the time of appearance and progress of the pain.

2. Careful external examination of the neck and supraclavicular and infraclavicular regions should include inspection and palpation. Local examination of pharynx, hypopharynx and larynx should be accomplished by the indirect method.

3. Fluoroscopic examination of the pharynx and esophagus should be made both during swallowing and during the performance of the Valsalva maneuver in the anteroposterior and straight lateral positions. Note any abnormality of the action of the palatal, pharyngeal and upper esophageal musculature that might be associated with difficulty in swallowing.

4. Perform esophagoscopic examination with particular attention to the hypopharynx, pyriform fossae and upper part of the esophagus.

5. Routine laboratory work should include urinalysis, blood count, differential count, serology and sedimentation rate.

If there is an obstructive lesion in the pharynx or esophagus it should be demonstrable on fluoroscopic examination. In the case of a bulbar palsy, however, there are sometimes associated palsies, most often involving the larynx. The difficulty in swallowing may be demonstrable roentgenologically by use of the Valsalva maneuver. This test in the anteroposterior position may demonstrate a weakness and bulging of the pharynx on one side.

The history of severe pain located high in the throat suggests strongly an ulcerative lesion affecting the epiglottis or some other part of the hypopharynx.

REMOVAL OF EXCESSIVE HAIR

To the Editor:—In the removal of excessive hair by electrodesiccation, is there danger of bad after-effect? What is the best technic? I plan to use a "Birchter-hyfrecator" for source of current.

M.D., California.

Answer.—Electrolysis is the preferred method in removing superfluous hair. One applies a current of sufficient strength to destroy the hair follicle, and, if properly carried out, the treatment is followed by a smooth, almost invisible scar and total destruction of the hair. The majority of dermatologists prefer electrolysis to high frequency diathermy. High frequency current offers the advantage of a time saver as compared with electrolysis. However, one must have equipment manufactured for this specific purpose, as it requires apparatus with a special fine current control such as is not available in ordinary high frequency machines. The lack of such control not only involves a definite danger of destroying the hair follicle but may result in abscess and excessive scar formation. For description of the technic of electrolysis in detail refer to any standard textbook on electrotherapy. Briefly, the method consists of placing a delicate needle point within the hair follicle, with the needle parallel to the hair shaft, being careful to avoid puncturing the tissues. The needle then is activated with a current just sufficient to destroy the hair follicle. The hair is gently lifted out with hardly any pull. One should be careful not to remove at one sitting too many closely adjacent hairs or repeat the treatment in the same area before all reaction has subsided lest excessive scar formation may be produced.

The "Birchter-hyfrecator" is essentially a high frequency unit, creating by the use of a spark gap condenser circuit, a high frequence damped current. Unless it has a special fine current control there is danger of producing excessive scar formation, as the interval distinguishing destruction of hair follicle from destruction of the skin is measured in a fraction of a second.

ESTROGENS AND SALT RETENTION

To the Editor:—Occasionally cardiopathic patients who are taking estrogenic substances are thrown into cardiac failure, presumably because these substances cause retention of salt and water in the body. Are there any estrogenic substances which do not possess this property?

Samuel L. Immerman, M.D., Philadelphia.

Answer.—Most potent estrogens are capable of causing a retention of salt and water in the body when administered in the appropriate dosages. There is little evidence at present to indicate whether there is a quantitative difference in this property among the common estrogens. It does seem likely, however, that those estrogens which are absorbed rapidly into the bloodstream will be most effective in causing retention of sodium with the increase in extracellular fluid. For this reason it is suggested that oral estrogens be used most cautiously in patients with cardiac damage. There is little possibility, however, that the injection of a slowly absorbed estrogen such as estradiol dipropionate, diethylstilbestrol *di*palmitate or estrone in aqueous suspension will cause any significant retention of salt and water when administered in therapeutic doses.

CHOREA

To the Editor:—A young married woman aged 25 has had several attacks of chorea since the age of 6. The last attack occurred during pregnancy and was so severe that she had to be aborted. Heart lesions are absent. A difference of opinion exists between the neurologist and obstetrician as to whether this woman should become pregnant again. Please give an opinion.

Louis Pelner, M.D., Brooklyn.

Answer.—A patient who has had several attacks of chorea without damage to the heart warrants thorough investigation. Is it chorea? Some recent literature tends to separate chorea from heart disease. This may be a psychiatric problem. If the condition is chorea and there is definitely no cardiac damage, no reason prevails to make pregnancy unwarranted.

PROCAINE IN ASTHMA

To the Editor:—Has procaine been used intravenously in the treatment of bronchial asthma? What is the intravenous dose of procaine hydrochloride when it is used alone or with other drugs?

R. C. Hill, M.D., York, Ala.

Answer.—Procaine has been used intravenously in the treatment of asthma. D. State and O. H. Wangensteen (The Journal, April 13, 1946, p. 990) described its beneficial effects in 14 of 16 patients with serum sickness and 6 of 7 patients with urticaria. One patient with chronic asthma failed to obtain relief. In patients with chronic urticaria the individual injection produced only temporary benefit. The dose used was 1 Gm. procaine hydrochloride dissolved in 500 cc. normal isotonic sodium chloride solution, given intravenously over a period of two hours. In other reports on the use of this drug against urticarial reactions the same dose was generally used. Durieu, DeClercq and Duprez (*Acta clin. belg.* **1:**150 [March] 1946) treated 25 asthmatic patients with intravenous procaine, employing 5 to 20 cc. of a 1 per cent solution daily. They stated that preliminary oral administration of phenobarbital improves the tolerance for procaine. They obtained lasting improvement in one half of the acute cases; 30 per cent of patients having emphysema with chronic bronchitis showed temporary improvement.

George L. Waldbott (The Journal, April 26, 1947, p. 1301) called attention to possible dangers from intravenous use of procaine because of allergic or toxic reactions and cited a near fatality from an injection of 0.5 Gm. of the drug by another physician. The evidence at hand would indicate that there is some hazard from the use of procaine intravenously and that this hazard would be increased in patients receiving repeated injections. It is questionable whether the effects thus far obtained justify this hazard.

EPIDIDYMITIS

To the Editor:—A man aged 34 who had acute gonorrhea about seven years ago was treated with sulfadiazine (or sulfathiozole). Before being pronounced cured by a urologist he had sounds passed and prostatic smear made. He had no difficulty until about one and one-half years ago when he got acute left epididymitis. The epididymis swelled to the size of an almond. He was treated with sulfadiazine for ten days (or two weeks) and had three injections of penicillin in oil and wax —300,000 units on successive days. The swelling subsided, and on rectal examination the left seminal vesicle was slightly distended and the left lobe of the prostate slightly soft. A few clumps of white blood cells were present in the prostatic smear. The prostate was massaged weekly for about two months, and the patient felt fine. The left epididymis became slightly tender and "ached" at various times. Prostatic massages were started again, but the smears showed only a few pus cells; no benefit was noted as far as the epididymis was concerned. Hot sitz baths were used and diathermy to scrotal contents was also given without benefit. All treatment was then stopped for a few months. About eight months ago typhoid vaccine along with penicillin in oil and wax was given on three occasions in ten days time. Fevers of 102 to 104 F. were obtained with no relief to the tender epididymis. The tender part of the epididymis is a small pea-sized nodule at the head which is firm and rather rubbery in consistency. In the past four to five months the patient has had joint pains in the hands—mainly the metacarpal joints and phalanges. Pains become worse on use of the hands—as in a sport or carrying a heavy package. The patient has a mild chronic sinusitis (postnasal drip) with occasional flare-up. No other focus of infection can be found. Roentgenograms of the sinus are normal; the sedimentation rate is 9 mm. in one hour; the white blood cell count is 8,700, with polymorphonuclears 57, small lymphocytes 34, large lymphocytes 1, eosinophils 4 and mononuclears 4. 1. Is it likely that the joint pains come from the epididymis? If so, what can be done for it? Can anything short of epididymectomy be done and would this operation be advisable? 2. What can be done for the tenderness of the epididymis? Has procaine infiltration of the epididymis been tried, and is it wise to try it?

M.D., Connecticut.

Answer.—Persistent tenderness in the epididymis subsequent to infection is not uncommon. No evidence of infection may be present in the prostatic secretion or in the urinary tract. Sometimes the discontinuance of local therapy and the use of a support for a period of a few months is definitely helpful. If the condition is painful and annoying to the patient over a period of many years after the acute infection, surgical treatment would seem to be indicated. In some of these cases a vasectomy on the affected side may be beneficial, and it is worthy of trial. If it is not successful, an epididymectomy should be considered. Procaine injection of the epididymis would hardly give any permanent relief. It does not seem probable that the pains in the hands of which the patient now complains are related to the epididymitis. If the infection in the epididymis is treated as outlined, it would be of interest to see whether it will have any bearing on the joint pains.

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DRASTIC FOOD RESTRICTION

Effect on Cardiovascular Dynamics in Normotensive and Hypertensive Conditions

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Since the first description of essential hypertension by von Basch[1] in 1874 there has been a constant stream of regimens for the cure or amelioration of the disease. None has proved specific, but one of the most frequently recurrent has been dietary limitation in one form or another. The most recent upsurge of interest in the dietary treatment of hypertension appears to have been stimulated by Kempner's reports[2] indicating that beneficial results may be obtained with a diet containing about 2,000 calories, 15 to 20 Gm. of protein and 0.25 to 0.4 Gm. of sodium.[2] The precise effective feature of the diet remains in some doubt, but Grollman and his co-workers[3] and Bryant and Blecha[4] expressed the belief that it is sodium chloride restriction, first suggested for the treatment of hypertension by Ambard and Beaujard[5] in 1905 and vigorously supported in this country by Allen and Sherrill[6] since 1920. The role of caloric restriction in the Kempner regimen is difficult to evaluate, although there is considerable evidence from other sources[7] that simple limitation of calories, without particular attention to the sodium intake, often results in lowering of the blood pressure both in persons with hypertensive disease and in normal persons.

It is perhaps not entirely fortuitous that renewed enthusiasm for dietary limitation as a means of treating hypertension should follow so closely on the heels of a global war. With conditions of famine prevailing in so many parts of the world, many opportunities for studying the effects of starvation on hypertensive disease have arisen. Wherever it has been possible to make sufficient observations on populations living under conditions of starvation and drastic food restriction, much highly pertinent information has accrued. Supplementing such contributions is a mass of data obtained from a study of experimental drastic food restriction carried out as a wartime research project in this country. The combined sources offer little new with regard to the familiar and often salutary effect of loss of body weight in hypertension, nor do they establish whether it is the diminished intake of calories or of sodium that effects the reduction in blood pressure. In general, however, they provide considerable support for the treatment in certain cases of hypertension by vigorous dietary limitation. In addition, important new light is thrown on cardiovascular dynamics during and after drastic food restriction.

It appears to us that in vivo investigations of the type to be described bear much more directly on the therapeutic rationale of dietary limitation than does the in vitro study offered by Kempner.[2b, c] Further, much of this information is at present either unavailable or inaccessible to American readers. For these reasons we have undertaken to draw the salient features together in the following review.

CARDIOVASCULAR DYNAMICS DURING STARVATION AND DRASTIC FOOD RESTRICTION

Experimental Data; Minnesota Experiment.—The exact effect of loss of body weight on the circulatory status of normotensive persons has recently been demonstrated under well controlled conditions.[8] Thirty-four young men, previously normal in all respects, were subjected to rigid control observations for three months, after which their food intake was drastically restricted for an additional six months. The daily caloric intake for the period was slightly less than 1,600 calories; the daily intake of protein was 49 Gm., and, although the exact intake of sodium is not known, no attempt at sodium limitation was made. Under these conditions, the average body weight for the group (69.4 Kg. in the control period) fell 23.9 per cent in the six month period. Paralleling the decline in body weight were striking decreases in blood pressure, pulse

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1. von Basch, S.: Die Herzkrankheiten bei Arteriosclerose, Berlin, August Hirschfeld, 1901, pp. 93-140.

2. (*a*) Kempner, W.: Treatment of Kidney Disease and Hypertensive Vascular Disease with Rice Diet, North Carolina M. J. **5**: 125-133 and 273-274, 1944; (*b*) **6**: 61-87, 1945; (*c*) Some Effects of the Rice Diet Treatment of Kidney Disease and Hypertension, Bull. New York Acad. Med. **22**: 358-370, 1946.

3. Grollman, A.; Harrison, T.; Mason, M.; Baxter, J., and Reichsman, F.: Sodium Restriction in the Diet for Hypertension, J. A. M. A. **129**: 533-537 (Oct. 20) 1945.

4. Bryant, J., and Blecha, E.: Low Sodium Forced Fluid Management of Hypertensive Vascular Disease and Hypertensive Heart Disease, Proc. Soc. Exper. Biol. & Med. **65**: 227-229, 1947.

5. Ambard, L., and Beaujard, E.: La rétention chlorurée sèche, Semaine méd. **25**: 133-136, 1905.

6. Allen, F., and Sherrill, J.: The Treatment of Arterial Hypertension, J. Metab. Research **2**: 429-544, 1922.

7. (*a*) Terry, A., Jr.: Obesity and Hypertension, J. A. M. A. **81**: 1283-1284 (Oct. 13) 1923. (*b*) Lups, S., and Francke, C.: Het gedrag van den bloeddruk tijdens den hongersnood en de herstelperiode (September 1944 to September 1945), Nederl. tijdschr. v. geneesk. **90**: 764-769, 1947. (*c*) Adlersberg, D.; Coles, H., and Laval, J.: Effect of Weight Reduction on Course of Arterial Hypertension, J. Mt. Sinai Hosp. **12**: 984-992, 1945.

8. Keys, A.; Henschel, A., and Taylor, H.: The Size and Function of the Human Heart at Rest in Semistarvation and in Subsequent Rehabilitation, Am. J. Physiol. **150**: 153-168, 1947.

rate and basal metabolic rate. The mean systolic blood pressure for the entire group fell from 106.5 mm. to 94.7 mm. of mercury, a decrease of 11.1 per cent; the corresponding values for the mean diastolic pressure were 69.9 and 64.5 mm. of mercury, respectively, representing a decline of 7.73 per cent during the six months of limited food intake. The mean pulse rate for the group at the end of the period reached the astonishingly low value of 37, and the basal metabolic rate reached a final average of — 39.9 per cent on the Mayo scale. An equally striking decrease in the size of the heart, progressing as semistarvation proceeded, was observed.

These and other observations point unmistakably to a general depression of circulatory function in previously normal young men with vigorous limitation of food intake. This depression is not to be confused with circulatory failure. Although edema appeared during the six month period in almost all the subjects, there was no evidence at this time of dyspnea, increased venous pressure or cardiac dilatation.

TABLE 1.—*Data Obtained in the Minnesota Experiment* *

Item	Period						
	C	S24	R6	R12	R14	R16	R20
Systolic blood pressure (mm./Hg.).............	105.3	92.7	97.2	101.5	106.8	104.9	104.0
Diastolic blood pressure (mm./Hg.).............	70.1	63.3	66.5	69.2	72.5	70.0	68.8
Venous pressure (cm./saline solution)....	(10)	4.8	5.5	6.7	—	11.4	11.0
Resting pulse rate (beats/min.)............	56.1	37.8	42.7	52.3	70.9	64.1	57.3
Daily food intake (calories)................	3,692	1,647	2,458	3,527	5,801	5,271	3,950
Body weight (Kg.)....................	67.7	51.7	53.0	58.2	64.5	68.5	70.8
Basal oxygen consumption (cc./min.).......	228	145	158	186	253	253	239

* Mean values of arterial and venous blood pressure, resting pulse rate, daily food intake, body weight and basal oxygen consumption for 12 men studied in the Minnesota semistarvation-rehabilitation experiment during the control period (C), after twenty-four weeks of drastic food restriction (S24) and six (R6), twelve, fourteen, sixteen and twenty weeks of nutritional rehabilitation.

Observations on European Populations During World War II.—Roughly corresponding to the three phases of the Minnesota Experiment (control, semistarvation and rehabilitation) are observations made in Leningrad before the outbreak of war, during the period of severe dietary limitation (September 1941 to March 1942) and during the recovery phase following the partial lifting of the siege in the spring and summer of 1942.[9] This study is of particular interest in that, unlike the Minnesota experiment, it encompassed both sexes and all adult age groups.

A decrease in the blood pressure was one of the characteristic symptoms of semistarvation in Leningrad, as were emaciation, muscular weakness, subnormal temperature, sensitivity to cold, general fatigue and apathy, polyuria and bradycardia.

It appears that during the period of reduced food intake not only was there a reduction in the number of patients hospitalized for hypertension but there were also significant changes in the clinical picture of hypertension and its manifestations. In a large number of patients who exhibited long-standing chronic hypertension, the blood pressure was reduced to a normal or near normal level. Furthermore, symptoms commonly associated with hypertension, such as headaches, dizziness and dyspnea on exertion, decreased in intensity or completely disappeared. In addition to the lowering of blood pressure and amelioration of the manifestations of hypertensive disease in general, there was a definite decrease in the severity and frequency of other cardiovascular disorders, such as angina pectoris and myocardial infarction.

From various other parts of Europe have come reports of somewhat similar observations. In Holland, striking decreases in blood pressure and pulse rate were observed by Langen and Schweitzer,[10] and by Lups and Francke[7b] in the general population during the winter of 1944-1945, when dietary restriction was at its height. Leyton[11] reported a definite tendency toward hypotension among prisoners of war in a camp in Germany where conditions of semistarvation prevailed. Similarly, Zimmer and his co-workers[12] observed hypotension to be common among undernourished persons held in concentration camps in the unoccupied zone of France. Burger and his co-workers[13] and Mollison[14] supplied further evidence of the same type from Holland and Germany, respectively. Specific mention of the effects of starvation on the blood pressure in hypertensive persons is made by Lups and Francke.[7b] They observed a more or less pronounced decline in systolic and diastolic blood pressures in about 74 per cent of normal persons and 93 per cent of persons with hypertensive conditions who lost weight during the period of drastic food restriction in Holland (September 1944 to April 1945).

CARDIOVASCULAR DYNAMICS DURING RECOVERY FROM SEMISTARVATION

Experimental Data; Minnesota Experiment.—In the Minnesota project, as in the Leningrad experience, changes in cardiovascular dynamics during recovery from semistarvation were recorded in some detail. For the entire group of 32 subjects, after twelve weeks of controlled rehabilitation the average weight increased from 52.8 Kg. to 58.8 Kg. The caloric and protein intake for this period were 2,449 calories and 72.85 Gm., respectively. Slight but definite rises in systolic and diastolic blood pressures occurred during the period, but the average readings were still well below the control values.

Of particular interest are the data for a smaller group of 12 men, who were observed for an additional eight weeks during which the dietary intake was large but was not rigidly controlled. The data are summarized in table 1. A large increase in caloric intake following the twelfth week of rehabilitation was associated with a rise of both the systolic and diastolic arterial blood pressure to values slightly above the control values. There was also a rise in the average venous blood pressure, which in 4 men reached the level of 15 cm. of saline solution or more. Moderate tachycardia and dyspnea on exertion became common during the period of rapid gain in weight. All these data indicate that the decidedly increased food intake, resulting in an increase of body weight and associated with a decided rise in the basal metabolism, placed a considerable strain on the cardiovascular system.

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[9] Studies of the Leningrad Physicians During the War Years: Hypertensive Disease, Leningrad, Medgiz, 1945. Problems of the Pathology of the Blood and Its Circulation: Hypertensive Disease in Leningrad in the Years 1943 to 1944, ibid., 1946, vol. 3.

[10] Langen, C., and Schweitzer, P.: Interne geneeskunde gedurende de eerste oarlogsjaren, in Medische Ervaringen in Nederlands tijdens de Bezetting 1940-1945, Groningen, J. B. Wolters, 1947, pp. 259-276.

[11] Leyton, G. B.: Effects of Slow Starvation, Lancet 2: 73-79, 1946.

[12] Zimmer, R.; Weill, J., and Dubois, M.: The Nutritional Situation in the Camps of the Unoccupied Zone of France in 1941 and 1942 and Its Consequences, New England J. Med. 230: 303-314, 1944.

[13] Burger, G.; Sandstead, H., and Drummond, J.: Starvation in Western Holland, Lancet 2: 282-283, 1945.

[14] Mollison, P.: Observations on Cases of Starvation at Belsen, Brit. M. J. 1: 4-8, 1946.

The experience with 1 particular man further suggests that the subjects were, in fact, on the verge of congestive cardiac failure. This man was released from the experiment after twelve weeks of rehabilitation and immediately began to eat at the general level of 7,000 to 10,000 calories of food a day. The daily intake of thiamine and other members of the vitamin B complex was above adult requirements as currently estimated during the entire period of rehabilitation. Two weeks after his release from controlled rehabilitation the subject noted a sudden return of edema and complained of dyspnea on exertion. At this time it was observed that he had gained 9 pounds (about 4.1 Kg.) in the preceding two days. Laboratory examinations showed a plasma protein level of 6.3 Gm. per hundred cubic centimeters and a ratio of albumin to globulin of 1.75. The venous pressure was 20 cm. of water. The size of the heart was seen to have increased sharply in the two weeks following cessation of controlled rehabilitation. The subject was placed in bed and given restricted fluids, ammonium chloride and a diet of 3,000 calories a day. A few days later diuresis began, and he quickly lost 10 pounds (about 4.5 Kg.) of body weight, after which recovery was rapid.

Interesting data were obtained on a group of 19 men examined after thirty-three weeks of dietary rehabilitation. At this time the average body weight increased to 75.8 Kg., or 109.2 per cent of the prestarvation value. At the same time, the average systolic and diastolic values were 107.7 and 70.4 mm. of mercury, as compared with 104.1 and 68.6 during the control period. These average values do not reflect the trend of changes as clearly as the frequency with which the blood pressure changed in the 19 persons comprising the follow-up sample. The systolic blood pressure increased in 14 subjects, decreased in 4 and remained the same in 1. The respective frequencies for the diastolic blood pressure were 13, 5 and 1. In no case did the rise represent a pathologic shift in the level of the blood pressure—the maximum rise was 12 mm. of mercury—but the relative frequency of the increases is suggestive.

In a group of 7 men, examined fifty-eight weeks after the end of the vigorous dietary limitation, the weight returned close to the prestarvation level (69.3 Kg., or 101.4 per cent of the control value). At the same time, the average blood pressure also returned to prestarvation levels. The actual means for the systolic blood pressure during the control period and at the fifty-eighth week of rehabilitation were 107.9 and 107.2; for the diastolic pressure the respective values were 70.7 and 69.1 mm. of mercury.

Observations on European Populations in World War II.—It is evident, from the Minnesota work, that the decline in blood pressure that occurs during semistarvation in normal young men is a reversible pocess and that when recovery is fully established the blood pressure returns to normal values. From areas directly affected by the war comes evidence that not only does the blood pressure return to normal values during recovery but it may also overshoot the mark to frankly hypertensive levels. Episodes of hypertension were observed in malnourished British prisoners of war during the period of recovery from semistarvation.[15] Schwartz,[16] working with Spanish internees in France, reported the sudden development of moderate hypertension concomitant with the institution of treatment for semistarvation.

By far the most extensive study of cardiovascular dynamics in a population recovering from semistarvation was that done in Leningrad.[9] A brief summary of the observations during the second, or starvation, phase of this work has already been given.[17] The observations during the third, or recovery, phase were detailed, and the results appear to us to be important enough to warrant reporting at some length.

In the two years following the famine in Leningrad, hypertension suddenly became a major medical problem.

In April 1943, measurements of blood pressure were carried out on a large sample of the city population and on small samples from particular occupational groups. Specifically, some 10,000 "normal" persons were examined, and the results were compared with those of Hellman, who conducted a similar survey in the prewar year 1940. Taking 140 mm. of mercury as the upper limit of normal for the systolic and 90 mm. of mercury as that for diastolic blood pressure, a pronounced increase in the incidence of hypertension in all age groups was observed (table 2). Thus, it appears that the pool of persons in whom symptoms and clinical signs of hypertension are likely to develop was enormously increased during recovery from semistarvation. In the group aged 20 to 29 and in that aged 30 to 39 there was approximately a fourfold increase in the period 1942-1943 as compared with the prewar incidence. In the group aged 40 to 49 the increase was about twofold, and in the group aged 50 or more it was threefold.

Table 2.—*Incidence of Elevated Blood Pressure* in "Healthy" Persons in Leningrad, 1940 and 1942-1943*

Age Group (Yr.)	Prewar (Percentage)	1942-1943 (Percentage)
20-29	3	12
30-39	7	30
40-49	25	50
50-59	22	66
60 plus	23	70

* Above 140 mm. of mercury systolic and 90 mm. of mercury diastolic.

That a portion of the increase in the incidence of hypertension might have been due to changes in the population of the city as a result of the war was taken into consideration by the Russian workers. The wartime population was an older one and contained more

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15. Stapleton, T.: Oedema in Recovered Prisoners-of-War, Lancet 1: 850-851, 1946.
16. Schwartz, O.: Beobachtungen und Erfahrungen bei der Hungerkrankheit im Lager von Gurs (Sudfrankreich), Schweiz. med. Wchnschr. 75: 1136-1137, 1945.
17. Brozek, J.; Wells, S., and Keys, A.: Medical Aspects of Semistarvation in Leningrad (Siege 1941-1942), Am. Rev. Soviet Med. 4: 70-86, 1946.

women than the prewar population, both of which changes are factors tending to increase the incidence of hypertension. It was the opinion of the Russian authors, however, that the entire increase in incidence of the disease would by no means be accounted for by changes in the age and sex distribution of the wartime population of the city. Detailed breakdowns by age and sex of the wartime sample are not given, but a rough grouping by age is provided, as shown in table 2. Unless the number of persons in the younger age group were extremely small it seems that the age factor could not, *per se*, account for the differences between the prewar sample and that examined in 1942-1943. As for the sex factor, we are told that 80 per cent of the 1942-1943 sample were women. That women are more subject to hypertension than are men is freely admitted, but differences in the incidence of the disease due to the sex factor alone, as judged by surveys in the United States,[18] are considerably smaller than those observed in the Leningrad surveys.

The studies on specific occupational groups involved rather small samples, but suggested that workers in the food industry, whose jobs during the siege gave them access to adequate or nearly adequate diets, subsequently suffered much less from hypertension than did those whose occupations were not concerned with food.

The general increase in incidence of hypertension resulted, as might have been expected, in a striking increase in the number of patients admitted to hospitals for hypertensive disease. The number of patients with hypertensive disease admitted in peacetime to the Therapeutic Clinic of the Pavlov First Medical Institute in Leningrad represented about 10 per cent of all admissions. This proportion increased slightly during the first months after the outbreak of hostilities (July to September 1941), dropped significantly during the period of severe dietary limitation (October 1941 to March 1942) and increased progressively from that time throughout 1943. In January of the latter year, patients suffering from some form of hypertension constituted 20 per cent of the total admitted; by June 1943, the figure had risen to 60 per cent (table 3).

TABLE 3.—*Relative Number of Patients Admitted for Hypertensive Disease to the Clinic of the First Medical Institute in Leningrad*

Period	Total Admissions (Percentage)
1940	10.0
July to September 1941	15.0
October 1941 to March 1942	2.0
April to December 1942	24.5
1943	50.0
January to April 1944	35.0

The general level of admissions for hypertension in 1943 was five times as high as that during the prewar year of 1940. It is probable that the criteria for admission to the hospitals changed radically during the siege, so that patients suffering from chronic, or even acute, nontraumatic ailments were cared for at home instead of being admitted to hospitals. It is not surprising, therefore, to see a pronounced decrease in the number of patients admitted for hypertension during the period of drastic food restriction. Furthermore, with the lifting of the siege, one might expect an influx of chronically ill patients who had previously been denied hospitalization. Such an influx could account for the increase in the number of patients with hypertensive disease admitted shortly after March 1942, at which time 20 per cent of the total admissions were for hypertension as compared with 10 per cent in 1940. The influx of such a backlog of patients with hypertensive disease might logically be expected to have spent itself within a few months and, in any case, could hardly explain the phenomenal influx reported for June 1943 (60 per cent of all admissions).

TABLE 4.—*Age Distribution of Patients Admitted to a Hospital in Leningrad for Hypertensive Disease*

	1938-1939		1942-1943		
Age Group	Number	Percentage	Number	Percentage	Percentage Difference
30-39	18	9	51	18	+9
40-49	54	27	96	32	+5
50-59	80	40	111	37	−3
60 and over	48	24	39	13	−9

The Leningrad population changed little in 1942 and 1943, yet it was during the latter year that the large increase in admissions for hypertension took place. If the shift toward an older population were alone responsible for the increased incidence of hypertension, one would expect the shift to be reflected in the ages of hypertensive patients admitted to the hospital. Actually the proportion of patients in the older age groups who were admitted for hypertension declined somewhat during this period (table 4). In another sample of 212 patients with hypertensive disease (25 men and 187 women) there was a similar shift, with a larger incidence among the younger age groups. The frequencies for samples of patients in 1939 and 1942-1943 are given in table 5.

In short, it appears probable from the data presented that the increase in admissions to a hospital for hypertension or for some manifestation thereof was an independent phenomenon and was not due exclusively to changes in criteria for admission or to changes in the wartime population of the city.

The increase in admissions to a hospital for hypertension was paralleled by the incidence of hypertensive disease observed at autopsy. At the Erisman Hospital in Leningrad, in the period from 1941 to early 1942, only 1.2 to 5.2 per cent of all autopsies were carried out in cases in which there had been hypertensive disease. In September 1942, about six months after it became possible to increase food supplies, the percentage began to increase rapidly, and by early 1944 it had reached 54.5 per cent.

Not only was there evidence for an increased incidence of hypertension during recovery from semistarvation, but there were also indications, particularly among hospitalized patients, that the disease was seen in a severer form than previously. Thus there was a pronounced rise in the relative frequency and severity of such symptoms as headaches, vertigo and syncope. The blood pressure itself, particularly the diastolic component, was said to be generally higher in hospitalized patients with hypertensive disease than it was in the same group before the war. For the epidemic period of hypertension (1942-1943), the diastolic blood pressure was 90 to 100 mm. of mercury in 20 per cent, 100 to 120 mm. of mercury in 60 per cent, 120 to 140 mm. of mercury in 10 per cent and above 140 mm. of mercury in 10 per cent. Unfortunately, the corresponding prewar blood pressure levels were not given. Ophthalmoscopic examinations disclosed that, while changes in the retinal vessels were only slightly commoner than before the war, changes in the retina itself, such as exudate and hemorrhage, were much commoner. Before the war the latter changes were seen in 23 to 25 per cent of patients hospitalized for hypertensive disease, while during the epidemic 70 per cent showed such changes. Frank neuroretinitis, including papilledema, was seen in 20 to 30 per cent of hospitalized patients with hypertensive disease, but could not be directly related to the height of the blood pressure. According to the Wagener and Keith classification,[19] these observations indicate that over one half of the patients admitted to the Russian clinic during the epidemic fell into group 3 and about one fourth into group 4 (malignant hypertension).

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[18] Wetherby, M.: Blood Pressure in 5,540 Individuals, Ann. Int. Med. 6: 754-770, 1932.

The incidence of cardiac insufficiency in persons with hypertension appears to have increased decidedly. The data for one hospital are given in table 6. In many patients, particularly those suffering from hypertension of relatively recent origin, the onset of cardiac insufficiency was acute. Many persons so affected had been apparently healthy up to the time the acute symptoms appeared, usually in the form of true cardiac asthma. The occurrence of angina pectoris either before or during the bouts of decompensation was rare. In many cases, the onset of cardiac insufficiency appeared to be related to severe physical exertion, particularly in persons ordinarily pursuing a sedentary calling. Further, there appeared to be no relation between the duration of hypertension and the development of cardiac insufficiency in a given case, the syndrome having developed in many shortly after the appearance of hypertension. In a sample of about 400 patients aged 20 to 80 years, there appeared to be a significant positive relationship between age and the incidence of cardiac insufficiency.

Table 5.—*Percentage Incidence of Clinical Hypertension According to Age in Two Samples of Hospitalized Patients in Leningrad*

Year	Below 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80	Total Number
1939..........	0	2.7	10.4	29.6	40.9	13.7	2.7	154
1942-1943......	0.9	4.7	16.5	36.3	25.0	15.2	1.4	212
Percentage difference..	+0.9	+2.0	+ 6.1	+ 6.7	−24.1	+ 1.5	−1.3	

At the same time, it should be noted that the average age in the group with hypertension of recent origin was 45 years, while in the group with long-standing hypertension it was 57 years.

Roentgenographic studies were carried out in 1943 on 250 patients with hypertension of recent origin. The size and configuration of the heart were normal in 25.4 per cent, left ventricular enlargement was seen in 57.6 per cent and generalized enlargement of the heart in 14 per cent. Electrocardiographic studies of the same 250 patients disclosed no abnormality in 12.2 per cent and changes ordinarily attributable to hypertension in 33.3 per cent. Left axis deviation was present in 14.6 per cent and right axis deviation in 9.8 per cent.

The venous pressure was measured in 121 patients with hypertensive disease in 1943 during recovery from semistarvation. Thirty-seven per cent showed distinctly elevated values. Unfortunately, correlations between venous pressure, on the one hand, and symptoms, physical observations and heart size, as determined by roentgenogram, on the other, were not given.

Table 6.—*Admissions for Hypertensive Disease, With and Without Cardiac Insufficiency, to the Therapeutic Clinic of the First Medical Institute in Leningrad*

	July-Dec. 1941	Jan.-June 1942	July-Dec. 1942	Jan.-June 1943	July-Dec. 1943
Total number of admissions........	20	4	37	155	168
With cardiac insufficiency...........	10	3	27	114	124
Without cardiac insufficiency.......	10	1	10	41	44

At autopsy cardiac hypertrophy was seen to be slight to moderate in the majority of cases in which death was due to hypertensive cardiac disease, and extreme hypertrophy was decidedly uncommon. In patients who died of semistarvation uncomplicated by hypertension the average weight of the heart at autopsy was 168 Gm., as compared with the normal average of about 300 Gm. When hypertension was superimposed on semistarvation at Leningrad, the expected cardiac atrophy appears to have been modified by a tendency to relative cardiac hypertrophy. In patients with hypertensive disease who still showed pronounced effects of semistarvation, the average weight of the heart at autopsy was 370 Gm., with a minimum weight of 200 Gm. In a group of patients with hypertensive disease in whom the residue of semistarvation was less severe, the average weight of the heart at autopsy was 420 Gm., while in patients who died of hypertension uncomplicated by semistarvation it was 477 Gm. In late 1942 and early 1943, autopsies disclosed that of persons who died as a result of hypertensive disease, 78 per cent showed cardiac insufficiency and 14 per cent showed cerebral hemorrhage. Significant renal changes were seen in less than 35 per cent of the cases, while before the war nephrosclerosis of significant degree was observed in about 50 per cent of cases. Frank malignant nephrosclerosis (arteriolar necrosis) disappeared completely and did not begin to reappear until the second quarter of 1943. Roughly comparable American figures[20] show that about 50 per cent of patients suffering from hypertension ultimately die of congestive cardiac failure, 15 per cent die of coronary sclerosis, 15 per cent of cerebrovascular accidents and 8 per cent of uremia. Evaluation of the Russian data is hampered by the inadequacy of prewar figures for comparison and by the failure of the authors to present a complete description of the autopsy material. The autopsy data are nevertheless interesting when considered along with the clinical material. The suggestion that in the epidemic of hypertension following semistarvation in Leningrad, cardiac insufficiency increased decidedly while renal damage decreased is of the greatest interest, as is the reported virtual disappearance of malignant nephrosclerosis. It is regrettable that more information is not presented on these topics.

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[19] Wagener, H., and Keith, N.: Diffuse Arteriolar Disease with Hypertension and the Associated Retinal Lesions, Medicine 18: 317-430, 1939.

[20] Herndon, H.: An Introduction to Essential Hypertension, Springfield, Ill., Charles C Thomas, Publisher, 1946.

COMMENT

That drastic dietary restriction causes a fall in blood pressure in most normal persons and persons with hypertensive disease seems to us to be proved. In this connection the Minnesota experiment supplies unequivocal data as regards normal young men. The European observations, and particularly those made in Leningrad, supply almost equally impressive evidence as regards normal persons and persons with hypertensive disease of all ages and both sexes. Neither group of observations can be regarded as settling the controversy over the relative importance of caloric and sodium restriction in the lowering of the blood pressure. If anything, they suggest that caloric restriction may be fully as effective as sodium restriction in producing this result, since in neither the Minnesota experiment nor the Leningrad experience was the sodium intake specifically limited. In fact, the men subjected to experimental limitation of food intake increased their consumption of salt.[21] Those Europeans who were forced to endure drastic food restriction during the war probably received less sodium in the form of common salt than they did under prewar conditions; it is unlikely, however, that their sodium intake even approached the low level required by the Kempner regimen.

The increase in incidence and severity of hypertension during recovery from semistarvation that figures so prominently in the report from Leningrad seems too impressive to be ignored. The absence of frank hypertension during the recovery phase of the Minnesota experience may well have been due to the fact that the subjects employed were normal young men; in Leningrad, on the other hand, the observations embraced a population containing both sexes and many elderly persons. It appears not unreasonable that the hypertensive effects of refeeding may be more pronounced in a population containing both sexes and all age groups than in one composed entirely of normal young men. However this may be, both sources supply information indicating that the cardiovascular dynamic state during recovery from semistarvation may be extremely precarious, even in the absence of hypertension. As the Leningrad physicians pointed out, if hypertension be superimposed on this treacherous state, severe cardiac failure may result.

From a practical point of view there is much to be learned from the results of the Minnesota and Leningrad investigations. Both appear to lend support to the treatment of hypertension by vigorous dietary restriction. On the other hand, both suggest that the uncritical application of regimens like that introduced by Kempner may not be without some danger to the patient. It may be argued that the Kempner diet is not comparable to those prevailing during the phase of vigorous dietary limitation of the aforementioned investigations, since patients receiving the Kempner regimen are allegedly in caloric and nitrogen balance. The matter cannot be regarded as settled, however, and Fishberg's assumption[22] that the inevitable unpalatability of salt-poor diets results in caloric restriction probably has some basis in fact. It is possible that both sodium and caloric restriction, working together or individually, may cause lowering of the blood pressure and that both factors were at work during the phase of drastic food restriction of the Minnesota and Leningrad investigations. In any case, few workers familiar with the Kempner and similar diets will deny that patients frequently cannot or will not adhere to such restrictions. Out of the Minnesota and Leningrad experiences grows the possibility that such a patient may be worse off, when he modifies or abandons his dietary restrictions, than he was before the treatment was instituted. This possibility appears to us to make careful selection of patients to be treated by the Kempner regimen mandatory. Patients so selected should be warned beforehand that once instituted, the regimen must be followed carefully and that modifications, particularly if sudden, may be dangerous. There can be no objection to the regimen in severe and especially in malignant hypertension. For less severe disease, particularly in obese persons, it seems unwise to employ such severe dietary restrictions. The salutary effect of weight loss alone in such cases has been repeatedly demonstrated, and a reduction diet rather than a diet of the Kempner type is to be preferred.

SUMMARY

Recent experimental and epidemiologic observations indicating that drastic food restriction usually causes lowering of the blood pressure in normal persons and in persons with hypertensive disease are reviewed. The same reports also indicate that during recovery from semistarvation the cardiovascular dynamic balance is so disturbed that cardiac failure may occur. The blood pressure in previously normal persons returns to normal levels during recovery from semistarvation and in some instances, according to European reports, may go well above the upper limits of normal. Particularly striking are descriptions of an epidemic of hypertension and hypertensive cardiovascular disease which occurred after the lifting of the siege of Leningrad in 1943.

The bearing that these observations may have on the currently popular method of treatment for hypertension by severe dietary limitation is discussed.

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[21] Franklin, J. C.; Schiele, B.; Brozek, J., and Keys, A.: Observations on Human Behavior in Experimental Semistarvation and Rehabilitation, J. Clin. Psychol., to be published.

[22] Fishberg, A.: Hypertension and Nephritis, ed. 4, Philadelphia, Lea & Febiger, 1939, p. 702.

Jenner and Hunter.—During this part of his career when he was actively engaged in his practice, he found time to conduct many biological experiments, some of which were suggested by Hunter. In fact, Hunter rarely wrote without some reference to this work. Jenner had occasion to send Hunter patients from time to time for his opinion and the report on these is accompanied by requests for biological material or suggestions of experiments which might help to solve some biological problem. He studied the subjects of the torpidity of hibernating animals and migration of birds; he introduced an improved method of purifying tartar emetic and conducted experiments on the effect of animal manure on vegetation. He showed "it was first the robin, not the lark, as has been generally imagined, as soon as twilight has drawn the imperceptible line between night and day, who begins his lonely song."—Milling, T., M.D., *The Bristol Medico-Chirurgical Journal,* Vol. 65, No. 233 (1948).

ACUTE CIRCULATORY ARREST

From Ventricular Fibrillation for Twenty-Seven Minutes, With Complete Recovery

R. STARR LAMPSON, M.D.
WILLIAM C. SCHAEFFER, M.D.
and
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The catastrophe of sudden circulatory arrest in the operating room is an emergency which will confront almost every surgeon at least once during his career. It has been stated[1] that a busy surgical clinic may expect approximately 2 cases a year. Experience,[2] experimentally with animals and clinically with patients, has shown that sudden circulatory arrest may be due either to cardiac standstill[3] or to ventricular fibrillation.[4] The series of events which precipitate abrupt circulatory arrest are complex and open to speculation. It should be emphasized that in the reported cases this calamity occurred most often during light anesthesia in either the phase of induction or recovery, when the myocardium is known to be more irritable than normally.[5] Effective methods of treatment are now at hand, and prompt treatment may prevent an otherwise certain fatality. It is the purpose of this communication to take up briefly these measures and to report a case of proved ventricular fibrillation with complete recovery following direct cardiac massage and the intravenous administration of procaine hydrochloride.

The most essential single therapeutic measure in sudden circulatory arrest is the immediate restoration of the circulation. The administration of oxygen in high concentration by pulmonary resuscitative procedures is of paramount importance in order to maintain adequate oxygenation of the lungs and also to aid in the circulation of the blood.[6] It is apparent that in some cases of sudden cardiac arrest effective cardiac action has been promptly restored by the stimulation of cardiac palpation.[7] In ventricular fibrillation this is less likely to occur,[4] and the circulation must be maintained by prompt manual propulsion of the blood. Effective cardiac massage is necessary until defibrillation has been accomplished and forceful coordinated ventricular contractions are present. Ventricular defibrillation of the human heart in the presence of coronary disease has occurred spontaneously and has been recorded and reported.[8] At present there are two practical methods of interrupting ventricular fibrillation, namely, the use of electric shock, as recently reported by Beck,[9] and the administration of procaine hydrochloride into the blood stream. These two methods may be used separately or as adjuncts to each other.[10] For some time it has been recognized[10b] that procaine hydrochloride reduces the excitability of the hyperirritable myocardium. It has been administered to control cardiac irregularities during thoracic operations,[11] and it is also used prophylactically to prevent their occurrence.[12] The injection of epinephrine in sudden cardiac arrest should be reserved for the treatment of cardiac standstill and should not be used as an agent for defibrillation, because it makes a hyperirritable myocardium even more irritable. It is for this reason that electrocardiographic diagnosis is important, as it may determine which of two diametrically opposed drugs to use.

REPORT OF A CASE

J. R., a 7 year old boy, entered the Hartford Hospital through the accident room at 3:45 p. m., July 17, 1947, because of a deep laceration of the bottom of the right foot, which was sustained by stepping on a jagged piece of glass. The laceration extended through the sole of the foot and cut most of the nerves, muscles and tendons beneath the central portion of the arch. The loss of blood must have been only moderate, because the child showed *no* evidence of increased pulse rate, pallor, sweating or any other sign of shock. After receiving preoperative medication of 1/12 grain (54 mg.) morphine sulfate, 1/200 grain (0.325 mg.) atropine sulfate and 3/4 grain (48.8 mg.) "seconal sodium" (sodium 5-allyl-5-[1-methylbutyl] barbiturate), he was taken to the operating room for suture of the laceration. The pertinent portions of the operative note, which follow, describe the dramatic events which took place when the heart suddenly went into ventricular fibrillation.

During anesthesia produced by open drop ether induced with cyclopropane (fig. 1), the severe laceration of the plantar surface of the right foot was carefully cleaned with soap and water and then irrigated with 1 liter of isotonic sodium chloride solution. The wound extended across the foot, directly beneath the instep and down to the bone and completely divided the tendinous and muscular structures. Repair of the various structures, including tendons, muscles and nerves, was undertaken. During the procedure, which lasted about one hour and fifteen minutes, a blood pressure cuff was used as a tourniquet and was released every twenty minutes for two minutes.

At the close of the operation, when administration of the anesthesia had been stopped and while preparations were being made to apply a plaster boot, the patient's pulse abruptly stopped. Auscultation over the heart revealed absolutely no heart sounds. The patient became pale and ashen. Spontaneous respirations ceased. It became startlingly evident that this child had suffered sudden circulatory arrest. As soon as this fact was comprehended with certainty, which was approximately two and a half minutes, three minutes at the outside, from

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Read at the meeting of the New England Society of Anesthesiologists, Boston, March 9, 1948.

From the Department of Surgery and the Department of Anesthesia, Hartford Hospital, Hartford.

1. Ruzicka, E. R., and Nicholson, M. J.: Cardiac Arrest Under Anesthesia, J. A. M. A. **135**: 622-628 (Nov. 8) 1947. Bailey, H.: Cardiac Massage for Impending Death Under Anaesthesia, Brit. M. J. **2**: 84-85 (July 19) 1941.

2. Beck, C. S., and Mautz, F. R.: The Control of the Heart Beat by the Surgeon, Ann. Surg. **106**: 525-537 (Oct.) 1937.

3. Adams, H. D., and Hand, L. V.: Twenty Minute Cardiac Arrest with Complete Recovery, J. A. M. A. **118**: 133-135 (Jan. 10) 1942.

4. (*a*) Beck and Mautz.[2] (*b*) Fauteux, M.: Cardiac Resuscitation, J. Thoracic Surg. **16**: 623-639 (Dec.) 1947.

5. Fauteux.[4b] Levy, A. G.: Sudden Death Under Light Chloroform Anaesthesia, Proc. Roy. Soc. Med. **7**: 57, 1913-1914.

6. Thompson, S. A.; Quimby, E. H., and Smith, B. C.: The Effect of Pulmonary Resuscitative Procedures upon the Circulation as Demonstrated by the Use of Radioactive Sodium, Surg., Gynec. & Obst. **83**: 387-391 (Sept.) 1946.

7. (*a*) Nicholson, J. C.: Cardiac Massage, Brit. M. J. **1**: 385-386 (March 21) 1942. (*b*) Vernon, H. K.: Recovery from Heart Failure After Cardiac Massage, Lancet **1**: 6 (Jan. 2) 1943. (*c*) Grimshaw, C.: Cardiac Massage: Recovery, Brit. M. J. **1**: 387 (March 21) 1942. (d) MacLeod, N., and Schnipelsky, L. A.: Cardiac Massage for Heart Failure Under Spinal Anesthesia, ibid. **1**: 610 (May 16) 1942. (*e*) Easton, A. M.: Cardiac Massage—Recovery, ibid. **1**: 651 (May 23) 1942.

8. Robinson, E. C., and Bredeck, J. F.: Ventricular Fibrillation in Man with Cardiac Recovery, Arch. Int. Med. **20**: 725-738 (Nov.) 1917. Zindahl, W. T., and Fulton, F. T.: Transient Ventricular Fibrilation—Report of a Case with Spontaneous Recovery, Am. Heart J. **32**: 117-123 (July) 1946. Levine, S. A.: Clinical Heart Disease, Philadelphia, W. B. Saunders Company, 1936, pp. 357-377.

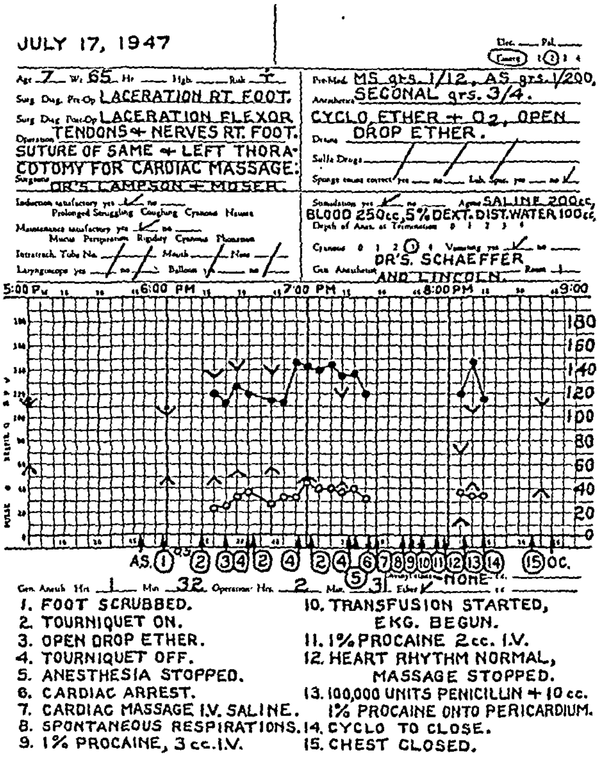
9. Beck, C. S.; Pritchard, W. H., and Feil, H. S.: Ventricular Fibrillation, J. A. M. A. **135**: 985-986 (Dec. 13) 1947.

10. (*a*) Fauteux, M.: Personal communication to the author. (*b*) Mautz, F. R.: Reduction of Cardiac Irritability by the Epicardial and Systemic Administration of Drugs as a Protection in Cardiac Surgery, J. Thoracic Surg. **5**: 612-628 (Aug.) 1936.

11. Burstein, C.: Treatment of Acute Arrhythmias During Anesthesia by Intravenous Procaine, Anesthesiology **7**: 113-121 (March) 1946.

12. Tovell, R. M., and Barbour, C. M.: Experiences with Procaine Administered Intravenously, Anesthesiology, to be published.

the time the pulse had stopped, an incision was made in the left side of the chest in the fifth interspace, opening directly into the left pleural cavity (fig. 2). This was done with the ungloved hand, because the gloves had been removed preparatory to applying plaster. It took approximately ten seconds to open the chest. It was possible to insert the middle and index fingers of the left hand and palpate the heart, which felt soft and lifeless. Visual examination of the heart disclosed the fine ripples of ventricular fibrillation passing aimlessly across the left ventricle beneath the pericardium. Cardiac massage was immediately started by intermittently compressing the heart against the sternum with the middle and index fingers of the left hand. This was done at a rate of approximately sixty times per minute. An observer at the wrist of the child could feel an effective pulse each time the heart was compressed. The anesthetist maintained artificial respiration with the anesthesia machine and supplied pure oxygen to the lungs. The patient's color and general appearance improved promptly after cardiac massage was begun. Epinephrine was ordered, but, before it was given, the advisability of its use was discussed by those of us in the operating room, and it was decided that an irritable heart would be made more irritable with epinephrine. It was not given. About fifteen minutes elapsed, during which time the heart failed to assume a normal rhythm. It was decided to give intravenously 3 cc. of a solution of procaine hydrochloride in 1 per cent concentration. Administration of isotonic sodium chloride solution had been started in the left saphenous vein at the ankle. A transfusion of blood was started, to provide more red cells to carry oxygen and to replace any deficit which might have occurred following the laceration of the foot, although no evidence of shock or excessive loss of blood had at any time been noted.



JULY 17, 1947

Age 7 Wt 65 Ht ___ Hgb ___ Risk I

Surg. Diag. Pre-Op LACERATION RT. FOOT.

Surg. Diag. Post-Op LACERATION FLEXOR TENDONS + NERVES RT. FOOT.

Operation SUTURE OF SAME + LEFT THORACOTOMY FOR CARDIAC MASSAGE.

Surgeons DR'S. LAMPSON + MOSER.

Induction satisfactory yes ✓ no ___

Prolonged Struggling Coughing Cyanosis Nausea

Maintenance satisfactory yes ✓ no ___

Mucus Perspiration Rigidity Cyanosis Phonation

Intratrach. Tube No. ___ Mouth ___ Nose ___

Laryngoscope yes ___ no ___ Balloon yes ___ no ___

Pre-Med MS grs. 1/12, AS grs. 1/200, SECONAL grs. 3/4.

Anesthetics CYCLO, ETHER + O_2, OPEN DROP ETHER.

Drugs ___

Sulfa Drugs ___

Sponge count correct yes ___ no ___ Lab. Spec. yes ___ no ✓

Stimulation yes ✓ no ___ Agent SALINE 200cc, BLOOD 250cc, 5% DEXT. DIST. WATER 100cc,

Depth of Anes. at Termination 0 1 2 3 4

Cyanosis 0 1 2 [✓ 3] 4 Vomiting yes ✓ no ___

Gas Anesthetist DR'S. SCHAEFFER AND LINCOLN. Room 1

Gen. Anesth. Hrs 1 Min 32 Operation Hrs. 2 Min. 31 Anesthetics NONE Ether ✓

1. FOOT SCRUBBED.
2. TOURNIQUET ON.
3. OPEN DROP ETHER.
4. TOURNIQUET OFF.
5. ANESTHESIA STOPPED.
6. CARDIAC ARREST.
7. CARDIAC MASSAGE I.V. SALINE.
8. SPONTANEOUS RESPIRATIONS.
9. 1% PROCAINE, 3 cc. I.V.
10. TRANSFUSION STARTED, EKG. BEGUN.
11. 1% PROCAINE 2 cc. I.V.
12. HEART RHYTHM NORMAL, MASSAGE STOPPED.
13. 100,000 UNITS PENICILLIN + 10 cc. 1% PROCAINE ONTO PERICARDIUM.
14. CYCLO TO CLOSE.
15. CHEST CLOSED.

Fig. 1.—Anesthesia record.

An electrocardiographic machine was procured, and a tracing was made (fig. 3). The fluctuations of the galvanometer string were observed and gave the gross impression of ventricular fibrillation. Approximately twenty-six and a half minutes after the circulatory arrest had been noted, a second dose of 2 cc. of procaine hydrochloride was given. In approximately thirty seconds after this, the tone of the heart changed. It was felt to stiffen beneath the massaging fingers and to assume again, after twenty-seven minutes, spontaneous contractions. These contractions were at first irregular, and at one time it was thought that they were going to cease; however, they continued and became more forceful and regular. The character of the response of the galvanometer string, as observed visually, appeared to assume a normal configuration. Two minutes after spontaneous rhythm occurred, there was a rapid, strong regular pulse. Observation of the heart was continued for approximately one-half hour, with the thorax open. Penicillin, 100,000 units dissolved in 10 cc. of procaine hydrochloride, was flushed onto the pericardium. The wound in the chest was then closed with interrupted silk sutures. A plaster boot was applied to the foot. Spontaneous respirations were present and had begun approximately fifteen minutes after the onset of cardiac arrest, while the heart was still being massaged but before it had reverted to a normal rhythm. Spontaneous respiratory effort was amplified by intermittent compression of the breathing bag. During recovery, the patient vomited several times and the trachea had to be cleared by suction. When the patient left the operating room, approximately three and a half hours after the anesthesia had been started, he was semicomatose, restless, vomiting, coughing and breathing spontaneously. He was returned to the ward and placed in an oxygen tent under the supervision of a special nurse, with the hope that the ravages of anoxemia of the brain would not leave a permanent scar.

The electrocardiographic tracing (fig. 3) was studied by Dr. Robert S. Starr, who gave the following interpretation: An electrocardiographic record of this patient was started about twenty minutes after pulsation, heart sounds and respirations had ceased. The tracing was continued, with two interruptions of a few seconds each, while the leads were changed, until a normal heart mechanism was reestablished. Throughout the first two leads the ventricular complexes were absolutely arrhythmic and totally differed from one another in contour. No P waves were identified. This portion of the electrocardiogram was typical of ventricular fibrillation. These curves were at a rate of 365 complexes per minute. Fibrillation ceased during the few seconds occupied by shifting from lead 2 to 3. When the record was resumed, no evidence of cardiac activity was present for a period of five tenths of a second. Then followed a run of ten bizarre, aberrant arrhythmic ventricular contractions, some of which seemed to be preceded by P waves. The heart mechanism then gradually returned to normal, the QRS complexes remaining bizarre and of small amplitude for

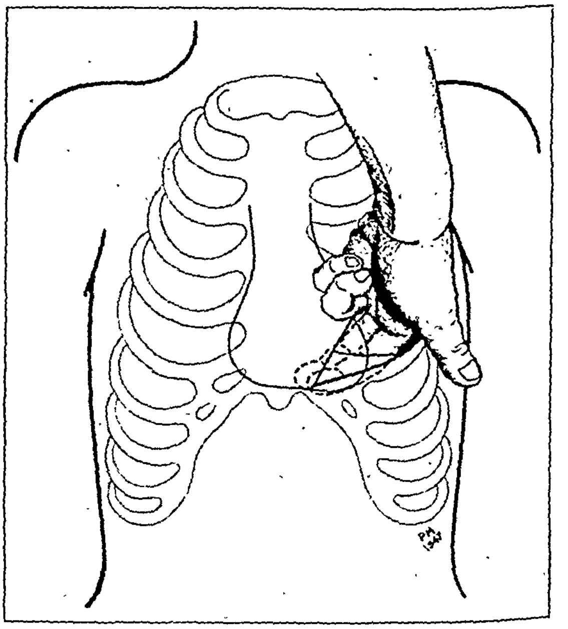


Fig. 2.—Diagram of approach for cardiac massage.

a few seconds. The ST interval remained depressed for a slightly longer period.

The immediate postoperative course was distressing and ominous, because of the effects of cerebral anoxemia. Excerpts from the neurologic notes by Dr. James C. Fox Jr., which follow, summarize the most important aspects of the recovery period: The patient could be aroused for the first time ten hours after operation, and he then spoke a few words. During the first twenty-four hours he remained restless, but lapsed into periods of sleep. His vision was impaired, but he could count fingers accurately. He could give his name. During the second twenty-four hours he became progressively more wakeful and talkative, but was confused. There was evidence of clumsiness of the hands, associated with bilateral astereognosis. Improvement continued, and on the fourth day he was alert, calm, oriented and in good rapport. His span of attention, however, was short, and he tired easily. He was unable to write his name, but could form a few letters. Progress continued, and by the fourteenth postoperative day he was able to write. He could feed and dress himself. He was interested in simple forms of occupational therapy and in comic books (fig. 4). His visual acuity was 20-50, and his visual fields showed no contraction.

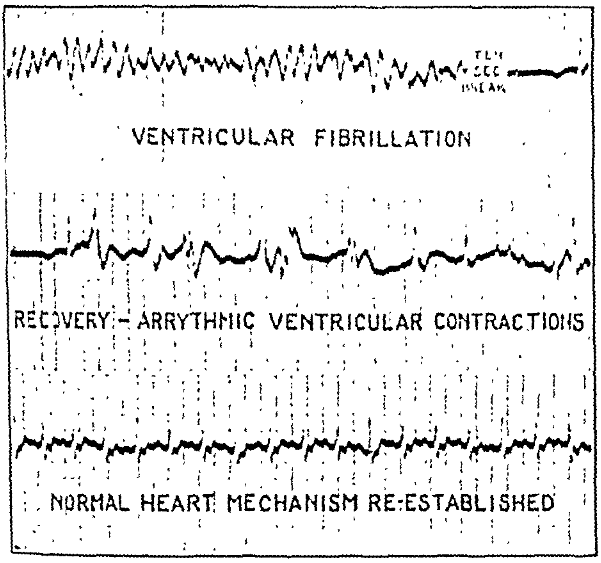

TEN SEC BREAK
VENTRICULAR FIBRILLATION
RECOVERY - ARRYTHMIC VENTRICULAR CONTRACTIONS
NORMAL HEART MECHANISM RE-ESTABLISHED

Fig. 3.—Electrodiagrams showing ventricular fibrillation, recovery and final normal rhythm.

The thoracic wound healed cleanly except for a small stitch abscess. The pleural cavity remained free from infection. A small superficial abscess developed in the foot during the second week, in spite of the prophylactic administration of penicillin, but cleared promptly with conservative therapy. During his convalescence two supportive transfusions were given. The hematocrit was never recorded below 32. Several electrocardiographic tracings were all reported as normal. On August 11, the twenty-sixth postoperative day, he was discharged from the hospital to his home, an alert but spoiled child.

After his discharge he continued to improve. He could walk and run without a limp. He returned to school and obtained a score of 108 in the form A Otis Quick Scoring Mental Ability Test. His visual acuity returned to 20-15. On December 20, five months after operation, his mother stated, "He is the same boy we took to the hospital, and the problems we have with him now are the same ones that were present before his injury."

COMMENT

The heart has an inherent capacity to function as a pump, but when sudden circulatory arrest occurs no one can foretell whether a few stimulatory manipulations of the heart through the diaphragm will induce an effective rhythm or whether a prolonged period of artificial circulation by cardiac massage will be necessary. Time is at a premium and must not be squandered. The dead line for complete recovery is three minutes and ten seconds.[13]

If the thorax is open when the heart stops, massage can be quickly and effectively executed. If the abdomen is open when the heart stops and massage through the diaphragm does not produce a palpable radial or carotid pulse, the massage is probably not effective in propelling the circulation and the heart should be securely grasped by actually entering the chest without delay, either through the left side of the diaphragm[7a] or through a new transthoracic incision. When neither cavity is open, a direct anterior intercostal approach, through the left fourth or fifth interspace, should be made. This will allow the index and middle fingers of the left hand to be placed directly against the heart, so that effective intermittent compression of the ventricle against the sternum can be done. The maintenance of adequate respiratory exchange by intermittent compression of the breathing bag containing oxygen is as vital as the cardiac massage. The anesthetist must maintain a clear airway in a closed system, assured, if possible, by the insertion of an endotracheal tube. The pressure applied to the bag should be sufficient to expand the thorax, but must not produce dilatation of the stomach.

When an adequate circulation has been established by manual propulsion of the blood and when anoxemia has been controlled by artificial respiration, the first crisis has been surmounted and there is time to consider the available measures for reestablishing an effective heart beat. The diagnosis of the type of cardiac disorder will determine the further course of treatment.

Fig. 4.—Photograph of the patient, taken eleven days following operation.

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13. Weinberger, L. M.; Gibbon, M. H., and Gibbon, J. H., Jr.: Temporary Arrest of the Circulation to the Central Nervous System: Physiologic Effects, Arch. Neurol. & Psychiat. 43: 615-634 (April) 1940.

In cardiac standstill observers [14] describe an absolutely quiet heart, while in ventricular fibrillation aimless ripples can be seen beneath the pericardium. Even though only one previous electrocardiographic tracing of this surgical and anesthetic emergency [15] with recovery has been published, it is apparent that the electrocardiograph is of great diagnostic as well as academic importance, as it alone establishes beyond question the true nature of the cardiac episode.

If it has been determined that the ventricles are in fibrillation, procaine hydrochloride, 5 to 10 cc. of a solution of 1 per cent concentration, should be given intravenously or directly into the heart. With good fortune a brief postundulatory pause will occur, to be followed by effective coordinated ventricular contractions. If defibrillation does not occur, the dose can be repeated or, if the equipment is available, electric stimulation, as outlined and perfected by Beck, may be applied. Epinephrine should be reserved for cardiac standstill and is best given intravenously, into the heart or into the cardiac muscle, in a dose not exceeding 1 cc. of 1 to 1,000 dilution. Epinephrine may be valuable during recovery following restoration of cardiac action to strengthen contraction of the myocardium. It should not be used in the presence of ventricular fibrillation, as it makes a hyperirritable myocardium more irritable and more difficult to control. By the same token, a heart in standstill may be thrown into ventricular fibrillation if the dose of epinephrine is excessive. In the presence of an uncertain diagnosis, procaine hydrochloride is the drug of choice and should be given promptly to facilitate the reestablishment of normal cardiac function. If hemorrhage and shock are complicating factors, blood should be given to assure an adequate cardiac filling.

When coordinated cardiac action has been resumed and the operation completed, the damage of anoxemia must be estimated and emphasis directed at aiding and encouraging the recovery of injured cerebral and cortical tissue. If the period of circulatory arrest was less than three minutes, complete recovery may be expected, but if more than eight minutes, survival is not likely.

In conclusion, it may be said that in the presence of sudden circulatory arrest inaction and indecision will lead to a certain fatality. Just as artificial respiration is mandatory for respiratory failure, so cardiac massage must be quickly and effectively instituted for circulatory arrest and, if necessary, supplemented by the considered and judicious administration of procaine hydrochloride, epinephrine, electric stimulation of the heart, or all three.

SUMMARY

A case of circulatory arrest due to proved ventricular fibrillation of twenty-seven minutes' duration, with complete recovery, is presented. Cardiac massage was employed and procaine hydrochloride administered intravenously to reestablish regular rhythm.

Electrocardiograms, indicating the existence of ventricular fibrillation, a period of transition leading to recovery and the final normal rhythm, are shown.

Suggestions for the handling of similar situations are presented.

179 Allyn Street.

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14. Beck and Mautz.[2] Adams and Hand.[3]

15. Beck, Pritchard and Feil.[9] Beck, C. S.: Personal communication to the author.

THE BLADDER IN GENITAL PROLAPSE

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Buenos Aires, Argentina

In 1946 I published with E. G. Murray a paper on the morphology of the bladder in cystocele.[1]

The present paper deals with the dependence between the urinary reservoir and the anterior vaginal wall, as well as with the various physiopathologic disturbances of urination following genital prolapse in its different degrees.

The particular forms that the vesical cavity adopts, the modifications of its different diameters, the important changes in the vesical neck and their effect on micturition, and the possibilities of recovery from such urinary complaints will be discussed.

When genital prolapse takes place, the bladder is dragged backward and downward and the so-called cystocele is formed. The organ undergoes decided changes in form which, affecting directly its normal functioning, bring about subsequent alterations in its kinesis and evacuation of urine. Besides, when the lower part of the vesical wall is dragged by prolapse, pronounced alterations in kinesis of the ureters will take place, as the inferior ends of these ducts are the only fixed points holding the vesical trigone. Bearing all this in mind, let us see the results of cystoscopic and roentgenographic examinations.

CYSTOSCOPIC APPEARANCE

Normal Bladder.—Although cystoscopic description of the normal bladder is out of place here, I shall only point out the parts that will suffer changes after genital prolapse.

During cystoscopic examination of the bladder filled with 150 cc. of fluid, the vesical walls, in a normal person, are definitely convex. The air bubble is always seen in the dome; the mucosa is pink and presents a smooth, shining surface. The vesical trigone is symmetrically placed in the median line; it is an equilateral triangle formed by the ureters and the vesical ostium. The interureteric ligament, scarcely marked, enables one to see the whole retrotrigonal wall. The vesical neck, of a triangular shape, must be regular; its posterior lip, larger than the anterior lip, is slightly protruding and motile when the patient starts micturition.

CYSTOSCOPIC APPEARANCE DURING PROLAPSE

First Degree Prolapse.—Vesical changes in prolapse of the first degree may be slight but they are always present, and, although in most patients examined the bladder was almost normal, a careful examination will show alterations appearing in the vesical wall proper, which becomes slightly trabeculated through hypertrophy of the plexiform layer. The air bubble tends to be displaced toward the anterior wall. The vesical trigone begins to undergo some changes caused by the ureter's pulling it, thus destroying its regular outline. The interureteric ligament and the vesical fundus appear more pronounced. The vesical neck also undergoes changes: the posterior lip becomes hypokinetic.

From Alvear Hospital.

Read before the Section on Urology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1947.

1. Murray, E. G., and Trabucco, A., in Congreso argentino de ginocologia y obstetricia, 194, p. 1398.

In prolapse of the second degree the foregoing modifications gradually becomes more pronounced until, in prolapses of the third degree, one can observe decided modifications in the vesical walls; the trabeculated bladder is the rule; the mucosa presents symptoms of infection, usually of a chronic type; the air bubble appears displaced anteriorly and is sometimes above the anterior lip of the vesical neck; the trigone is markedly modified; it is irregular and hypertrophic; the protruding interureteric ligament bounds an enormous vesical fundus with thick trabeculated walls; the posterior lip of the vesical neck, less marked and immobile, appears elongated in a longitudinal direction and is lower than the anterior lip; the ureteral meatuses which form the angles of the trigone appear as if pulled upward, deformed and open.

ROENTGENOGRAPHIC EXAMINATION

Although cystoscopic examination will show the state of the bladder during genital prolapse, it cannot show clearly the condition of the vesicourethral outline and the deviations of the vesical and urethral diameters from the normal state.

In order to make a comparative study, one should see first the normal bladder filled with opaque substance, in a picture taken with the patient standing in anterior half lateral position, avoiding the large osseous portions of the pelvis and trochanters and with a degree of inclination that will enable one to see the anteroposterior outline of the bladder. To produce contrasts, the bladder was filled with 250 Gm. of 6 per cent sodium iodide.

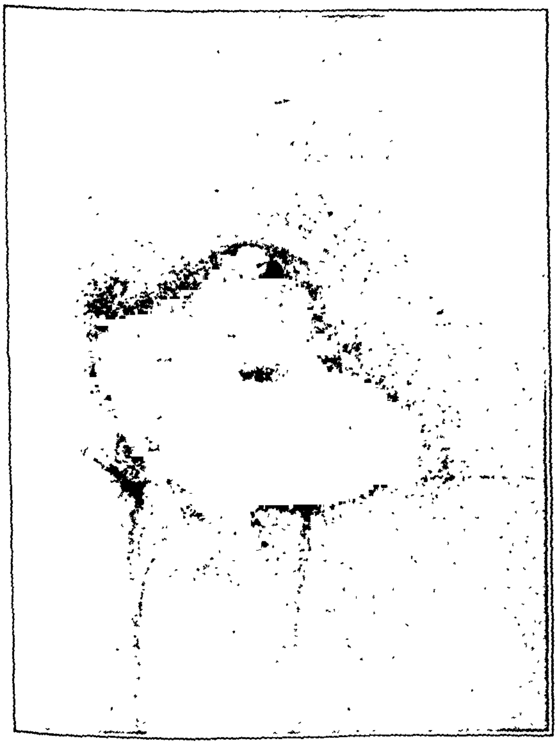

Fig. 1.—Normal bladder, half lateral standing position

Normal Bladder.—A normal cystogram of a woman standing in half lateral position shows the vesical globe of an elliptic regular shape, divided into two equal portions by the urethral axis. The air bubble, which is always found, appears definitely differentiated from the vesical opaque medium; it is located in the upper median portion. The upper border of the bladder is formed by a semicircle, the radius of which is longer than that of the anterior and posterior portions; no deformations are present. The border corresponding to the vesical base is divided into two equal parts by the urethra; it is slightly concave, forming what I have called the anterior and posterior fundus, the latter being more pronounced.

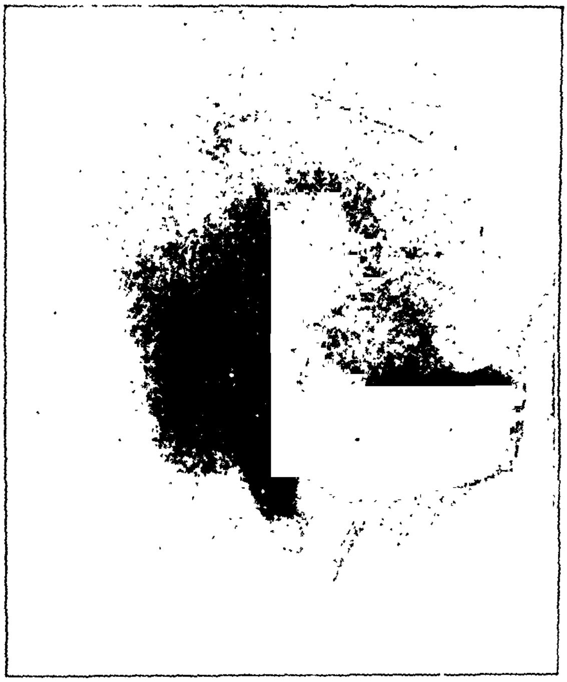

Fig. 2.—Prolapse of first degree, half lateral standing position.

The urethra enters into the bladder perpendicularly to its base and presents a slight anterior concavity; this sign is of the greatest importance when compared to pathologic conditions that will be described later. The vesical neck has a great importance in this study. In order to see it clearly, it is often necessary to reduce the contrast substance or inject through the urethra only 20 cc. In normal persons the vesical neck is clearly distinguished by two lips, anterior and posterior; the anterior lip forms a right or slightly obtuse angle, the sides of which are the urethra and the inferoanterior vesical wall, and the posterior lip forms a right or acute angle the sides of which are the urethra and the vesical trigone. This posterior lip of the neck is always placed slightly above the inferior lip, in relation to an imaginary line crossing this zone horizontally (fig. 1).

ROENTGENOGRAPHIC PICTURE IN FIRST DEGREE PROLAPSE

Cystography, as described, will show that the vesical globe tends to be displaced backward; it is laterally elongated and adopts an ovoid shape with a larger posterior circumference. The air bubble is beginning to be displaced backward.

The urethra penetrates into the anterior part of the lower border of the bladder instead of the median part, as normally; besides, the anterior fundus has become smaller while the posterior fundus has become exca-

GENERAL PRACTITIONERS SESSION

CARE OF THE CANCER PATIENT AFTER HE RETURNS HOME

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Before a patient who has been treated for cancer is discharged from the hospital he should be reassured concerning his condition, because too many persons believe that cancer represents a hopeless condition and that nothing can be done for it, which, of course, is contrary to the facts.

Most patients with cancer who have been seen early and who have had adequate therapy are well, should be reassured of this fact so that they will not fear the persistence of the malignant growth. Even the patient who has had a palliative procedure or in whom a cure was not possible should be reassured about his condition unless there is some definite indication for his being told the true facts.

The person who has been treated for cancer should report back to the attending physician at regular intervals for subsequent observation and examination. In this way, the recurrence of the neoplasm or the development of other manifestations can be detected at a time when something possibly can be done.

Whereas before the definitive therapy of a cancer can be undertaken the patient may have symptoms referable to his lesion, such as pain, interference with normal function of a viscus, such as obstruction of a hollow viscus, or ulceration with its consequent anemia, a patient who has had definitive therapy is relieved of these symptoms. The anemia which previously was a prominent factor and produced severe symptoms no longer exists because, with the removal of the malignant process, there is no longer loss of blood and no further interference with the hemopoietic function so that the patient is able to continue in a fairly normal way. His appetite is better, he is able to enjoy his food and to remain free from symptoms. If, for any reason, there has been resection of the upper part of the digestive tract, such as the mouth, it may be necessary during the preliminary period to feed the patient by tube. In such an instance, it is important to give a diet as nutritious as possible, particularly containing large amounts of proteins, because unless adequate amounts of protein are available, the normal reparative processes are interfered with. The same is true of the patient with a gastrostomy. One is limited, of course, in these instances by the size of the tube which can be inserted either into the esophagus or into the stomach. By means of mixing apparatuses, one can liquefy otherwise solid material and in this way get large amounts of nutritious substances into the digestive tract without much difficulty. In the occasional case in which a tracheotomy has been necessary as a temporary or permanent procedure, it is imperative that some type of suction apparatus be available in order to aspirate secretions from the trachea when they accumulate because of the difficulty which these patients have in expectorating the viscid secretions.

Unless there is some definite contraindication, it is desirable that the patient who has been operated on for malignant disease return to his normal activity as soon as possible. This is of importance not only as regards the healing of his lesion but also because of the beneficial effect on his morale. It is now generally agreed that early ambulation is desirable in the postoperative period because of more rapid reestablishment of normal bodily function but also because of the psychic effect on the patient.

In the patient who has had a resection of the distal colon for malignant disease with the production of an abdominal anus, it is extremely important that a great deal of attention be paid to the colostomy in the early postoperative period. Contrary to what is commonly thought by most laymen and by too many physicians, a colostomy is something not to be feared; with proper care, a person with a colostomy can carry on his normal activities without any difficulty and in no different way from the perfectly normal person. Although a patient who has had a colostomy done as a palliative procedure in which the malignant disease was not resectable does have difficulty with his colostomy in that it is difficult to control the bowel evacuations because of the irritative effect of the malignant lesion, the patient who has had a curative resection of his malignant growth will have no difficulty in controlling his bowels. These patients should be placed on a constipating diet in order to inspissate the feces. They should not be given bags or apparatuses, but should be instructed to take an enema every second or third day in order to evacuate the colon at that time. If this is done, a complete evacuation of the colon is accomplished at one time and in the meantime the patient can go without any fear of discharge of fecal material and without the necessity of wearing a bag or other cumbersome apparatuses. The attention to these few details in a patient who has had an abdominoperineal resection for cancer will do more to rehabilitate that patient to a normal life than probably anything else and will abolish the fear in the minds of other persons who have similar lesions.

Occasionally the patient with cancer in whom resection has not been possible continues to have an ulcerating wound. At times the odor from these ulcerating masses is considerable and extremely disagreeable not only to the patient but also to other persons. In such instances, frequently the changing of the bacterial flora of the ulcerating lesions is possible by changing the mediums. Granulated sugar sprinkled into the ulcerating mass will frequently change the culture medium sufficiently to alter the bacterial flora to eliminate the undesirable odor. The application of chlorophyl ointment to the wound is also frequently of value.

The unfortunate person whose cancer has not been eradicated and who continues to have pain because of the persistence of the lesion can be kept comfortable either by the liberal administration of opiates, which is perfectly justifiable in such a hopeless case, or by a more radical attack on the nerve supply to the lesion. Simple injection of procaine hydrochloride into the involved nerves followed by infiltration with alcohol frequently gives remarkable and astonishing relief. In more persistent cases the intrathecal use of alcohol at times is justified, and in even more persistent and terrible cases cordotomy may be a humanitarian procedure. Although these are only palliative procedures, they are perfectly justifiable in the case of the person who is having otherwise uncontrollable pain.

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Read in a panel discussion on the care of the posthospitalized patient with cancer at the interim meeting of the American Medical Association, Cleveland, Jan. 7, 1948.

POSTHOSPITALIZED PATIENT WITH CANCER

Medical and Psychiatric Aspects

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Patients subjected to a presumably curative procedure, usually removal of the cancer, need relatively little care after they leave the hospital; on the other hand, those with incurable cancer usually require a great deal of attention from the physician. I shall not discuss the "cured" group, except to point out that often the morale of these patients is impaired; they require strong reassurance and rehabilitation together with the usual medical procedure such as a diet high in calories and high in protein.

The physician in charge of a patient with inoperable cancer should examine the evidence to make certain, first, that the diagnosis is valid and, second, that curative procedures are really not possible. The diagnosis of cancer is sometimes incorrect, even when it appears to be obvious, and not all apparently inoperable lesions are really inoperable. These points may be emphasized by illustrative cases.

REPORT OF CASES

Case 1.—A man aged 43 years entered the hospital because of extremely severe continuous epigastric pain of six months duration radiating through the body to the back. The referring physican reported that an exploratory laparotomy had disclosed an inoperable carcinoma of the pancreas. The patient was referred for chordotomy to relieve the intractable pain. While arranging for the operation, it was noted that the vomitus consisted chiefly of large amounts of watery, highly acid gastric secretion. Further study disclosed roentgenologic evidence of an ulcer of the posterior wall of the duodenum. When the patient was placed on appropriate antacid management the pain disappeared. Seven years have now passed; the patient is alive and well. The error here was that of relying on gross findings at operation; there was no biopsy; further clinical study or perhaps a more careful examination at the time of the exploratory laparotomy would have disclosed the duodenal ulcer and thus prevented the near tragic and erroneous diagnosis of inoperable pancreatic neoplasm.

Case 2.—A man aged 48 years was subjected to operation in May 1942 for cancer of the rectosigmoid. The patient was a poor risk because of an old myocardial infarction. At operation two metastases were found in the liver; consequently, a colostomy was performed and no attempt made to remove the primary lesion. Two and one-half years later, the patient was again submitted to laparotomy; the liver was perfectly normal; there were no regional or distant metastases; the tumor was removed. There has been no evidence of recurrent neoplasm in the subsequent three years. The error in this instance consisted in failure to make a biopsy of the presumed hepatic metastases at the first operation and in the consequent assumption that the primary lesion was inoperable.

Case 3.—Brunschwig[1] has shown that many apparently inoperable cancers are, in fact, operable. A patient aged 55 years entered the hospital with the picture of complete extrahepatic biliary obstruction. The presumptive diagnosis was carcinoma of the head of the pancreas, a lesion considered, at that time, to be inoperable. However, the patient was subjected to laparotomy; Dr. Brunschwig found a primary carcinoma of the ampulla of Vater and resected the tumor; recovery was uneventful. Three years later the patient returned with abdominal pain, diarrhea and loss of weight; a mass was palpated in the right side of the abdomen; roentgenograms disclosed a filling defect in the ascending colon. At operation, Dr. Brunschwig found a primary carcinoma of the ascending colon; there were no metastases; resection was again followed by uneventful recovery. The patient is still alive and well, five years after the first operation and two years after the second.

COMMENT

Unfortunately, however, the diagnosis of inoperable neoplasm is usually correct and the problem is purely that of palliation. The standard hygienic procedures are diet, rest and exercise, all of which should be prescribed by judgment rather than by rule. Ordinarily a diet high in calories and high in protein is desirable; it must be cooked well; moreover, it should be served attractively and cheerfully. Rest and exercise are of both physiologic and psychologic value; they should be advised in graduated amounts as tolerated by the patient.

The chemotherapy of malignant disease seems to be entering a new era; its eventual complete success will be hoped for, but, at the present time, that goal seems remote. Arsenic has been used for many years in the treatment of leukemia, often wth dramatic palliative results.[2] Certain aleukemic states, reticulum cell sarcomas or lymphoblastomas, may likewise respond in a most gratifying manner with a clinical remission and objective evidence of regression, such as a decrease in the size of an enlarged spleen or liver. The more common inoperable cancers, however, seem at present to be completely unaffected by arsenic or by any of the chemotherapeutic measures used thus far. The nitrogen mustards[3] have proved helpful in Hodgkin's disease and in other neoplasms of the lymphatic system chiefly as an adjunct to radiation therapy. In certain cancers, notably carcinoma of the prostate and of the breast, hormonal therapy has produced spectacular results, although it has not replaced surgical removal. The estrogens, such as diethylstilbestrol, may be used in advanced prostatic cancer, with or without orchiectomy. There can be no doubt of their palliative effect on the primary tumor and also on the metastatic lesions, particularly those in the skeleton. Castration, be it by surgery, radiation or hormones, inhibits to a variable degree and for a variable period the growth of these specific malignant cells. Huggins,[4] in an analysis of the five year results of orchiectomy, reported that remissions of varying length occurred in 18 of 20 patients with disseminated prostatic cancer; after five years 1 patient was alive with slowly advancing cancer; in 4 there was no clinical or laboratory evidence of cancer. Similarly, the skeletal metastases of mammary cancer may be influenced by large doses of testosterone propionate.[5] However, it is not yet possible to make a final appraisal of the effectiveness of hormonal therapy.

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Read in a panel discussion on the care of the posthospitalized patient with cancer at the interim meeting of the American Medical Association, Cleveland, Jan. 7, 1948.

[1] Brunschwig, A.: Radical Surgery in Advanced Abdominal Cancer, Chicago, University of Chicago Press, 1947.

[2] Forkner, C. E.: Leukemia and Allied Disorders, New York, The Macmillan Company, 1938.

[3] Spurr, C. L.; Jacobson, L. O.; Smith, T. R., and Barron Guzman, E. S., in Approaches to Tumor Chemotherapy, American Association for the Advancement of Science, Washington, 1947, pp. 306-318.

[4] Huggins, C. B.: Prostatic Cancer Treated by Orchiectomy: The Five Year Results, J. A. M. A. **131**; 576-581 (June 15) 1946. Huggins, C., and Johnson, M. A.: Cancer of the Bladder and Prostate, J. A. M. A. **135**; 1146-1152 (Dec. 27) 1947.

[5] Herrmann, J. B.; Adair, F. E., and Woodard, H. Q.: The Use of Testosterone Propionate in the Treatment of Advanced Carcinoma of the Breast, Surgery **22**: 101-119 (1947)

The question is often asked as to which drugs should be used for the relief of pain in incurable cancer. Here again no arbitrary answer can be given, for so much depends on the patient, the family, the physician and the total situation. Generally speaking, the wise physician will choose the drugs needed to give relief. The barbiturates do not ease pain; they do reduce nervous tension and they bring greatly needed sleep and rest. Chloral hydrate is used less frequently, but may be helpful. In some circumstances as the inevitable end approaches, these drugs alone may enable the patient to sleep life peacefully away. Usually, however, it will be necessary to combine the hypnotic drugs with opiates; in fact, if opiates are used in adequate amounts, other medications may often be discarded. Codein may suffice for a few days or weeks, but usually it becomes ineffective. Morphine in doses of $\frac{1}{8}$ to $\frac{1}{4}$ grain (8 to 15 mg.) may be given as frequently as needed; addiction is not to be feared. The smoking of opium is foreign to Western culture, but in this particular situation it might prove of as great value for us as it has for the Chinese. The various substitutes for morphine, such as *meperidine hydrochloride, are rather effective.* The physician should use in adequate amounts the drugs with which he is familiar.

Thus far I have dealt with the more tangible phases of the care of the patient with incurable cancer, but perhaps not with the more important ones, the attitude of the patient and of his family to the disease and its ultimate inevitable outcome. Usually the first questions to arise are what the patient should be told and what should be said to the family. Opinions differ with regard to these questions; doctors differ; situations differ and change. Certainly the patient should be told enough to induce him to carry out the treatment indicated, to enable him to make the proper decisions and to dispose of essential business matters. I have rarely considered it necessary or wise to tell a patient bluntly that he has a cancer. The connotations of the word "cancer" are, as a rule, much worse for the layman than for the physician; consequently, softer and less final words such as ulcer, growth and tumor may often be used to advantage. If the patient then persists in his questions and insists on knowing whether the lesion is "malignant," one may decide to give the direct affirmative answer, qualified, perhaps, with the explanation that malignant lesions vary greatly in their rate of growth and that some malignant lesions are relatively benign. Such statements are, in fact, the truth, and they have the further advantage that they leave with the patient a ray of hope. It is cruel to destroy all hope; furthermore, the physician's diagnosis and prognosis may be wrong! The physician's task, after all, in this particular disease is to ease both the physical and the mental suffering of the patient as much as possible.

If a cancer is removed at operation, little is gained by gleeful statements to that effect; softer words with reassuring instructions and smiles are more helpful. If the cancer proves inoperable, then appropriate explanations are in order, accompanied again by instructions for the further management. Of course, the family, or at least, some responsible member, should be told frankly of the situation and should be kept informed as developments arise not only for the protection of the physician, but, more particularly, in order that the most satisfactory environment for the care of the patient may be created.

In theory, at least, the religious views of the patient are of no concern to the physician; in practice, however, the physician, consciously or unconsciously, takes them into consideration; they help to determine the attitude of the patient. This is scarcely the appropriate time or place to discuss questions of religious faith, but there are enormous differences in the way in which people face the imminence of death; some accept it with courage and fortitude, with a transcendent faith and serenity of spirit; others face it with fear and terror; some refuse to face it at all. The physician cannot alter the patient's basic reaction, but he should understand it. *By attitude, rather than by word, he should provide* as much strength and fortitude as possible. The physician is not called on to assume primary responsibility in spiritual matters; these are the private concerns of the patient, his family and the minister, priest or rabbi; every family physician knows, nevertheless, that in such times of crisis his role is not a minor one. The splendid monograph by the late Richard Cabot and his minister friend, *Russell Dicks,*[6] on "The Art of Ministering to the Sick" can be read with great profit, for it provides many insights and gives a better understanding of the differing reactions of patients to illness and approaching death.

Death, of course, is inescapable; it comes in various ways. Most of us, perhaps, would prefer it to come suddenly, silently, painlessly, when we are totally unaware of its approach. You will recall, however, than Hans Zinsser felt differently, for, as leukemia ran its course, he "felt increasingly grateful for the fact that death was coming to him with due warning, and gradually." In his last sonnet he wrote "Now is death merciful.—How good that 'ere the winter comes, I die!"[7]

Francis Peabody, in his middle forties, at the very fruition of his medical career, accepted the tragedy of an advanced gastric cancer with a similar transcendant tranquillity of spirit. He met this desperate situation "without defiance, without dismay, without show of regret and . . . without resignation. . . . It was accepted quietly, as a thing all in the day's work, handsomely, as a gentleman should accept a challenge."[8] Zinsser and Peabody had both achieved a fulness of life; the flower of their spirits had blossomed into full bloom; death held no terror for them. At an earlier age or under different circumstances, it might have been otherwise. You will recall Fitz-Greene Halleck's poem[9]:

> Come to the bridal chamber, Death,
> 　　Come to the mother's, when she feels
> For the first time her first-born's breath! . . .
> Come when the heart beats high and warm,
> 　　With banquet-song, and dance, and wine!
> And thou art terrible!—the tear,
> The groan, the kneel, the pall, the bier,
> And all we know, or dream, or fear
> 　　Of agony are thine.

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[6] Cabot, R. G., and Dicks, R. L.: *The Art of Ministering to the Sick,* New York, The Macmillan Company., 1936.

[7] Zinsser, H.: As I Remember Him, Boston, Little, Brown & Company, 1940, p. 441.

[8] Warthin, A. S.: In Memoriam, Tr. A. Am. Physicians 43; 13 1928.

[9] Halleck, F. G.: Marco Bozzaris, in Book of Famous Poems, Boston, Hall & Locke Co., 1902.

And so the physician as a fellow human being and as a friend must understand the significance of the approaching tragedy to each patient and to the family. To the physician is given the privilege of sharing in the joys and the sorrows of life, in its heartaches, and in the sacred sublime hours when, with or without the support of family, friends and clergy, the patient enters on the final experience.

It would seem foolish to speak of the psychotherapy of cancer, as if one might influence a neoplasm by any such procedure, but it is not foolish to speak of the psychotherapy of the patient with cancer. Psychotherapy, using the term in its broadest sense, is inevitably present in the treatment of all diseases, whether recognized or not; perhaps, indeed, it is most effective when not recognized and hence given unconsciously. The ability of some patients to deny or blot out pain, to refuse to admit to themselves or to any one else their progressive decline, is an amazing phenomenon. It is seen not infrequently in the practice of medicine; it is utilized by quacks and faith healers; it sometimes misleads physicians, for patients may gain, temporarily, in weight, strength and well-being in spite of the steady advance of the disease. In recent months I have seen a woman bedridden from innumerable osseous metastases of a cancer of the breast rehabilitated after the injection of a "new serum" given by a faithful nurse. The patient was able to resume for several months an active almost normal life in spite of the fact that roentgenograms taken from time to time disclosed rapid progression of the tumor throughout the skeleton instead of the regression anticipated from the excellent clinical condition. The attending physician attributed the symptomatic improvement to the splendid nursing care and the psychotherapy of the "new serum" administered enthusiastically.

This case illustrates the important fact that the practitioner must take an active interest in the progress of the patient; the physician must see the patient frequently at home or in the office; various therapeutic and palliative procedures should be tried, sympathetically, if not enthusiastically, for, while they may not have any value from a scientific point of view, their suggestive and psychotherapeutic value may be very great.

These brief remarks on the medical and psychiatric care of the posthospitalized patient with cancer may be concluded with a quotation from Francis Peabody's paper on "The Care of the Patient,"[10] written as he gave ground steadily to his own neoplasm, but containing no reference to it. Every physician would do well to bear constantly in mind and, perhaps, especially so when dealing with patients with cancer, the concluding two sentences of this delightful penetrating essay:

> Time, sympathy and understanding must be lavishly dispensed, but the reward is to be found in the personal bond which forms the greatest satisfaction of the practice of medicine. One of the essential qualities of the clinician is interest in humanity, for the secret in the care of the patient is in caring for the patient.

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[10] Peabody, F. W.: The Care of the Patient, J. A. M. A. 88:877-882 (March 19) 1927.

WHAT TO DO FOR THE CANCER PATIENT WHEN HE RETURNS HOME

The Role of the Radiologist

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The problem of what to do for the patient with cancer when he returns home as it concerns the radiologist may be divided into two categories: (1) diagnostic procedures and (2) palliative therapeutic procedures.

DIAGNOSTIC PROCEDURES

The symptoms that occur often in many patients who have had operations for removal of a malignant tumor include tightness of the chest, dyspnea and cough, rapid pulse, pain in the chest, lumbago, pain in any part of the body, headache, diplopia, dimness of vision, ringing in the ears, unsteady gait, loss of appetite, constipation, ascites and fever. It should be emphasized that multiple cancers are not uncommon and that one should be on the alert for such a possibility.

The roentgen examination of the chest is the best method of demonstrating metastatic disease of the lungs, mediastinum and pleura. Metastatic cancer may produce cough, dyspnea, pain in the chest, tight feeling of constriction in the lower part of the chest and a rapid pulse. *Carcinoma of the breast is one of the most* frequent causes of metastasis to the thoracic structures. Many times the patient thinks that she has a cold which will not clear up, and in such instances, if one has a high index of suspicion, the true nature of the condition can be demonstrated early by a roentgen examination of the chest. Metastasis to the lungs does not always produce a cough.

Lumbago and pain in the hip, shoulder and elsewhere are often due to metastasis to bone from various organs, such as carcinoma of the breast to prostate, or any of the lymphoblastomas. It sometimes is possible to make a clinical diagnosis before the roentgen diagnosis will demonstrate any abnormality. Thus, a roentgen examination of bones which shows no evidence of metastasis should not be regarded as negative unless there is some other explanation for the pain. It is well known by radiologists that unless the cortex of the bone is involved the lesion may not be detected unless one is able to compare roentgenograms made before symptoms with those of an examination after pain has developed.

Lumbago or unexplained fever is oftentimes due to metastases to retroperitoneal lymph nodes. *Metastasis to renal lymph nodes* from a testicular tumor often causes lumbago or lumbar pain referred to the groin and down the leg. Unexplained fever may be due to enlargement of retroperitoneal lymph nodes in Hodgkin's disease and in malignant lymphomas. Lumbago may be due to blockage of the ureters from carcinoma of the cervix which has invaded the broad ligaments. Urographic roentgen examination and roentgenograms of the abdomen oftentimes will provide the clues as to what is producing the symptoms.

Headache, diplopia, dimness of vision, ringing in the ears and unsteady gait are symptoms that are often

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Read in a panel discussion on the care of the posthospitalized patient with cancer at the interim meeting of the American Medical Association, Cleveland, Jan. 7, 1948.

produced by metastases from carcinoma of the lung and breast. In many hospitals it is a routine procedure for the neurosurgeons to request a roentgen examination of the chest, because they have learned to exclude metastasis as a cause of the neurologic phenomena before operating on the patient for a brain tumor. My associates and I have seen patients with symptoms referable entirely to the eyes that have been produced by metastatic carcinoma from the breast.

Loss of weight, loss of appetite, constipation and ascites are often due to metastases to the liver or other abdominal organs or structures. The symptoms may be acute or may be insidious. If the index of suspicion is high a correct diagnosis will generally be made or suspected of a condition which otherwise might go undiagnosed. The roentgen examination of the abdomen and of the gastrointestinal tract oftentimes will aid one in arriving at a correct diagnosis.

One of the most neglected fields in radiology is the follow-up examination after major surgical procedures. This is particularly true in gastric and colon operations, surgery of the lungs, surgery of bone and neurosurgical procedures on the head and spine.

We believe that every patient who has an operation for removal of a part, or for reconstruction, should have a follow-up roentgen examination. Such studies provide a base line for diagnosis should the patient subsequently show symptoms and have a roentgen examination.

PALLIATIVE THERAPEUTIC PROCEDURES

Radiation therapy like roentgen diagnosis covers such a large field that it is impossible to do otherwise than mention a few conditions that respond well to radiation and provide some degree of palliation.

Pain due to metastasis to bone may in many instances be relieved by irradiation. When destruction of bone is present, new bone forms after therapy and the symptoms disappear. Even when a pathologic fracture develops, the bone heals after irradiation in most cases.

Pain due to metastases to the spinal cord does not respond well to irradiation. Some other procedure such as surgery is more efficacious. On the other hand, if the pain is relieved by surgical measures, irradiation does provide palliation and may have a distinct retarding effect on the growth.

Cough and dyspnea and pain in the chest may oftentimes be relieved by radiation, even small doses.

Inoperable metastases and recurrences in many instances are helped and occasionally cured by appropriate irradiation.

It may be well to discuss briefly my views concerning the role of irradiation in the treatment of carcinoma of the breast.

We do not recommend preoperative irradiation in operable lesions. If the breast is found to be operable, we do not believe that it is necessary to give radiation over the operative field. One may give irradiation over the supraclavicular region in such patients as prophylactic procedure as recommended by Portmann.[1]

We do recommend irradiation in inoperable carcinoma of the breast, and the criteria for operability that we adhere to are those recommended by Haagensen and Stout.[2]

Only inoperable recurrences or metastases should be treated by irradiation.

Ovarian irradiation has been demonstrated to be a palliative procedure. It may be given immediately after the radical operation on the breast or it may be deferred until recurrences or metastases develop and or until after other measures have failed. Most patients respond for a short time, and a number will be helped for one to three years.

Every physician who cares for a patient with cancer is obligated to teach the patient what symptoms to look for and how to make a self examination. Our experience has led me to believe that patients can assume an important role in the early recognition of early metastasis, even when they are not told the true nature of their disease.

The relationship of sex hormones and neoplasms has been the stimulus for a great deal of investigation in recent years. The antiandrogenic treatment of cancer of the prostate was introduced by Huggins and Hodges in 1941[3] and has proved to have definite practical value. Cancer of the prostate is stimulated by androgens and is inhibited by either excision of both testes or by administration of the female sex hormone.

Some of the benefits observed include increased appetite, relief of pain, gain in weight, loss of the anemia, reduction in size of the primary tumor, healing of bone metastases and disappearance of soft tissue metastases. The results are not uniformly successful, but remissions may last from two to five years.

Many clinicians interested in cancer of the breast have employed the male sex hormone in the treatment of extensive breast cancer with bone metastases. Early efforts with small doses were not so valuable,[4] but recently larger doses have been employed with greater benefit.[5] The palliative response included symptomatic loss of pain and increased sense of well-being. In many, the bone metastases heal and occasionally the primary tumor is reduced in size. There still is much work to be done in this field, but the results thus far have been encouraging.

There are many other phases of the problem concerning the role of the radiologist in the care of the cancer patient. Those mentioned serve to illustrate how he can be most helpful if his efforts are integrated with those of the family physician.

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[5] Adair, F. E.: The Use of the Male Sex Hormone in Women with Breast Cancer, Surg., Gynec. & Obst. **84:** *719-722,* 1947.

Myasthenia Gravis.—Up to about 1935 the mortality was between 50 and 75 per cent, so its name, "grave myasthenia," was indeed justified. I have estimated that in one hospital where I am working, over a period of thirty years prior to 1935 we had only 30 cases, one a year, and that half of those cases died in the hospital and another half died within a year after leaving the hospital. This was indeed a fatal disease. The mortality from the disease at the present time, however, is probably less than 10 per cent, so that we have reduced the death rate from roughly 50 to 75 per cent down to less than 10 per cent. . . . All our patients take the medicine orally in the form of prostigmine bromide, the only tablet made for oral medication. There are 15 mg. of neostigmine bromide in each tablet. Under certain conditions we may supplement the oral dosage with subcutaneous injection, but that is rarely done, and not more than 2 or 3 per cent of my patients take the drug subcutaneously. They are all adjusted to oral neostigmine bromide.—Viets, Henry R., M.D., *Postgraduate Medicine,* July 1948.

NUTRITIONAL PROBLEMS OF ADOLESCENCE

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Most of the "problems" which bring the average parent of the adolescent to the physician are problems only to the extent that the parent fails to appreciate what normally should be expected at this age, and how wide is the time range within which may take place the events terminating skeletal growth and the attainment of sexual maturity. The mother who is concerned because her daughter is larger or smaller than her companions of the same age seems unaware that chronologic age is no measure at all of the events of this period, but that now there is being forced on us an assessment of normal progress in terms of physiologic age; that each person will have his own inherited time schedule and that his progress in growth must be measured against the yardstick of his sexual maturing. An attempt to compare the growth progress of a schoolroom of 13 year old girls will bring this point home better than anything which I can say. It will be found that their gains in height for the previous year have varied from 1 inch to 4 (2.5 to 10.2 cm.), and in weight from 6 to 30 pounds (2.7 to 13.6 Kg.), and this without there being an abnormal child in the group. It will be noted that about two thirds of the group have just menstruated for the first time, and that half of the remainder will be one, two or three years away from achieving this function, while in the other half of the remainder it will be an equal number of years in the background. When comparisons of growth are limited to girls in the same physiologic age group, seemingly hopeless discrepancies disappear and predictions become possible within relatively narrow ranges.

Such growth problems as do exist, and it is true that they come into bolder relief at this age than at other periods in the growth span, relate to the fact that growth is extremely unstable at this time, the rate actually doubling just preceding and halving just following the menarche in girls, a similar pattern being seen in boys about two years later and being measurable against their attainment of sexual maturity within just as wide a range as the girls. This correlation of the rate of growth with sexual maturity rather than chronologic age is well brought out by Boas[1] and by Shuttleworth,[2] and a recognition of it is fundamental to an understanding of the adolescent.

The actual time of occurrence of the first menstrual period is the source of much needless anxiety, which can be allayed when a mother is made to realize that while 13 is the average for this incident, the range is from 10 to 16. She needs likewise to be reminded that the only predictable thing about the menstrual cycle of the adolescent is its unpredictability for the first two years and that true abnormalities will reflect more often physical and emotional abnormalities of the whole child than those that relate specifically to the sex hormones.

The rate of metabolism at this period shows the same instability as does the rate of growth, a tendency for elevated rates to precede and depressed rates to follow the point of maximum growth. As a by-product of this, hyperthyroidism, rare in earlier childhood, becomes relatively common in the prepuberty spurt of growth, and depressions of metabolism reaching pathologic levels are frequent in the years that immediately follow puberty.

It might be predicted from a study[3] of growth curves that the assimilation from the diet and the storage within the tissues of those food elements that enter into the making of muscle and skeletal tissues—for example, *nitrogen in muscle and calcium in bone*—would show changes that paralleled the growth rates, as indeed they do. With diet unchanged, retentions of these items have been shown to be halved in the period following puberty in contrast to the period that preceded it, and, further, the requirement for these items is satisfied within much narrower ranges than at those periods of growth that are more stable. During a year when a child is adding 3 inches (7.6 cm.) to his height, his calcium requirement will be satisfied with *no less than* the amount that *occurs in* a quart of milk, and his need for vitamin D is probably twice as great as at any other time in life with the possible exception of the middle of the first year. His protein needs likewise are higher than they will ever again be in life, and the attainment of an optimal storage of nitrogen in his tissues and of a normal metabolism will demand about three times as much as that required in adult life. It is true that when such demands are not met equilibrium is reached at a lower level, but only at the expense of a fall in basal metabolism. Beyond a certain point this will result in a failure to achieve sexual maturity.

The protein and calcium needs of the adolescent will be covered when the diet includes the items in the accompanying list:

	Protein, Gm.	Calcium, Gm.
1 quart milk	28.8	1.152
1 egg	6.0	0.033
Cereal, 1 serving, and bread, 3 slices	13.0	0.067
Meat, fish or cheese, 2 large servings	46.0	0.318
Simple dessert, 1 serving containing egg and milk	3.5	0.102
Soup, 1 serving containing milk	2.4	0.020
Vitamin D—800 Units		

The protein in this diet constitutes 15 per cent of a calorically adequate diet. The total calories can be estimated within a narrow range as approximately twice the basal calories as predicted on a Wetzel grid. This method of calculation is actually practiced only on specifically ordered diets such as those for the person with diabetes; in the average normal youngster, we found in the study[4] from which this figure was derived that instinct was a reliable guide to this amount and that a mother's fear that "he would take too much meat" was unjustified. When amounts greater than this were offered, not only was retention of nitrogen not usually increased, but there was prompt refusal and, in some instances, evidence of protein intoxication.

Read in a symposium on the Treatment of Pathologic Disturbances of Adolescence at the interim meeting of the American Medical Association, Cleveland, Jan. 7, 1948.

[1] Boas, F.: Studies in Growth, Human Biol. **4**: 307, 1932.

[2] Shuttleworth, F. K.: The Adolescent Period: A Graphic and Pictorial Atlas, Monographs of the Society for Research in Child Development, 1938, vol. 3, no. 5.

[3] Johnston, J. A.: Factors Influencing Retention of Nitrogen and Calcium in the Growth Period: III. Puberty in the Normal Girl and in the Girl with Minimal Reinfection Tuberculosis, Am. J. Dis. Child. **59**: 287 (Feb.) 1940.

[4] Maroney, J. W., and Johnston, J. A.: Caloric and Protein Requirements and Basal Metabolism of Children from Four to Fourteen Years Old, Am. J. Dis. Child. **54**: 29 (July) 1937.

If for any reason milk is not taken, the calcium content of a quart, something over a gram, can be supplied otherwise.

The amount of vitamin D recommended is higher than that usually quoted, but the figure is based on calcium retentions reported elsewhere.[5]

OBESITY

The facts that the average obese adolescent is above average height, shows advanced bone age and is in the advanced group intellectually, though retarded in his social and emotional maturation, are all sound arguments advanced by Bruch[6] against attributing the excess weight to thyroid deficiency. The use of surface area standards in the calculation of the basal metabolic rate introduces an error in the case of the obese child of the magnitude of 20 per cent; the use of a standard based on height, or the Wetzel grid, will provide estimates that fit the clinical picture more accurately; by such standards these children are shown to have a slightly elevated metabolism. The use of thyroid in their management is definitely contraindicated; as much loss of mineral and nitrogen can be effected by elevating the metabolic rate to abnormally high levels as results when the other extreme exists, hypothyroidism. The management of the problem of the obese child includes more than the attempt to limit his caloric intake; it involves an assessment of his emotional and social difficulties and the frank facing of the too frequently found overdependent relationship between parent and child.

1,400 Calories, 20 Per Cent Protein

	Calories
Breakfast	
Tomato juice, one 8 ounce glass	36
Milk, skimmed, one 8 ounce glass	138
Bread (whole wheat, rye, graham, cracked wheat), 1 slice	72
Butter, ½ square	40
Egg, one, or a hamburger or small serving of lean meat	75
Lunch	
Lean meat or fish, any kind, 1 average serving or 2 eggs	172
Vegetables, 3%, any amount	18
Vegetables, 10%, ½ cup	46
Bread, ½ slice	36
Milk, 1 glass	138
Butter, ½ square	40
Fruit, fresh or canned without sugar, 7% to 10%, ½ cup	40
Dinner	
Lean meat or fish, 2 eggs, or average serving cottage cheese	102
Vegetables, 3%, any amount	18
Vegetables, 6%, ½ cup	36
Bread, ½ slice	36
Milk, 1 glass	138
Butter, ½ square	40
Fruit, fresh or canned without sugar, ¾ cup 7% to 10% or ½ cup 15%	60
Mid-afternoon	
Milk, skimmed, 1 glass	138

This diet should be supplemented with vitamin D such as one A.B.D. capsule or 5 drops of percomorph liver oil or a halibut oil with viosterol capsule.

The accompanying reducing diet for the obese child recognizes the need for a high intake of protein, calcium and vitamin D at this period, and stresses the use of protein at the morning meal as a means of allaying hunger for longer periods than would carbohydrate without effecting a corresponding increase in weight.

In the case of obese boys, one of the commonest causes of concern has to do with seemingly infantile genitalia. Bruch[6] concluded from her study on this point that "there are no indications to support the common belief of sexual retardation in obese boys. One may expect that there are a few obese children who do not reach this stage (pubescence of Schonfield); yet they seem to be rare, and they would still fall within the normal range." Actually the size of the penis in the obese boy is deceptive because it is obscured in a pad of pubic fat. The use of sex hormones to influence development at this age is unjustified.

EPIPHYSIOLYSIS

Slipping of the upper femoral epiphysis is largely a problem of the period of accelerated growth, the average age of occurrence in the girl being 12, and the boy, 14.[7] It is likewise a problem to a large extent of the obese child, and the possibility of its occurrence is an added reason for dealing vigorously with that condition before puberty sets in. There is no general agreement on its etiology, but in a study of 5 of these patients we found diminished retention of calcium. Since the studies were done after nailing, the poor balances may well have been referable to the surgical procedure, but their prompt correction by the use of vitamin D differs from the experience of Howard,[8] whose calcium losses in cases of fracture were not so influenced. I feel that observation is added support for the need for vitamin D at this age period, as might be anticipated from the increased rate of growth.

THE ADOLESCENT AND TUBERCULOSIS

The abrupt increase in the incidence of the adult or reinfection type of tuberculosis in the adolescent has long been associated in the physician's mind with some change which lowered resistance at this age. That the lesions found at this time represent endogenous exacerbations of primary foci would seem to be borne out by the experience in Detroit in which 1,100[9] children, wards of the Society of St. Vincent de Paul, were followed for varying periods up to twenty years after their detection as reactors and their removal from their sources of infection to rural foster homes. Two thirds of the 29 reinfections detected over this period occurred in girls, the majority between the ages of 11 and 17. Metabolic observations carried out after the detection of the lesion, and practically all were discovered in the minimal stage, suggested from the magnitude of the storages of nitrogen that deficits had existed which were now being made up with an optimal diet and rest. The role of the onset of puberty itself in creating such deficits was studied and the depressed retentions of nitrogen and calcium noted at the menarche were felt to contribute to the reactivation of the lesion, and to its spread when the menarche followed the first appearance of the adult type lesion. The observations lend further support to the need for supplying liberally the increased needs for protein, calcium and vitamin D of this period of accelerated growth.

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[5] Johnston, J. A.: Factors Influencing Retention of Nitrogen and Calcium in Period of Growth: VI. The Calcium and Vitamin D Requirements of the Older Child, Am. J. Dis. Child. **67**: 265 (April) 1944.

[6] Bruch, H. B.: Obesity in Relation to Puberty, J. Pediat. **19**: 365, 1941.

[7] Johnston, J. A.: Special Problems of the Adolescent Child, in Nelson, W. E.: Textbook of Pediatrics (Mitchell-Nelson) Philadelphia, W. B. Saunders Company, 1945.

[8] Howard, J. E.; Bigham, R. S.; Eisenberg, H.; Wagner, D., and Bailey, E.: Studies on Convalescence: IV. Nitrogen and Mineral Balances During Starvation and Graduated Feeding in Healthy Young Males at Bed Rest, Bull. Johns Hopkins Hosp. **78**: 282, 1946.

[9] Johnston, J. A.; Howard, P. J.; Smith, F. J., and Douglas, B. H.: Tuberculin Reactors and Exposure Cases, Am. Rev. Tuberc. **42**: 551, 1940.

MENSTRUAL IRREGULARITIES IN ADOLESCENCE

After dismissal of a large number of complaints regarding menstruation as due to a failure to appreciate that, while the average onset of menses is 13, the range is from 10 to 17, and that the establishment of a regular rhythmic cycle is a matter of many months—in one study, twenty-six—there remains a group whose basis can roughly be grouped into the following categories: nutritional, emotional, hormonal and organic defect.

The obese girl and the malnourished share equally in having a disordered menstrual cycle. In both types thyroid has been unwisely employed. Its mistaken use in the obese child has probably resulted, as pointed out elsewhere, from the misleading information gained from the determination of the basal metabolic rate, when this is referred to standards based on the surface area. Malnutrition of any significant degree, not the result of hyperthyroidism or infection, will cause a fall in the metabolic rate; in neither instance is the use of thyroid indicated; the obese child needs dietary restriction, and the supplying of an adequate diet to the undernourished child can cause a rise to a normal rate in two weeks.

Both of these situations may have their basis in emotional difficulties, the obese child using food as a solace for social inadequacies, and the malnourished teen-ager not infrequently developing a state approaching anorexia nervosa when confronted with an inability to keep pace with a school schedule beyond her intellectual capacity.

About one fourth of a group of 50 high school students who complained of menstrual irregularity required thyroid as judged by clinical signs and symptoms, a slow pulse, small pulse pressure, lowered metabolic rate and fatigue, and pallor. Rarely was it necessary to use more than ½ grain (30 mg.). It cannot be stressed too often that the anabolic effects of this hormone become catabolic when amounts are used that elevate the metabolic rate above normal.

Gynecologic consultation in this group should not be too long delayed. Psychic trauma incidental to the examination is not lightly to be dismissed, and the experienced gynecologist has in our experience explored the possibilities mentioned before resorting to it. Nevertheless, a failure to employ adequate examination would have resulted in this series in missing organic lesions in 6 cases—1 of adenomyoma, 2 of ovarian cysts and 2 of hypertrophy and hyperplasia of the endometrium; there was a single instance of primary amenorrhea.

SUMMARY

Adolescence is set apart from the other periods of growth by varying rates of speed, changes in metabolism and the maturation of the sex hormones. Many of its problems can be resolved when the nutritional requirements are met that fulfil these varying needs. More of the problems cease to exist when due account is taken of the wide range of normal of the events of the period.

PSYCHIATRIC PROBLEMS OF ADOLESCENCE

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Commonly encountered problems relating to the emotional and social development of the adolescent will be discussed in this paper. For many young persons, the adolescent period is one in which a relative disequilibrium, physiologic and psychologic, must be coped with. The familiar physical changes of puberty usher in a period in which the relative stability of the prepubescent period is disrupted. Physical growth and development, shift and change in endocrine balance, accompanying change in social and educational relationships conspire to impose a difficult task of adjustment on the adolescent. I shall endeavor to review some of the chief areas in which reactions characteristic for or emphasized by the adolescent are encountered.

PHYSICAL DISABILITY

With respect to problems of physical health, the adolescent is in a vulnerable position. He has little tolerance for the threat of illness or disability; this is particularly true for the boys. Physical disability of any sort is reacted to as a tremendous threat to prestige and in the competitive relationship that characterizes the attitude of the adolescent. Adolescents have a great capacity to deny the existence of any incapacity, since the existence of such provokes deep anxiety. An adolescent boy had required a number of operations on his foot to correct a congenital deformity, had to wear a brace to counteract a tendency toward serious spinal curvature and had an undescended testicle that failed to respond to efforts to effect descent. He devoted his major energy toward denial of his difficulties. One can completely sympathize with his sensitivity and eventual refusal to wear a brace, if there was any chance that this would be discovered by his school friends. He spent endless time and energy in calisthenics and exercise and succeeded in developing a most muscular physique. His emphasis in the direction of physical development was so great that he seemed to have little energy to invest in his academic effort and, though of good intelligence, throughout his high school years has remained on the verge of failure. In his overdetermined zeal to secure himself a robust physique, he has lost sight of the important role that his other capacities play in determining his life situation.

As opposed to the reaction just described, not uncommonly the reverse defensive attitude is encountered. The adolescent who feels himself at a disadvantage on the physical score may stake everything on gaining status through intellectual achievement, perhaps isolate himself as the "grind," but in any event conceive of himself as the intellectual. This fundamental attitude toward himself really includes a great depreciation of his own physical powers. While the emphasis on intellectual achievement may be desirable in itself, particularly if the young person concerned has the capacity to implement his own demands for achievement, the concomitant self depreciation on the physical side tends to maintain an underlying state of anxiety and mistrust of self that interferes with normal adjustment in social and personal relationships.

Like younger children, the adolescent can tolerate no sense of difference between himself and his com-

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rades. Daniels[1] reported the difficulties in management of an adolescent diabetic patient, for whom being left out of group games proved a deep embarrassment and being unable to have an occasional snack with his friends a prime deprivation. To the adolescent, the cure is certainly worse than the disease.

SOMATIC DISTURBANCE

Not only does the adolescent react strongly to physical disability or illness to which he may be subjected, but, conversely, he may manifest mild to extreme somatic disturbance in his effort to cope with the emotionally significant problems characteristic for the adolescent. Disturbance of appetite, common in early childhood, is a not infrequent symptom during adolescence. The problems range from those of the adolescent girl who remains too fat to be attractive (she is the subject of a popular song now being heard daily over the radio) to those of the sufferer with so-called anorexia nervosa, whose life is threatened by inability to eat and retain food. In these adolescents, one is dealing with conflict situations already laid down in childhood experience, but with intensification under the influence of pubertal changes and hormonal stimulus. I wish to comment on some of the psychologic and psychiatric problems involved. The physiologic changes of puberty coincide with changes in external personal relationships involving separation from parental protection, and the impending adjustments of adult social and sexual life.

Some boys and girls tend to overeat and gain weight rapidly with the onset of puberty. I am not talking about the healthy appetite of the energetic boy who eats "like a horse" and expends an enormous amount of energy in active sports and other energetic adolescent pursuits. He does not become obese and socially withdrawn, as does the "fat" boy or girl here referred to. Here one is dealing with the adolescent who is basically anxiety ridden and feels incompetent to enter into the more demanding relationships of adult life. Case studies make clear that in some adolescents overeating occurs as a regressive reaction when heterosexual strivings undergo repression. Such a person reverts to an essentially dependent orientation, expressed in a retreat to oral and receptive possibilities for gratification that are normally dominant only in early childhood. The psychologic picture is a complicated one that cannot here be elaborated, but in turn, the obesity in some measure serves as defense against the possibility of exposure to a mature sexual life.

The opposite picture, the extreme of anorexia nervosa, also expresses an unsuccessful struggle of the adolescent with emotional problems too great for him to cope with. Here again one is dealing with extremely anxious young persons so disturbed that their recourse to illness amounts to a suicidal threat. Again a consistent picture of deeply disturbed familial and childhood relationships is encountered. Neurotic disturbance of one or both parents creates a situation in which the child lacks the security provided by normal parental affection and wise training and guidance. Instead, intense hostile and dependent attitudes are fostered. The female patients rather consistently are involved in threatening pregnancy phantasies and defend themselves against the possibilities of growing to maturity, and specifically against the phantasies of pregnancy, through self starvation. Dr. Ruth Moulton[2] among others has clearly exposed the psychodynamics underlying the illnesses of these young persons.

The treatment of the problems described is primarily a psychotherapeutic task. It may be relatively simple or extremely difficult, depending on such factors as degree of regression and the capacity of parents to cooperate. Often neurotic parents unwittingly interfere seriously with the efforts at therapy, and the patients frequently are highly resistive to efforts to help them abandon the destructive patterns. But many adolescents can accept psychotherapy designed to clarify to them the nature of the basic reactions of anxiety and hostility and are able to reorient themselves in a manner approaching that of the healthy adolescent.

CONFLICT WITH AUTHORITY

A constant concern to parents and educators is the conflict with authority that arises with many adolescents. Adolescents do not like to be told what to do. At the same time they are not always in a position to convince their parents that they are capable of self direction. Parents often remain too mistrustful as to the degree of responsibility and self direction which they may entrust to their adolescent children. This theme has many variations.

The parents of a boy aged 13 complained of his lack of responsibility. He was argumentative, would accept nothing readily from his parents. He argued constantly with his younger brother and with his friends. He was impatient unless his friends would do just what he wanted to do. He did rather poorly in his school work, did not concentrate, "fiddled around." He was rather slender and did poorly in athletics. He whined, acted silly when the mother had company, so that she was ashamed of him and sent him from the room; seemed generally unhappy; spent a great deal of time reading; was unpleasant about family outings; did not even like to accept when the father invited him to go to a motion picture with the father and the younger brother; always felt abused and identified with the underdog.

The picture as seen from the boy's point of view is interesting. Though 13, he had never been allowed to come into town by himself and was accompanied to the office by the mother until she was sure he had learned the way. The boy complained that there was too much arguing with the mother and when he got irritated with her the father chimed in on her side. His father offered to take him to motion pictures and insisted even when there was no picture which the boy cared to go to. He finally went because his father would be angry or the father's feelings would be hurt. His mother insisted that he come in to greet her friends when she had visitors, but she watched him all the time to see how he behaved and he knew that she did not want him to stay. When he decided he would like to have a party, the mother first insisted that he have all the children in his room and it took him two days to convince her that would be too many. Then the mother wanted certain children of her own friends invited, but he knew that they would not have a good time because they went to different schools and "the kids do not know them." Finally he got it down to just one girl that mother insisted on, though he knew that the others would not want her and he did not think that she would have a good time.

These details tend to highlight the familiar conflict between parents still too mistrustful of the child's capacity for self guidance and the relatively insecure adolescent who wants to manage on his own. In actuality, the children of this age need and readily accept considerable guidance, but it must be offered in a manner that takes full cognizance of their need to exert their own prerogatives. The disturbed relationship in the case situation described tended to further distinctly unhealthy trends in the character development of the boy. A sullen withdrawal, with exaggeration of resentful, hostile attitudes toward parents and other adults, uncertainty and mistrust about what he himself is capable of doing, the growing conviction that he is always at a disadvantage, tend to become established.

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[1] Daniels, G. E.: Present Trends in the Evaluation of Psychic Factors in Diabetes Mellitus, Psychosom. Med. 9: 205, 1947.

[2] Moulton, R.: A Psychosomatic Study of Anorexia Nervosa, Psychosom. Med. 4: 62, 1942.

The familial conflict may play off in other relationships.

A high school boy of very superior intelligence, who had hitherto given a good account of himself both academically and in his conduct and attitudes in school, was referred for advice because of rapid deterioration in his school work that threatened failure in his senior year, and because of increasing difficulties in his relations with the faculty. His attitude seemed to be that rules were absurd; if there were rules he was an exception and need not conform; they made no sense, etc. It must be remarked that his school was a most liberal one, in which much freedom was given the students. His parents made no complaint about his conduct in the home except that he was most uncommunicative and had to be left strictly alone.

The boy at once took a most superior air with the therapist, began by carefully explaining the absurdities of the rules that got him into difficulty, and questioned the right of the school to impose any restrictions unless he were utterly convinced that they were necessary, etc. He soon shifted his tack, demanded of the therapist whether he had read Wylie's "Generation of Vipers," and expounded a philosophy of life, derived from his particular understanding of this work, that rested on a profound depreciation of the common man and on convictions about the overwhelming significance of an intellectual elite. Factually, this boy's truly superior intellectual capacities do place him at a high level as compared with high school students in general, but the healthy student does not arrive at the orientation expressed by this boy. Further discussions made clear that there was good reason for his cynical attitude. The boy gave an account of a deeply disturbed family life, in which he had much good reason to be anxious and disappointed about his father. Though the father was a professional man who had achieved reasonable success in his field, he was weak and vacillating and betrayed dependent and unrealistic attitudes that deeply disturbed the boy. As his own unfavorable appraisal of his father impressed itself on him, this boy turned against all the adults in his environment and became as critical of and resentful toward his teachers (among whom were a number of men) as he felt toward his father. His overly independent, nonconforming behavior in school followed. His readiness to accept a philosophy of depreciation of most of mankind corresponds with his disillusionments about the authoritarian person in his family. The concept of the intellectual elite who would guide the destinies of mankind reflect a possible solution in which one need not expect much from any one but oneself—and still have life be possible.

ANXIETY STATES

While all the clinical situations referred to involve reactions of mistrust, discomfort and anxiety in adolescents, a word further about anxiety states as such seems in order. Without specific somatic symptoms or disturbances in overt behavior or in the externals of personal relationships, many adolescents exhibit states of anxiety that, at times, seriously threaten their capacity to proceed normally in school work and ordinary routines. When such states of anxiety exist, a careful inspection of the childhood and adolescent experience will usually reveal (*a*) lacks or errors in childhood training or rearing and in child-parent relationships that make it difficult for the child to accept and cope with his situation and (*b*) a recent or current situation that is immediately threatening or overwhelming and that acts as precipitant or augments long-standing discomfort. Examples may be of the following order:

A high school student had always been able to remain on the honor roll, got high grades and had much status on this basis. He was somewhat undersized, but able to participate in sports and athletic activities with some degree of distinction. He drove himself rather mercilessly in this latter activity. He was the only son, in a family in which his anxious mother continued to play a highly overprotective role. With a change in school, the last year in high school, the boy found the work more difficult; he did not do quite as well as he formerly had in a set of examinations, and thereafter became acutely anxious about his school progress. He worried about anticipated examinations to an extent that made it difficult to do any studying at all. About this time, his group of boy friends were paying more attention to social affairs involving the girls, made more dates. He vacillated between going along and feeling that he should spend all his time studying to catch up with his work. In the meantime his mother became greatly concerned about her son's welfare, watched him closely, took him to a number of doctors who found nothing specifically wrong, and this caused more concern. This truly intelligent and capable boy, most dependently attached to an overanxious mother, was able to make a good adjustment as long as it could be on the basis of being the honor student. His general social adjustments were fairly good, though maintained at too great a cost in terms of his overstriving for prestige in sports. His defense against anxiety was successful until a heightened tempo of demand in the school made it difficult for him to maintain his high academic status. With this cornerstone of security shaken, he was ill prepared for the additional demands of blossoming social exposure and the expectation that he cope with the girls, not as his mother's compliant son, but as a more independent young man. This combination of circumstances was sufficient to provoke the state of anxiety that in turn sabotaged his effectiveness in meeting current school and personal situations.

This theme has many variations, and must be understood not only by physicians, but by educators, who must be prepared to recognize and, if possible, offer help to the student so discomfited. Often the break between high school and college is the time at which disturbances of the nature of anxiety reactions are encountered. The educational difficulties which young persons encounter may, to be sure, be primarily of the order of problems of special interests and capacities. Here the task is one of direction and guidance, having in mind the particular fields of learning in which a student may be expected to find the most stimulus and satisfaction. But so often, whatever his special interests and capacities may be, the student may be devoting so much energy to his problems of inner adjustment as to make him relatively ineffective in any field of academic interest. It is this factor of emotional and social maturity or immaturity that is understood in some school settings, given lip service in some and just not comprehended in others.

In academic settings where particular emphasis is placed on acceleration, with the view to telescoping the years of general education, the too exclusive emphasis on the "academic" aspect of the educational experience constitutes a danger to a certain number of the young persons involved. Assuming the intellectual equipment requisite for grasp of the material presented, the intellectual experience may be integrated with socially and emotionally maturing experiences that together constitute a healthy and successful educational experience. By successful, I would mean an increased capacity to understand and cope with his world of experience.

But it is quite possible, with many young persons, that the intellectual experience proceeds in a somewhat isolated fashion. I have already indicated the capacity of adolescents to intellectualize and to use an intellectualizing defense in their inability to cope with the emotionally disturbing aspects of their life relationships. For this reason, adequate progress in intellectual achievement is not in itself a sufficient criterion for success of the educational experience. There needs to be the assurance that in the personally meaningful relationships between student and faculty and student and student the real need of the adolescent is met. The details of this consideration are many and cannot here be discussed; my point is that this important element in the educational provisions for the adolescent is not sufficiently understood. So often the failure of the experience is appreciated only if the student actually fails to make good in his school subjects, because certainly the discomfort of a most intelligent student may reflect itself in academic failure. Failures in the fields of emotional and social orientation are frequently overlooked and more often not understood. They become apparent when the student later runs into actual difficulties in adapting to vocation—to marriage and parenthood.

I do not propose to discuss specifically the question of sexual education of the adolescent. There is no special sexual education of the adolescent, because his sexual education has been in process since earliest childhood. Sexual education is not merely a matter of exposing a child to "the facts of life" at a given age considered appropriate, important indeed as that aspect of education may be. The sexual orientation of the adult is compounded of a synthesis and integration of gradually changing and evolving attitudes and values based on the healthy experience of family life. The experience of being loved and cared for in infancy, and having a live concept of what an adequate mother and father are like, the experience of learning the give and take of family life with brothers and sisters, the experience of being accepted as an adequate boy or girl by the parents, the discovery of the capacity to be successful in meeting ordinary life situations and in adapting oneself to new situations; all of these add up to sexual education. The deficiencies of this earlier life experience tend to be highlighted during adolescence, because the growing boy or girl finds himself more imminently faced with the actual problems of sexual life. For the emotionally healthy boy and girl, the evolving social opportunities of high school and college years can gradually be utilized in achieving the understandings that lead to ultimate courtship and marriage. It is during this period, however, that much preventive work can be done in helping the insecure or emotionally disturbed adolescent. The problems centering about sexual strivings and sexual behavior should be dealt with openly and realistically.

THE GENERAL PROBLEM OF PSYCHOTHERAPY

This leads to a final commentary on the general problem of psychotherapy in adolescence. Any relationship with an adolescent has the possibility of being of therapeutic value. Most young persons are highly sensitive to the personalities, the attitudes of the adults with whom they have contact. Teachers and doctors particularly are in a position to affect the young person profoundly at times. Among educators, the intent is educational, not therapeutic; yet there are situations in which a distinction can hardly be made. The mere acceptance of an adolescent on a fairly adult level by an instructor whom he respects may have a rather positive effect on an insecure adolescent. The willingness of a doctor to review disturbing family or personal situations, free of the complication of familial attitudes toward the adolescent, can similarly be utilized. If the adult is capable of really understanding an unfolding problem exposed to him by an adolescent, the chances are great that the young person can share that understanding, unless he is neurotically seriously disturbed.

Unfortunately, with more serious disturbances, there at times must be a considerable uncovering of uncomfortable and disturbing earlier experience or present attitudes. For this reason, psychotherapy with adolescents offers certain difficulties and dangers. Adolescents, disturbed in their family relationships, are likely to act out their dissatisfaction with the family more freely, for a period during treatment, than ever. Unless parents are fully prepared, they tend to become disturbed by such possibilities and are unable at times to cooperate in treatment. With all patients in psychotherapy, it is important that the physician be quite cognizant of the patient's capacity to tolerate, assimilate and make constructive use of whatever he may be confronted with in the course of therapy. For adolescents, this is particularly important. But if the physician fully understands this factor, and his own relationship to the adolescent and problem, with all except the most disturbed adolescent he finds the ready possibility of helping the patient to a more effective and realistic manner of dealing with his life situation.

PERITONEAL IRRIGATION

Successful Use in the Treatment of a Case of Renal Failure Due to Mercurial Nephrosis

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and
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Use of the peritoneum as a dialyzing membrane in the treatment of uremia following acute renal failure has been under careful investigation recently by Fine and his associates.[1] Their goal has been to provide "a temporary substitute for the normal excretory function of the kidney," and so to prevent deterioration and death from uremia during the period necessary for the repair of acute renal damage. They reported an instance of cure in a case of uremia due to sulfathiazole toxicity.[2] Subsequently, Goodyear and Beard [3] were successful in treating a case of acute renal failure due to a transfusion reaction in a patient with a solitary kidney. Several other successful results are known to us, but have not yet appeared in the literature. To the best of our knowledge this is the first successful application of the method of peritoneal irrigation to a case of renal failure due to mercurial nephrosis.

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[1] (*a*) Seligman, A. M.; Frank, H. A., and Fine, J.: Treatment of Experimental Uremia by Means of Peritoneal Irrigation, J. Clin. Investigation **25:** 211 (March) 1946. (*b*) Fine, J.; Frank, H. A., and Seligman, A. M.: Treatment of Acute Renal Failure by Peritoneal Irrigation, Ann. Surg. **124:** 857 (Nov.) 1946.

[2] Frank, H. A.; Seligman, A. M., and Fine, J.: Treatment of Uremia After Acute Renal Failure by Peritoneal Irrigation, J. A. M. A. **130:** 703 (March 16) 1946.

[3] Goodyear, W. E., and Beard, D. E.: Successful Treatment of Acute Renal Failure by Peritoneal Irrigation, J. A. M. A. **133:** 1208 (April 19) 1947.

TECHNIC

The technic employed was that of Fine, Frank and Seligman,[1b] with several slight modifications. Monobasic sodium phosphate was omitted from the irrigation fluid because of the hyperphosphatemia which usually accompanies uremia.[4]

To 19 liters of freshly distilled water in a "pyrex" carboy the following anhydrous substances were added: sodium chloride, 160 Gm.; potassium chloride, 4 Gm.; calcium chloride, 2 Gm.; magnesium chloride, 2 Gm., and dextrose, 30 Gm. The carboy was then autoclaved for ninety minutes and allowed to cool for five or six hours. Simultaneously, in a 2 liter flask, 20 Gm. of sodium bicarbonate was dissolved in 1 liter of distilled water and autoclaved for forty minutes. When both solutions were thoroughly cool, the sodium bicarbonate was added to the carboy to make 20 liters of modified Tyrode's solution. Just prior to use, 10 mg. of the sodium salt of heparin, 1,000,000 units of penicillin and 1 Gm. of streptomycin were added. The remainder of the apparatus was that described by Fine and associates.[1b] A rubber catheter was inserted through a short paracostal incision high in the right flank to function as the inlet tube, while a stainless steel sump drain was placed into the cul de sac through a McBurney incision in the left lower quadrant for use as the outflow tube. It was connected to a suction motor, regulated by a water trap to supply suction at a negative pressure of about 12 inches (30.5 cc.) of water.

TABLE 1.—*Comparison of Peritoneal and Renal Blood Urea Clearances*

	Peritoneal Fluid			Urine					Blood Urea Clearance	
Days	Flow Rate, Cc./Min.	Urea Nitrogen, Mg./100 Cc.	Total Urea, Gm./24 Hr.	Flow Rate, Cc./Min.	Urea Nitrogen, Mg./100 Cc.	NH₃N Mg./100 Cc.	Total Urea, Gm./12 Hr.*	Blood Urea Nitrogen, Mg./100 Cc.	Cc./Min. Peritoneal	Cc./Min. Renal
1	28.0	17.8	15.4	0.021	....	....	....	78.0	6.49	.....
2	15.1	20.4	9.52	0.021	188.0	....	0.12	72.5	4.25	0.035
3	24.5	17.9	13.0	0.052	....	....	0	68.0	6.13	.....
4	24.0	19.7	11.6	0.055	49.2	....	0.08	52.0	9.10	0.052
5	25.6	16.9	13.4	0.151	181.8	....	0.85	41.0	10.55	0.673
6	14.4	29.8	10.3	0.503	67.1	....	1.01	51.5	7.77	0.656
7	....	..	.	0.268	101.0	0	2.91	72.0	....	1.32
8	....	....	....	1.53	135.0	0	6.23	75.0	....	2.76
9	....	....	....	2.30	84.1	0	6.12	75.0	....	2.66
10	....	....	....	2.98	89.4	39.8	11.9	81.5	....	4.55
11	....	....	....	2.32	171.0	44.5	13.3	91.0	....	4.58
12	....	....	..	3.05	151.0	57.1	79.8	83.5	....	7.07
13	....	..	....	3.65	188.2	74.4	24.0	81.5	....	9.80
14	....	....	....	1.49	218.0	58.8	12.7	81.5	....	5.66
15	....	....	....	2.29	207.0	49.0	18.2	73.5	....	5.91
16	....	....	....	2.50	155.0	84.4	16.8	63.5	....	8.61
17	....	....	....	2.29	130.0	84.1	15.1	66.5	....	7.37
18	....	...	....	2.11	137.0	64.4	12.9	67.5	....	6.20
19	....	....	....	1.58	200.0	83.0	13.8	51.0	....	8.27
20	....	....	....	1.94	155.0	95.5	14.4	65.0	....	7.01
21	....	..	....	1.60	187.0	100.0	14.1	70.0	....	6.55
22	....	....	....	1.50	216.0	83.0	14.5	72.0	....	8.52
23	....	....	....	2.82	171.0	33.2	9.9	69.5	....	8.40
24	....	....	....	2.95	....	....	....	45.0	....	....
25	....	....	....	2.00	50.2	58.5	8.7	49.0	....	5.75
26	....	....	....	2.39	87.3	42.1	9.6	54.0	....	5.84
27	....	....	....	4.97	32.8	44.5	4.5	50.0	....	2.92
28	....	....	....	2.78	40.3	41.5	7.0	48.5	....	4.78
29	....	....	....	2.78	255.0	93.8	29.9	40.0	....	17.3
30	....	....	....	3.26	87.0	73.4	16.1	28.0	....	10.5
31	....	....	....	4.50	89.5	9.4	10.9	35.0	....	9.1
32	....	....	....	3.71	82.3	9.5	10.4	37.0	....	8.2

* This includes urea nitrogen in form of ammonia.

TABLE 2.—*Blood Chemistry Determinations During and Following Peritoneal Irrigation*

Day	Blood Urea Nitrogen, Mg./100 Cc.	Nonprotein Nitrogen, Mg./100 Cc.	Creatinine, Mg./100 Cc.	Calcium, Mg./100 Cc.	PO₄, Mg./100 Cc.	CO₂ Combining Power, Vol. %	Chlorides (as NaCl), Mg./100 Cc.	Total Serum Proteins, Gm./100 Cc.	Serum Albumin, Gm./100 Cc.	Hemoglobin, Gm./100 Cc.
1	75.0	.....	...	10.7	6.5	31.7	430.0	..	...	....
2	73.0	107.0	...	8.8	5.4	35.5	460.0	...	...	....
3	68.0	94.0	...	8.8	4.6	31.3	520.0	4.8	2.9	....
4	....	72.0	5.0	9.4	4.1	43.8	490.0	...	...	11.2
5	41.0	.....	5.8	9.1	6.2	42.8	.....	...	...	....
6	51.5	.....	...	8.6	6.9	36.2	490.0	...	...	....
7	72.0	.....	...	...	...	....	.....	5.5	3.3	10.3
8	75.0	98.0	9.5	...	...	36.2	485.0	...	...	....
9	75.0	113.0	9.5	...	...	42.8	470.0	5.8	3.4	....
10	85.0	108.0	8.9	...	...	39.3	.....	6.0	...	....
11	91.0	.....	8.5	...	...	41.9	485.0	5.4	...	8.4
12	81.0	.....	...	...	...	44.9	525.0	5.6	...	....
13	82.0	.....	...	...	...	47.0	404.0	...	...	....
14	82.0	101.0	8.5	...	...	43.8	480.0	...	...	10.6
15	71.0	98.0	...	...	...	40.9	.....	6.6	6.6	....
16	64.0	.....	...	...	...	42.8	480.0	...	...	....
17	67.0	96.0	...	...	...	....	.....	...	...	....
18	68.0	93.0	...	...	...	50.4	460.0	...	...	....
19	54.0	.....	...	...	...	....	.....	...	...	....
20	65.0	.....	...	...	...	....	.....	...	...	...
21	70.0	100.0	...	...	...	48.5	520.0	...	...	....
22	72.0	95.0	..	...	...	....	.....	...	...	....
23	69.5	100.0	...	...	...	49.1	450.0	...	..	....
24	45.0	.....	3.2	...	...	....	.....	...	...	....
25	....	.....	...	...	...	....	.....	...	...	....
26	53.0	.....	...	...	...	50.1	.....	...	...	....
27	....	.....	...	...	...	....	.....	...	...	....
28	48.5	.....	...	...	...	40.5	.....	...	...	....
29	....	.....	...	...	...	....	.....	...	...	....
30	28.0	....	...	...	..	50.4	.....	...	...	....
31	....	.....	...	...	...	....	.....	...	..	....
32	37.5	.....	...	...	...	....	.....	..	...	....

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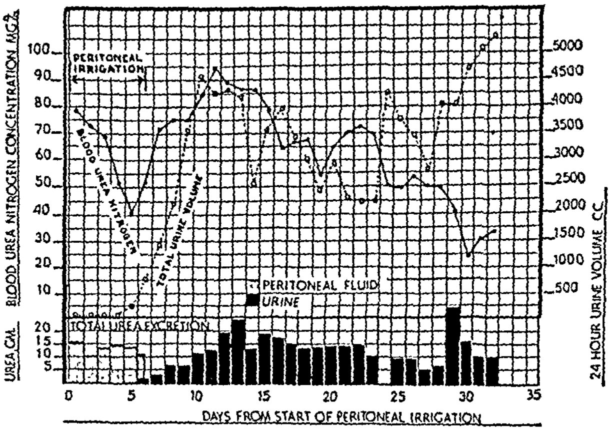
[4] Seligman, A. M.: Personal communication to the authors.

Insertion of both tubes was accomplished in the operating room with the patient under local anesthesia.

The rate of flow was kept at about 2,500 cc. per hour for one day, after which a kink in the inflow catheter and clogging of the Mandler filter slowed down the flow to about 1,500 cc. per hour. The patient was comfortable in a slight Fowler's position and experienced no pain throughout six days of irrigation. Collateral chemotherapy consisted of penicillin 50,000 units every three hours intramuscularly and streptomycin 333 mg. every four hours by mouth for twelve days.

REPORT OF A CASE

The patient was a white bipara aged 32, transferred to the service of one of us (J. W. H.) from her community hospital with a history of having swallowed at least 4 tablets (2 Gm.) of bichloride of mercury about seventy-eight hours previously, in an attempted suicide. It was stated that the patient had experienced a small bloody emesis about fifteen to twenty minutes thereafter. Gastric lavage was carried out about one hour after the mercurial compound was taken. Peripheral vascular collapse had been treated with prompt transfusions of plasma and blood. BAL (2,3 dimercaptopropanol) was rushed to the patient from a neighboring city, but over four and one-half hours elapsed before the first dose could be administered. She received a total of 1,900 mg. of this drug intramuscularly over a sixty-six hour period. During this time the patient had a severe and persistent bloody diarrhea. Parenteral fluid therapy was given daily but the patient was stated to have been completely anuric from the time the poison was taken until she came under our observation three days later.



Showing blood urea nitrogen, total volume of urine and total excretion of urea.

On admission to the New York Post-Graduate Hospital the patient was alert and oriented but uncooperative and depressed, with evidences of a psychotic mental disorder. Heart and lungs were clear. The abdomen was soft and not tender. The temperature was 99.4 F., pulse rate 128, respiration rate 24 and blood pressure 132 systolic and 90 diastolic. The red blood cell count was 4,120,000; hemoglobin 13.0 Gm.; white cell count 16,150, of which 84 per cent were polymorphonuclear cells. The nonprotein nitrogen was 106 mg. per hundred cubic centimeters, while the blood urea nitrogen was 75 mg. per hundred cubic centimeters.

Shortly after admission and about eighty hours after the ingestion of poison, peritoneal irrigation was begun. During the first two days of irrigation the patient passed about 30 cc. of grossly bloody urine each day. This was accompanied by a severe bloody diarrhea. On the first day a 500 cc. blood transfusion and 1,000 cc. of 10 per cent dextrose in water with large amounts of vitamins B and C were administered. A moderately severe ulcerative stomatitis developed, which did not prevent the patient from eating. The stomatitis slowly responded to local treatment. The patient was kept on a full soft diet with carbohydrate supplements in the form of sweet drinks and hard sugar candy, which she took fairly well throughout the period of irrigation.

In an attempt to correct acidosis, on the second day 1,000 cc. of one-sixth molar sodium lactate was given intravenously with no improvement in the carbon dioxide-combining power (table 2). Therefore, on the third day, 22.5 Gm. of sodium bicarbonate in 1,000 cc. of 10 per cent dextrose in water was administered intravenously, very slowly. Subsequently, there was definite improvement of the acidosis. On the second hospital day a significant amount of fluid began to leak around the outflow tube. This persisted to some extent throughout the remainder of the treatment.

Four days after the onset of irrigation, pronounced pitting edema was noted in the dependent portions of the body. Five hundred cubic centimeters of plasma was given in an attempt to ameliorate the severe hypoproteinemia. Digitalization was accomplished with 1.2 mg. of digitoxin divided into two oral doses. Despite the presence of edema, 10 Gm. of sodium bicarbonate were administered by mouth to control acidosis. At the same time the patient began menstruating. Since it became difficult accurately to ascertain the urinary output, an indwelling Foley catheter was inserted at the start of the fifth day. At this time the urine output increased to 217 cc., although the specific gravity and urea concentration remained low. In an attempt to remove some of the edema fluid via the peritoneal route, the irrigating fluid was modified slightly and 1 per cent gelatin was added, while simultaneously 30 Gm. of salt-poor human serum albumin was given intravenously on the fifth day with only slight success. The lungs remained essentially clear to auscultation at all times.

At the end of five and one-half of irrigation (eight and one-half days after ingestion of poison), the output of urine had increased to 725 cc. and the blood urea nitrogen had been reduced to 51.5 mg. per hundred cubic centimeters. Peritoneal irrigation was then discontinued. The red blood cell count at this time had declined to 3,400,000; the hemoglobin to 10.3 Gm.; the white cell count was 15,050. The patient's temperature had never exceeded 100.6 F. Although there was moderate abdominal distention on the fifth and sixth days, it never became a serious problem, nor was there ever any clinical evidence of peritonitis. The patient's stools had been brown in color since the third day but were extremely soft; no further gross blood was noted, although tests for occult blood were positive for several days. Cultures of the outflow fluid were made each day, and remained sterile until the last day of irrigation, when Escherichia coli and nonhemolytic streptococci were found.

After cessation of peritoneal dialysis, the blood urea level rose for five days despite the large volumes of urine which were excreted (the figure). Clinically, however, there was improvement, and the patient was out of bed on the eighth day after admission. Because the kidneys were as yet apparently unable efficiently to conserve base, the patient's carbon dioxide-combining power fell to 36.2 volumes per cent on the eighth day. This state of acidosis successfully was counteracted by administration of 1,000 cc. of one-sixth molar sodium lactate intravenously. Thereafter, acidosis never became a serious problem, although the urine continued to be alkaline in reaction throughout the patient's hospitalization. The specific gravity varied from 1.006 to 1.010 and there was a faint trace of albumin during this entire period. No glycosuria, hematuria or pyuria was noted during the period of recovery.

Digitoxin was discontinued on the ninth hospital day. From the ninth through the thirteenth day the patient's urinary output far exceeded the total fluid intake and her edema entirely disappeared. Blood transfusions of 500 cc. each were given on the twelfth and the thirteenth day because of a decline in the red blood cell count to 2,600,000.

In view of the steadily rising blood urea nitrogen level, an attempt was made to reduce the quantity of nitrogenous excretory end products by reducing the dietary protein to 40 to 50 Gm. daily after the twelfth day. Three hundred grams of carbohydrate was given daily to achieve as much of a "protein-sparing" effect as possible. By the fifteenth day after the start of peritoneal dialysis, the concentration of urea nitrogen in the blood began a slow but progressive decline. On the thirty-third hospital day, the patient was transferred to a mental hospital because of the urgent need of intensive psychotherapy. The renal function was still poor with the urea clearance averaging only 10 to 15 per cent. of normal

COMMENT

Although this patient on admission was not moribund and did not exhibit the signs of severe uremic intoxication, it was evident that the prognosis was poor, despite the use of BAL. If BAL is to achieve optimal results in preventing renal and gastrointestinal protoplasmic destruction, it must be administered within three and one-half hours of the ingestion of bichloride of mercury.[5] In this case BAL was not available for four and one-half hours and failed to prevent profound renal damage.

Anuria of twenty-four hours' duration or more was noted by Hull and Monte [6] in 40 cases of mercurial poisoning. This occurrence carried with it a mortality of 92.5 per cent. If the anuria persisted for three days, the mortality in their series was 100 per cent. In this case anuria was present for over three days, and severe oliguria for four days more. A blood creatinine level of 5 mg. per hundred cubic centimeters was likewise considered of poor prognostic import by these authors. This patient's creatinine rose to a height of 9.5 mg. per hundred cubic centimeters two days after peritoneal dialysis was discontinued, probably a reflection of widespread tissue protein destruction by the mercurial, as well as failure of the damaged tubules to excrete creatinine.

On the other hand, tubular regeneration has been noted as early as three days after the onset of mercurial nephrosis,[7] provided that the patient does not succumb in the meantime to the effects of uremia. For this reason, and also because the patient was still in fairly good physical condition, it was considered that this was an ideal case for peritoneal irrigation. The patient was never comatose or delirious and was able to take a full soft diet by mouth. It was not necessary to restrict the protein intake during irrigation, because of the efficiency of the peritoneal dialyzer in removing the nitrogenous end products of protein metabolism, although after cessation of dialysis, protein restriction was considered necessary so far as the blood urea nitrogen concentration was rising.

The method employed succeeded in removing more than 75 Gm. of urea over the five and one-half day period of operation. The quantity of urea actually removed was probably much greater than this but could not be measured because of the considerable leakage of fluid around the outflow tube. Based on the material collected and analyzed, the daily urea excretion and urea clearances are given in table 1.

We are able to confirm the findings of Fine and his group [8] that peritoneal irrigation can serve as a satisfactory temporary extrarenal pathway of elimination of urea and the other excretory products whose accumulation in the body fluids leads to uremia and death. It is considered that the urea clearances achieved by the peritoneal dialysis in this case could have been increased by running in the fluid at a more rapid rate of flow. It should be noted that promptly after discontinuing irrigation the blood urea level rose from 51.5 to 72 mg. per hundred cubic centimeters and eventually to 94 mg. despite urine output volumes as high as 4,500 cc. per day. One factor contributing to this elevation of blood urea nitrogen was the presence of considerable edema fluid which probably served as a temporary "reservoir" of urea, and similar diffusible excretory products with which the poorly functioning renal tubules were forced to contend. Probably the most important factor in this case, of course, was the persistence of tubular damage with fixed urinary specific gravity and low urine urea concentration.

The most serious difficulty encountered in the management of this case was the treatment of acidosis in the presence of hypoproteinemia and pronounced dependent edema. Despite the danger of pulmonary edema, the patient was treated with intravenous or oral sodium bicarbonate whenever a low carbon dioxide-combining power seemed to warrant such treatment. It was noted that intravenous sodium lactate therapy was not successful in combating acidosis while the peritoneum was being irrigated, although it served its purpose well after irrigation was discontinued. The reason probably was that the lactate diffused out into the peritoneal fluid before the body had an opportunity to metabolize it. Sodium bicarbonate was effective during the irrigation because the irrigating fluid contained the bicarbonate ion, thus preventing great losses by this route. It is felt that further investigational work needs to be carried out before control of both edema and acidosis may be achieved by altering the irrigating fluid to fit each case individually. However, as presently constituted, the irrigation fluid was effective in keeping the blood chloride and calcium concentrations at normal levels in this case.

Finally, it is important to emphasize that this method is a formidable one and should be used only in cases in which a fatal result by conservative treatment seems beyond reasonable doubt. The great danger, of course, is the development of peritonitis.[9] E. coli were cultured from the outflow fluid in 3 of the 4 cases reported by Fine, Frank and Seligman,[1b] although clinical peritonitis did not occur. In this patient, E. coli and nonhemolytic streptococci were cultured on the last day of irrigation. The frequent occurrence of E. coli would indicate that the origin of the peritoneal contamination is probably due to migration of organisms through the wall of the intestinal tract. Severe distention and ileus may enhance such migration. We have attempted to counteract this source of peritoneal contamination by giving streptomycin orally, but cannot determine on the basis of this experience alone whether the procedure was of value. It has been pointed out that prophylactic use of streptomycin in the irrigating fluid leads to the rapid development of resistance to the drug on the part of the organisms.[9a] The problem of peritonitis constitutes the most serious limiting factor in the use of peritoneal dialysis as a clinical therapeutic method.

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[5] Longcope, W. T., and Luetscher, J. A., Jr.: Clinical Uses of 2,3,-Dimercaptopropanol (BAL): The Treatment of Acute Mercury Poisoning by BAL, J. Clin. Investigation **25**: 557 (July) 1946.

[6] Hull, E., and Monte, L. A.: Bichloride of Mercury Poisoning: A Statistical Study of Three Hundred and Two Cases, South. M. J. **27**: 918 (Nov.) 1934.

[7] Fishberg, A. M.: Hypertension and Nephritis, ed. 3, Philadelphia, Lea & Febiger, 1934.

[8] Footnotes 1 and 2.

[9] (*a*) Fine, J.: Peritoneal Dialysis, Lancet **1**: 120 (Jan. 18) 1947. (*b*) Fine, J.; Frank, H. A., and Seligman, A. M.: Peritoneal Dialysis, ibid. **1**: 577 (April 26) 1947.

CONCLUSION

Peritoneal irrigation has been successfully applied to the prevention of uremia in a patient with anuria due to mercurial nephrosis.

NOTE.—Seven months postoperatively the patient still had intermittent mild azotemia, with 20 to 30 mg. of urea nitrogen and 2 to 3.5 mg. of creatinine. Ten months postoperatively the chemical content of the blood was normal. She had returned to her home from a psychiatric hospital following treatment, and she was carrying on her household duties with no apparent physical or mental difficulty.

ARTIFICIAL KIDNEY

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It is impressed on every physician occasionally and on some ill fated patients at short intervals that renal function is a vital one. The sudden onset of acute anuria following blood transfusion, the acute toxemias of pregnancy and otherwise, following certain poisonings or the administration of sulfonamide drugs, etc., sets off an alert in the attending physician. With reasonable luck, many of these patients will recover function within a few hours or days, when the "stand easy" signal arrives, with great relief to the physician. However, if such fortuitous circumstances do not establish themselves, after the fifth or sixth day of anuria the physician is faced with an ominous set of circumstances over which he has little control. There are the average and orthodox methods of treatment, but, by and large, these have relatively little effect in changing the course of events which are indicated by the acute anuria. At this stage the physician in attendance invariably questions himself whether there is not some way of escape from the fatality which must ensue if the anuria persists. Time and again physicians have asked themselves, if some artificial kidney could be applied at this stage, what an important change it might make in the course of the individual patient.[1]

It was with great satisfaction, therefore, after many years' work on attempting to replace renal function by artificial means, that we were able to produce a machine (fig. 1) which will reproduce the function of the kidney, will reduce the nonprotein nitrogen substances in the blood stream and tissue fluids as well as the fixed cells themselves and remove many, if not all, the toxic substances that cause the fatal result in the cases of anuria. Obviously this machine can function only as a temporary measure. It was assumed, however, if the patient could be prevented from dying of toxemia, that eventually the kidney, in the cases of acute disease, might be given time to repair itself sufficiently that it might begin to take over, and finally restore natural renal function. Experimentally with uremic animals we were able to provide this effect, and in patients as well the toxemias have been reduced so that unquestionably several patients have survived following treatment with this machine who otherwise were doomed to nonsurvival from a state of acute uremia from anuria.

My original efforts in this direction were in an attempt to transplant kidneys from one animal to another in the same species, then from one species to another. It was demonstrated about fifteen years ago[2] that the renal function could be taken over by a transplanted kidney and that an animal with his own kidneys removed could live for a time on the function of the transplanted kidney. At a later stage different methods of attempting to dialyze the blood of the uremic animal were made, and it was finally with satisfaction that we were able to use a cellulose membrane with the proper apertures so that the crystaloids, the nonprotein nitrogen substances and toxic substances would escape whereas the large molecules, such as proteins, hormones such as pituitrin, epinephrine, insulin and heparin, would not escape (table 1). The problems in this work came under the following headings:

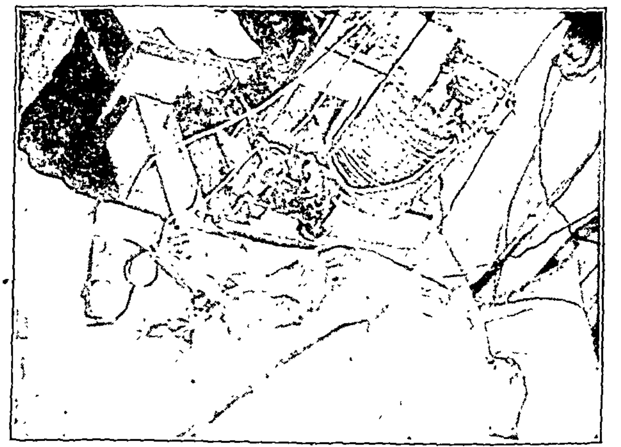

Fig. 1.—Photograph of artificial kidney in use on a patient.

1. A method of removing the blood for dialysis, then returning it to the subject presented the first problem. Many experiments were done and many methods used; we began by using arterial blood with arterial blood pressure as the circulating pressure, then returning it through the venous system. Finally, however, the present method, which is satisfactory and has worked rather well in clinical patients, has been to remove the blood from the inferior vena cava and return it through the opposite iliac vein. By this method a sufficient flow of blood can be obtained without obstruction and there is no ill effect either on the experimental animal or on the patient.

2. The method causing this blood to circulate was experimented with. The first efforts were by removal of volumes of blood from the subject, dialyzing it and then returning it as a separate transfusion; this worked satisfactorily but it was laborious and was too slow in its operation. For that reason a method of continuous circulation of the blood through a tube seemed to be ideal and when ultimately developed worked satisfactorily. At the present time an efficient pump for

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Prof. H. B. Van Wyke, Prof. J. McClelland and Dr. W. G. Cosbie provided the patients whose records of treatment are reported. Laboratory space and some chemicals were furnished by Prof. Andrew Hunter, of the Department of Pathological Chemistry. The Department of Experimental Research provided experimental animals and space in which to work.

[1] Abel, J. J.; Rowntree, L. G., and Turner, B. B.: On the Removal of Diffusible Substances from the Circulating Blood by Means of Dialysis, Tr. A. Am. Physicians **28**: 51, 1913; J. Pharmacol. & Exper. Therap. **5**: 275 and 611, 1913-1914. Thalhimer, W.: Artificial Kidney and Experimental Exchange Transfusion for Reducing Azotemia, Proc. Soc. Exper. Biol. & Med. **37**: 641, 1938. Murray, G. D. W.: Heparin in Thrombosis and Blood Vessel Surgery, Surg., Gynec. & Obst. **72**: 340, 1941. Kolff, W. J.: The Artificial Kidney, Kampen, Holland, J. H. Kok N. V., 1946.

[2] Murray, G. D. W.: Heparin in Thrombosis and Embolism, Brit. J. Surg. **27**: 567, 1940.

causing this circulation, removing the blood from the vena cava, circulating it through the apparatus and then returning it, is a satisfactory method. It will continue to function for hours on end without difficulty and, provided the blood in the apparatus as well as that in the subject being treated is adequately heparinized, there are no difficulties whatever.

3. The next problem was one of dialyzing the membrane to produce the desired effect and not to produce any untoward effect. It was demonstrated early in the work that if such a membrane was surrounded only by tap water the experimental animal quickly showed ill effects from the procedure. There were pronounced ill effects on respiration and blood pressure, and within ten to fifteen minutes the animal succumbed from loss, or addition to, his circulation of important substances. However, it was found that provision of sodium chloride solution as the bath surrounding the dialyzing membrane caused some improvement, and finally by the addition of various substances, including the list in table 2, the dialysis could be carried on for hours or days without causing any ill effect in the animal or on the patient clinically. It was found that the crystaloids, sugar and water escaped rapidly through the membrane. By adequate buffering of these substances in the surrounding bath or dialysate, it was possible to prevent any ill effect.

Table 1.—*Showing Changes in Nonprotein Nitrogen in Blood of Dog During Two Hours' Perfusion by Artificial Kidney*

	Blood Nonprotein Nitrogen Mg./100 Cc.	Plasma Content, Mg./100 Cc.
Blood, after 20 minutes' perfusion, going into apparatus	39.5	110
15 Gm. urea in saline solution added; blood, after 80 minutes, going into apparatus	130.2	115
Blood, after 80 minutes, coming out of apparatus	122.6	109
Blood, after 2 hours, going into apparatus	98.0	112
Blood, after 2 hours, coming out of apparatus	82.4	112

Table 2.—*Formula to Make 18 Liters of Perfusion Fluid*

Ingredient	Amount, Gm.
Sodium chloride	114
Calcium chloride	1.8
Magnesium chloride	1.8
Sodium phosphate	0.9
Dextrose	27.0
Potassium chloride	3.6
Sodium carbonate	18.0

The diagram (fig. 2) shows the simple principles of this machine as it works in action. It was discovered by doing estimations of nonprotein nitrogen on the dialysate that the nonprotein nitrogen substances escaped fairly rapidly though the dialyzing membrane and their accumulation in the dialysate slowed up the rate of dialysis. By changing the dialysate at short intervals the rate of dialysis is kept at a relatively high speed. It was demonstrated that with a length of about 35 feet (10.7 meters) of this tubing about 0.75 Gm. of nonprotein nitrogen substances will pass through this membrane each hour. The result of this on the uremic animal or on the clinical patient was striking. From a state of uremia, the subject returned to a state of more normal health.

With this apparatus it was possible to fractionate the blood of a toxic animal or patient, and it gave an opportunity for study of the substances which were causing the toxemia. We have demonstrated experimentally that, if an animal was given an injection intravenously of urea which raised the level at least five times above that of the level of an animal dying of uremia, it caused little ill effects. With the machine working, the urea could be removed again without difficulty (table 1).

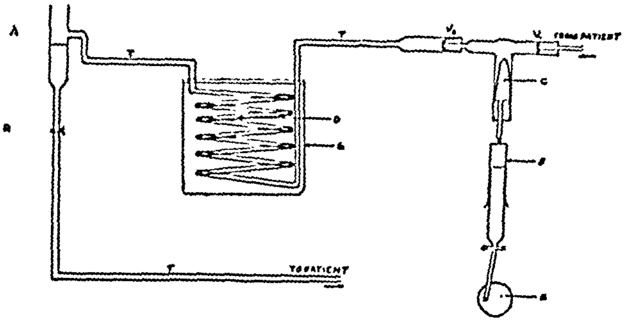

Fig. 2.—Schematic diagram of artificial kidney.

This suggests that the substance causing the disease and illness of the patient in uremia is not the nonprotein nitrogen substances but is comprised of other substances which are removed by this membrane.

Experimentally we have demonstrated that when an animal is having a deficiency of oxygen, produced in various ways, a fairly large quantity of oxygen can be supplied by this machine. Moreover, the blood stream of the animal could be supplied with almost any desired quantity of sugar or other crystaloids by addition of these substances to the dialysate, but this requires a great deal more investigation. There was some evidence to suggest that by use of this apparatus various types of medication and treatment might be given for various conditions such as traumatic shock or following severe burns.

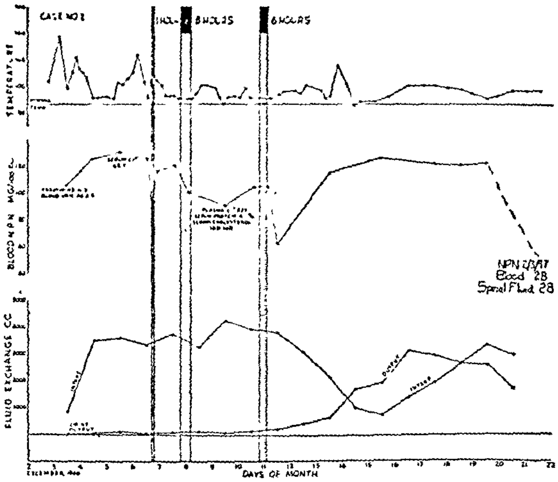

Fig. 3.—Showing the effects of dialysis in a uremic patient.

While we have treated several clinical patients with this apparatus, there are 3 cases in particular which are reported herewith to illustrate the function and effect of this apparatus.

REPORT OF CASES

Case 1.—The patient was 26 years of age. After an attempt at inducing abortion, acute anuria developed. The patient was seen on the ninth day, after treatment by the physicans, the gynecologists and the genitourinary surgeons had been discontinued because it was thought that the patient had no hope of surviving. Professor Van Wyck enabled us to see this patient. At that time she had pronounced uremia. She was semicomitose and having minor uremic convulsions. She was secreting from 4 to 30 cc. of urine only, in twenty-four hours, and chemical analysis of the blood (fig. 3) showed uremia.

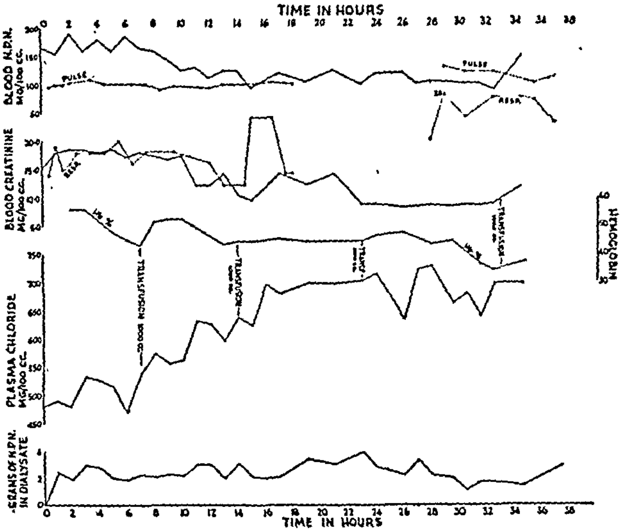

Fig. 4.—Showing chemical changes in the blood of patient during dialysis over a period of thirty-six hours, with removal of 72 Gm. of nonprotein nitrogen

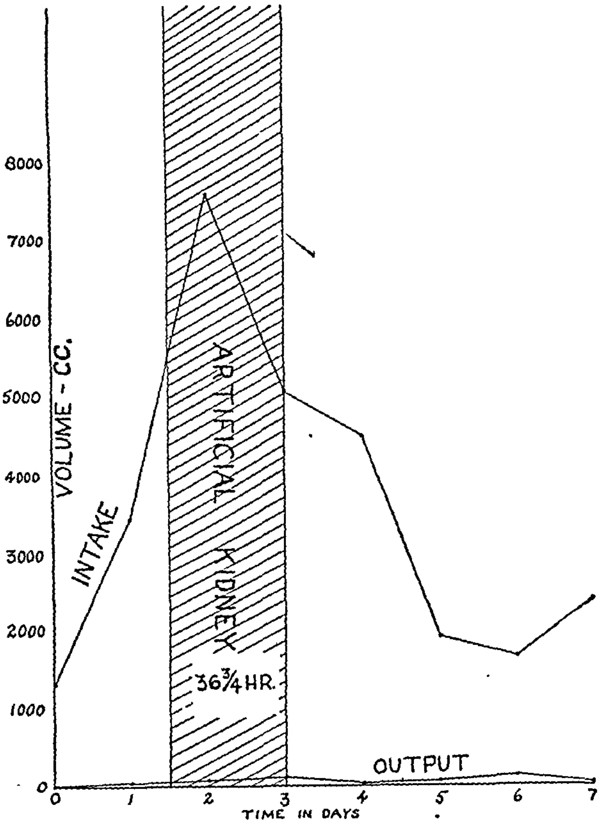

Fig. 5.—Showing fluid exchange of patient previous to, during and following treatment with the artificial kidney (case 2).

Even though the situation seemed hopeless, it was decided to attempt dialysis with this artificial kidney. Cannulas were placed through the iliac vein on one side reaching into the inferior vena cava, from which the blood was removed. It was circulated through the machine and passed into the iliac vein on the opposite side. The patient was heparinized and the blood entering the machine was heavily heparinized. The first run was carried on for one hour, during which 330 mg. of nonprotein nitrogen substances was removed, on estimations done on the dialysate. At this time the patient had a chill and the operation was discontinued. The patient was considerably improved after this. However, forty-eight hours later she had relapsed again and was in a comatose condition. Another dialysis, started at this time, was carried on for eight hours. During this time 6.6 Gm. of nonprotein nitrogen substances was removed, and as a result of this the patient's condition was changed in an amazing fashion. She had become rational, had normal responses and would drink some fluids; everything seemed to be improved. However, there was still no secretion of urine beyond the few cubic centimeters each twenty-four hours. Following the next forty-eight hours the patient was again back in the condition of extreme uremia, and another run of seven hours was undertaken with the artificial kidney. Again the patient's general condition was greatly improved. She was again rational, and things were well on the mend. The day following discontinuation of this run, the patient began to secrete urine; on the day following that, she secreted 4,000 cc., and from then on she made a continuous and rapid recovery. Nonprotein nitrogen in the blood was followed, as well as in the cerebrospinal fluid and in the ascitic fluid in the peritoneal cavity throughout the investigation. It was demonstrated that nonprotein nitrogen in the blood, the spinal fluid and the ascitic fluid diminished rapidly; finally the ascitic fluid disappeared and no further estimations were possible here. Within about one month of the time that the patient was in acute uremia, she was in perfect health and was able to return to work at a clerical job. The last renal function to regain its normal level was that of concentration of urine. At the end of a month she could concentrate on a water two hour test only up to a specific gravity of 1.016. However, at the end of two months the concentration was up to 1.022 and as time progressed beyond this the concentration reached a higher level still. At the present time no abnormality is noted in the urine, the blood pressure or the patient generally.

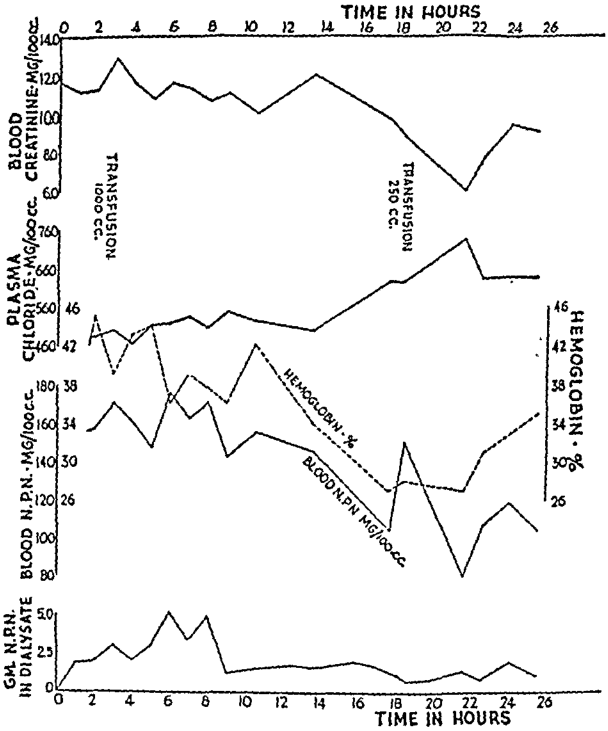

Fig. 6.—Showing chemical changes in the blood during treatment with the artificial kidney (case 3). Total amount of nonprotein nitrogen removed in twenty-five and one-half hours was 49.4 Gm.

Case 2.—Opportunity to see Mrs. C., age 37, was provided by Dr. J. McClelland. This patient had bilateral renal calculi, of which the left had been removed about one year previously. Eight weeks previously she gave birth to a normal child and had no renal complications during or following pregnancy. Fairly suddenly she began to have oliguria, and it is uncertain whether a recent infection of the upper respiratory tract might have been a cause for this.

On admission to the hospital the patient was in poor condition. She had a period of about twelve hours when there was no blood pressure to be demonstrated, no pulse and a severe heart block with a rate of 18 per minute. After suitable medication, the blood pressure rose to 150 systolic and 86 diastolic, but the patient did not regain consciousness, and urinary secretion was only a few cubic centimeters.

After much hesitation because of the poor condition of the patient and the uncertainty regarding the state of the chronic lesion of the kidneys, a decision was made to attempt a dialysis on the artificial kidney.

A successful run, lasting thirty-six hours continuously, was carried out. Fifty-two feet (15.8 meters) of tubing was used. During this time 72 Gm. of nonprotein nitrogen was removed and the charts show the effect on the chemical composition of the blood. In spite of this, the patient did not regain consciousness. It was thought that perhaps the prolonged period (twelve hours) of absence of blood pressure might have caused permanent injury to cerebral cortex. In spite of this, the patient lived seven days; the output of urine during that time is shown in figure 5.

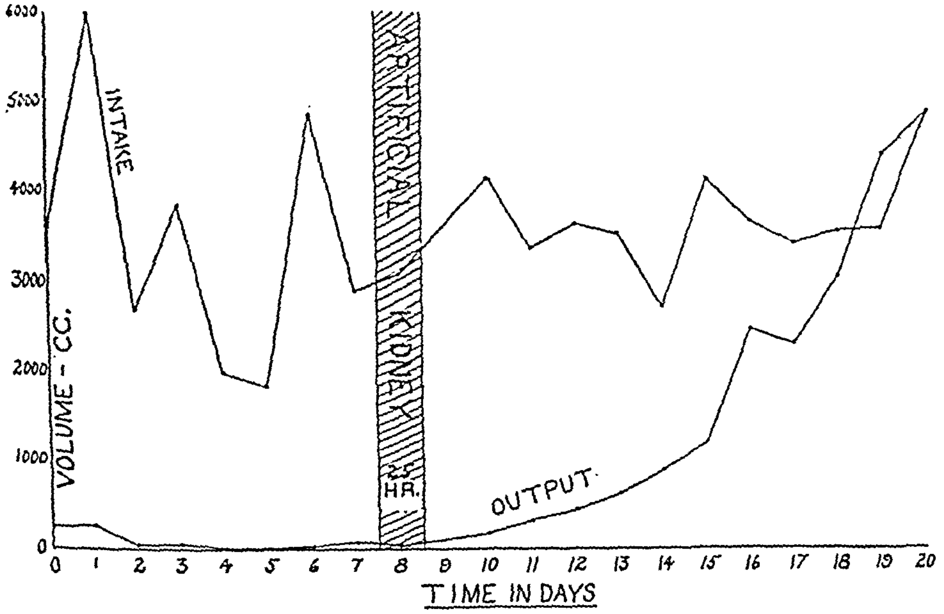

Fig. 7.—Showing fluid balance previous to, during and following treatment with the artificial kidney. The shaded area represents the time of dialysis.

Case 3.—Opportunity to see Mrs. McL., aged 40, was provided by Dr. J. Cosbie.

After caesarean section when a blood transfusion was given, the patient showed oliguria, the urine contained hemoglobin and hematin. She passed only 3 to 5 cc. of urine daily for eight days, at which time the blood nonprotein nitrogen was 0.179 mg. and the patient was showing signs of uremia.

She was then treated for twenty-six hours in the artificial kidney. Fifty-four feet (16.4 meters) of tubing (fig. 6) was used, and 49.4 Gm. of nonprotein nitrogen was removed from the blood. The following day the urinary secretion increased to 210 cc.; the daily increase, up to 5,730 cc. on the twelfth day, is indicated on the chart. The patient gradually improved clinically and has made an excellent recovery. Renal function has returned to normal and the patient is in normal health.

CONCLUSIONS

A method of dialyzing a patient's blood for removing of nonprotein nitrogen as well as toxic substances has been produced which functions satisfactorily and can be used safely.

Clinical Notes, Suggestions and New Instruments

STREPTOMYCIN THERAPY

Effects on Fetus

ERNEST H. WATSON, M.D.
and
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Two patients, both in the second trimester of pregnancy, received 2 Gm. of streptomycin (0.4 Gm. five times per day) for ninety-five and ninety days, respectively. The blood serum levels ranged between 12 and 25 mg. per cubic centimeter. The first (V. B.) had had a nephrectomy on the right side four years previously, for far advanced caseous renal tuberculosis, and on admission showed evidence of progressive tuberculous involvement of the left kidney and bladder. The second (J. S.) had had primary pleural effusion followed just prior to admission by rapidly progressive far advanced hematogenous pulmonary tuberculosis. In each case streptomycin was felt to offer the only hope for recovery. Because the pregnancies were in the second trimester, it was felt safer to allow them to continue rather than to resort to interruption.

At the time streptomycin therapy was started, V. B. was five and a half months pregnant and J. S. four months pregnant. Both showed improvement during and following streptomycin therapy, though vestibular function was completely lost in each patient. In each case examination of the placenta revealed no gross or microscopic abnormalities.

The patient V. B. was delivered of a female infant by cesarean section at what was calculated to be approximately eight and a half months of pregnancy. The infant breathed and cried at once. The birth weight was 5 pounds 6 ounces (about 2,438 Gm.). The occipitofrontal circumference of the head was 12¼ inches (31.02 cm.) and the circumference of the chest was 11¾ inches (28.13 cm.). This infant was given unusually close observation, but nothing abnormal in its neonatal behavior was noted. She was on demand bottle feeding after 48 hours of age and by 3 weeks of age had reached a weight of 6 pounds (about 2,722 Gm.)—a gain of 10 ounces (about 284 Gm.) over birth weight. Reactions to Kahn and tuberculin tests were negative at 10 days of age, and the reaction to the tuberculin test repeated at 6 months of age was negative. Roentgenologic observations of the chest at 6 months were normal. It was evident from early infancy that the child could hear. There was no nystagmus or other neurologic abnormality to indicate vestibular involvement. This child was 9 months of age at the time of writing. She was able to sit up, play with objects and in general behaved in a normal fashion. She was regarded by several pediatricians and by other attendants as a normal infant.

The patient J. S. delivered a 6 pound 9 ounce (about 2,523 Gm.) boy spontaneously after medical induction at approximately the ninth month of gestation. The infant measured 19 inches (47 cm.) in length; the occipitofrontal circumference of the head was 13¼ inches (33 cm.) and the circumference of the chest was 13 inches (32 cm.). General examination revealed no abnormalities, and it was determined rather early that the infant could hear. No abnormalities were observed in a roentgenogram of the chest. Kahn and routine laboratory tests elicited negative reactions. Considerable regurgitation was encountered for the first two weeks of life, leading to a consideration of several possible diagnoses, but the infant gradually regurgitated less, and by the third week of life normal gain in weight was observed. This boy was followed closely for nearly a year and at the time of writing was regarded as entirely normal. At 10 months he was 28¼ inches (71.76 cm.) in length, weighed 20 pounds (about 9,072 Gm.) and had circumferences of the head and chest of 18 inches (45.72 cm.) each. These are normal measurements. He sat up well, played with objects with dexterity and normal neuromuscular control.

CONCLUSIONS

We realize the danger of drawing conclusions from 2 cases, but thought it would be of interest to report that streptomycin administration during the second or third trimesters of pregnancy did not appreciably harm the infant in 2 instances. We would be hesitant to advise administration of streptomycin during the first trimester because of the generally accepted sensitivity of the fetal structures in the anlage stage during that period. We would welcome further information on the condition of infants born to mothers receiving streptomycin during pregnancy.

Council on Physical Medicine

REPORT OF THE COUNCIL

The Council on Physical Medicine has adopted and authorized publication of the following report as a revision of its previous statement "Acceptance of Ultraviolet Lamps for Disinfecting Purposes."[1] HOWARD A. CARTER, *Secretary.*

ACCEPTANCE OF ULTRAVIOLET LAMPS FOR DISINFECTING PURPOSES

PRESENT STATUS

This article represents an analysis of the present status of the proposed use of ultraviolet lamps for disinfecting purposes, indicating the probable degree of effectiveness that may be expected in the various applications, and a recommendation of supervisory organizations (state, county, municipal) under whose purview such uses appears to belong. This analysis is followed by a statement of the Council "Requirements for Acceptance of Ultraviolet Lamps for Disinfecting Air."

In reconsidering the previous statement[1] the Council reaffirmed its decision to accept ultraviolet lamp devices only as adjuvants or supplements to other methods of disinfecting air in hospitals, nurseries and operating rooms, where the population can be controlled.

Perusal of recent advertising literature and reports, issued by manufacturers, indicates that the use of ultraviolet lamps for disinfecting purposes is proposed for a wide range of applications (dairy and poultry industry; irradiation of meat, beverages, etc.) that are outside the purview of the Council on Physical Medicine.

Under the Council's rules the acceptance of any device by the Council may not be used to promote the sale of such device for uses that are not specifically indicated by the Council's acceptance.

Sales promotion for installation of ultraviolet disinfecting lamps, for applications outside the Council's purview, must not include references to applications accepted by the Council.

I. ANALYSIS OF PRESENT STATUS OF ULTRAVIOLET LAMPS FOR DISINFECTING PURPOSES

After due consideration of the present status of the use of ultraviolet radiation as a germicide, in consultation with bacteriologists, physicists, chemists, ventilating engineers and other scientists, the Council on Physical Medicine[1] promulgated its first regulations for acceptance of ultraviolet lamps for use as an adjuvant in the disinfection of air.

It was then noted, and it continues to be true to this day, that a lamp used for disinfecting purposes is a single unit in an installation and that compliance of the ultraviolet output of a single lamp unit with the Council's requirements does not insure adequate radiant disinfection or the safety of the occupants of the room in which an installation of such lamps is in actual use. Obviously the manufacturer and distributor of such lamps, as well as the superintendent of the hospital, must assume some responsibility for the adequacy of the lamp installation for the purposes of radiant disinfection of the air and for the adequacy of the protection from injury of the occupants of the space irradiated. Concerning these questions the Council cannot undertake supervision or assume responsibility for the satisfactory performance of any particular installation. While much progress has been made in protecting the occupants, the most frequent complaint that comes to the attention of the Council is injury by ultraviolet burns and conjunctivitis caused by improperly installed ultraviolet lamp fixtures. The Council therefore recommends that, before occupancy of the beds and cubicles, measurements be made to determine that the ultraviolet intensities do not exceed the values specified in this acceptance.

The total amount of direct and scattered ultraviolet radiation incident on the occupants must be kept below the level that will produce conjunctivitis, erythema and any other injurious physiologic effects that may arise from prolonged irradiation. This requirement should be met by a suitable arrangement of the lamp fixtures and light baffles and not by requiring the occupants of hospital wards and nurseries to wear glasses and a special covering of the parts of the body (face, hands) normally uncovered. Recently the attention of the Council was called to a drying and roughening of the skin of some of the nurses and infants in a nursery (caused by the slow photochemical action of diffusely reflected ultraviolet radiation) that was remedied by painting the walls and ceiling with a decorative, light blue paint that absorbed these rays. The Council's specification of the maximum allowable intensity for continuous exposure to ultraviolet radiation is based on measurements in this nursery after painting the walls and ceiling. Recent developments indicate that reflected ultraviolet intensities in excess of that specified by the Council should be remedied by painting all ordinary and all perforated acoustic ceilings with a standard oil paint or by painting nonperforated acoustic materials with a coat of ordinary glue wall size.

The efficiency of the emission line 2,537A (angstroms) in producing an erythema is very high and, in contrast, the efficiency of this emission line in producing tan is very low.[2] As a result of this slow-acting protective mechanism (tanning, skin pigmentation) the occupant of the room may suffer severe burns.

The data governing the Council's Acceptance of Sun Lamps[3] show that exposure to an intensity of 36 microwatts per square centimeter of radiation of wavelength 2,537A produces an erythema in about fifteen minutes. If the reciprocity law holds for very low intensities and long exposures, then the total intensity of the ultraviolet radiation (diffusely reflected from the walls and fixtures and emanating directly from the lamp) incident on the occupant for seven hours or less should not exceed five-tenths microwatt per square centimeter ($0.5 \mu W/cm.^2$) and for continuous exposure (twenty-four hours a day) should not exceed 0.10 microwatt per square centimeter[4] of wavelength 2,537A. How to design the lamp installation to meet the requirements for adequate disinfection of a room and at the same time protect the occupants is a problem for solution by the sanitary engineer.

At the present juncture the design and installation of ultraviolet lamps in their fixtures for disinfecting purposes is empiric and the adequacy of disinfection by any given installation of lamps must be judged by clinical experience. For example, in connection with the first Acceptance[1] clinical evidence was submitted to the Council showing that, in a scarlet fever ward (size about 60 by 27 by 11 feet) containing sixteen cubicles, four lamp units suspended over the central corridor, each lamp unit emitting a radiant flux of 30 microwatts per square centimeter at 1 meter, were found inadequate; but eight lamp units in the ward, each unit protecting two cubicles, and a ninth unit at the entrance, prevented cross infection. This is a rather high intensity (requiring twenty minutes calculated time to produce a minimum perceptible erythema) incident on a person of average height, standing directly under a lamp fixture suspended from a ceiling of average height.

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[1] Acceptance of Ultraviolet Lamps for Disinfecting Purposes, J. A. M. A. **122:** 503 (June 19) 1943.

[2] Luckiesh, Matthew, and Taylor, A. H.: Production of Erythema and Tan by Ultraviolet Energy, J. A. M. A. **112:** 2511 (June 17) 1939.

[3] Acceptance of Sunlamps, J. A. M. A. **102:** 42 (Jan. 6) 1934; **114:** 325 (Jan. 27) 1940.

[4] The accuracy of this value is confirmed by tests recently reported by Anderson, W. T.: Arch. Phys. Med. **28:** 705 (Nov.) 1947.

Experience shows that an ultraviolet lamp, mounted in a fixture that shines downward (a "light curtain") in a corridor, is a potential hazard from burns, especially on the calves and ankles of the attendants. Present day disinfection is principally by irradiation of the upper air of the room with fixtures attached on the side walls, shining crosswise, with minimum intensities incident on the ceiling, involving no direct radiation downward to the face level of the attendants in the room Hence, enough fixtures should be used to provide an average ultraviolet intensity of 20 to 25 microwatts per square centimeter throughout the whole irradiated area to disinfect the area completely in one to two minutes and to maintain an adequate disinfection while the lamps are in operation. This is a matter of engineering design, beyond the Council's purview.

PHYSICAL DATA ON DISINFECTING LAMPS

Experimentally, equal amounts of energy of different wavelengths being applied, it is found that the spectral band at 2,652A appears to produce the maximum bactericidal action and that the emission band at 2,537A is about 75 per cent as effective (on Escherichia coli). This difference in effectiveness is negligible in the present considerations because in readily obtainable sources of germicidal radiation, especially in the low vapor pressure (high voltage) mercury discharge tube, which is well adapted for killing micro-organisms, the ultraviolet radiant power of wavelength 2,652A is less than 0.2 per cent of that of wavelength 2,537A, the resonance emission band that dominates the whole ultraviolet spectrum of this type of lamp. Thus the use of a lamp emitting principally the wavelength 2,652A is impracticable.

Over 90 per cent of the total biologically effective ultraviolet radiation of wavelengths shorter than 3,132A emitted by the low pressure mercury discharge (whether in quartz or in a transparent glass tube) is concentrated in the emission line at 2,537 A. For this reason the emission line at 2,537 A, logically and by common consent, is taken as the standard of homogeneous ultraviolet radiation for evaluating the ultraviolet output of germicidal lamps, just as the wavelength 2,967A in the high vapor pressure (low voltage) mercury arc is taken as the standard of homogeneous ultraviolet erythematogenic and antirachitic radiation in evaluating the ultraviolet output of therapeutic lamps.[3]

The low pressure mercury discharge in a suitable glass tube or in a suitably filter-jacketed quartz tube which readily transmits the strong, highly germicidal emission line at 2,537A but is opaque to wavelengths shorter than about 2,200A (that generate ozone) appears suitable to supplement other means of disinfection when operated under controlled conditions and limited to certain types of applications. In other words, the room must be relatively free from dust and infecting bacteria, without the use of ultraviolet disinfecting lamps. Ultraviolet radiation is not a substitute for cleanliness.

From the evidence available it appears that a minimum of 5,000 to 10,000 microwatt seconds per square centimeter (μW sec./cm.^{2} or 50,000 to 100,000 ergs/cm.^{2}) of homogeneous radiation of wavelength 2,537A is required to produce adequate (practically 100 per cent) killing of micro-organisms, especially bacteria. This value may, perhaps, be lower for air, depending on the amount of dust and suspended droplets. With an exposure of fifty to one hundred seconds this will require an intensity of 100 microwatts per square centimeter.

The Council has adopted 100 microwatts per square centimeter of homogeneous radiation of wavelength 2,537A as the unit of germicidal intensity (G. U.); that is, 1 G. U. = 100 μW/cm.^{2} of radiation of wavelength 2,537A.

Since the ultraviolet emission from the low vapor pressure mercury discharge tube is practically homogeneous radiation of wavelength 2,537A, such a lamp can be readily calibrated in absolute value and used as a standard. As noted in the foregoing, the intensity at 1 meter may be only one fifth of the Council's unit, or 20 microwatts per square centimeter, for safety to the occupants, provided sufficient lamp units are used.

SCOPE OF THE COUNCIL'S ACCEPTANCE OF ULTRAVIOLET LAMPS FOR DISINFECTING PURPOSES

The Council's first specifications of "Acceptance" were promulgated after careful consideration to the feeling, expressed by manufacturers vitally concerned in the matter, that the general acceptance of the use of ultraviolet radiation as a sanitary agent may necessitate some form of regulation and that ultraviolet generating units offered to the public and medical profession may be classed with antiseptic agents requiring a degree of control of their potency and keeping qualities.

In the meantime, apparently to capitalize on the dramatic appeal to the public and in some instances on a liberal interpretation of a limited amount of statistical data, the use of ultraviolet lamps is proposed for a variety of disinfecting purposes far exceeding the purview of the Council on Physical Medicine, and involving consideration by state, county and municipal health boards, sanitary commissions and safety engineers, who can supervise, follow up and enforce their requirements.

It is not the intention of the Council to evade its responsibility, and, as in the past, it intends to report on the possibilities and limitations of devices and procedures offered for healing purposes, including the use of ultraviolet radiation.

The procedure of disinfection by ultraviolet radiation is too new, too complex and apparently too uncertain, where virulent organisms (e. g., typhoid) may be concerned in spreading epidemics, to warrant wide unsupervised use. Moreover, in view of the use that would be made of its "Acceptance" for advertising purposes; also the legal implications involved, and the precedent that would be established in the preparation of serums, blood irradiation, and so on, the Council cannot be expected to accept devices designed for the unrestricted use of ultraviolet radiation for disinfecting purposes where conditions cannot be controlled and where the effectiveness is far below the maximum (100 per cent).

It is understandable why a manufacturer desires to establish the widest possible application of a new device. In the present instance the variety of proposed applications of ultraviolet radiation for disinfecting purposes is unprecedentedly large in comparison with the three medical applications (hospitals, nurseries and operating rooms) that, as will be noted presently, fall within the Council's purview. If the advertising matter issued by a lamp manufacturer and by a lamp fixture manufacturer includes all contemplated applications in one general folder or brochure, the Rules of the Council will be violated because nonaccepted procedures will be advertised with accepted procedures.

Herewith follows an analysis of some of the proposed applications of ultraviolet radiation as a disinfectant and a statement of *the specific applications that appear to fall within* the Council's purview.

In its first "Acceptance"[1] the Council reported the advantages and disadvantages of the use of germicidal ultraviolet radiation for sterilizing purposes which are summarized in the 1941 issue of "The Chemical Action of Ultraviolet Rays," by Ellis and Wells, second edition, by Francis F. Heyroth[5]; also in the researches of Koller,[6] who found that while sterilization of glassware and dishes is possible by means of ultraviolet radiation it was extremely important to start with fairly clean surfaces. Practically the same results are reported in an investigation by Appling and Tanner.[7] This was confirmed at that time in unpublished reports of tests made by the United

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[5] Ellis, C., and Wells, A.: The Chemical Action of Ultraviolet Rays, revised by F. F. Heyroth, New York, Reinhold, 1941, p. 718.

[6] Koller, L. R: J. Applied Physics **10**: 629, 1939.

[7] Appling, J. W., and Tanner, F. W.: Bactericidal Effect of Ultraviolet Rays on Microorganisms on Restaurant Glass-Ware, *Proc. Soc. Exper. Biol. & Med* **47**: 51 (May) 1941.

States Public Health Service. While these investigators noted decided improvement on irradiation, complete sterilization did not result in every case.

Reference was made also to an editorial on "Disinfection by Light,"[8] showing that much remains to be done in studying the capacity of such lamps to reduce the dangerous bacterial content of the air, not only under controlled laboratory conditions, but also in the more difficult and varied circumstances of practical use. This statement remains true to this day.

In this connection it is important to note that in order to kill a micro-organism a direct hit by ultraviolet rays of sufficient intensity is required. This is difficult to accomplish on the edge of a drinking cup, also in a liquid containing suspended matter or in air laden with dust particles that shield the organism. To provide adequate sterilization a germicide must effect practically 100 per cent killing. Ultraviolet germicidal rays cannot penetrate deeply and hence may be absorbed by finger marks, saliva, cosmetics or other contamination on a drinking cup. The ultraviolet germicide lamp, therefore, appears to be an uncertain means of sterilizing solid objects (drinking cups, combs, brushes, shaving utensils, shoes, toilet seats) even if irradiation of the whole surface is possible.

If ultraviolet germicidal lamps are used to irradiate shelves and housing in which freshly washed eating and drinking utensils, and the like, are stored, then adequate protection is required to prevent ultraviolet burns on the hands and arms of the attendants who manipulate these utensils.

Recent evidence seems to indicate that the ultraviolet germicidal lamp can be used for disinfecting the water used in beverages and the like but only after adequate removal of suspended material; and it is applicable only to liquids which are highly transparent to ultraviolet germicidal radiation. As is to be expected, this irradiation process requires an expert bacteriologist to test the product for purity and freedom of pathogenic organisms.

About three decades ago an elaborate attempt was made to disinfect water, on a large scale, by ultraviolet radiation using hot quartz mercury arc lamps, which, under the conditions of operation, remained relatively cool, and emitted a large amount of germicidal radiation of 2,537A, and longer wavelengths. The presence of suspended matter and the necessity of keeping the surface of the quartz glass covering of the lamps free from slime (algae) made ultraviolet radiation an uncertain method of disinfecting water. Consequently, the proposal to irradiate the water supply of a mountain resort hotel, obtained from springs that became turbid after a freshet, was rejected.

With the advent of the low vapor pressure mercury arc germicidal lamp the proposal has been revived to disinfect, by ultraviolet radiation, the water supply of summer camps and isolated rural communities. This will require a periodic bacterial examination to determine the effectiveness of the irradiation. Evidently this is a task for the board of health, or sanitary commission of the state or county, whose duty it is to check the purity of the water supply. In the light of available evidence the Council is not convinced of the efficacy of this method of disinfecting water.

Although mold spores are difficult to kill by ultraviolet rays, recent reports seem to indicate a reduction in growth of mold by "direct hits" on directly irradiated surfaces of tanks of sugar syrup, walls of bakeries, meat storage rooms and the like. These are commercial applications that financially will solve themselves, or in the case of food and meat storage can be handled best by the inspectors already employed in that service.

Apparently some of these installations are made as a matter of competition. At any rate, in the case of one large meat processing plant, the Council's consultant was informed that no observations had been made on the effectiveness of the ultraviolet lamp installation, presumably for the reason that the product was consumed before it had time to mold.

Another proposal is to use the germicidal lamp for irradiating milk. When this process was first tried out, using arc lamps with impregnated carbon electrodes, it was found that a slight overexposure to ultraviolet radiation produced a disagreeable taste; also that the wavelengths in the range of 2,537A were more effective in causing this bad taste than the wave band of intense radiation, at 2,852A, emitted by the magnesium arc. Evidently if this process of ultraviolet irradiation is adopted in the dairy industry it is incumbent on the state or municipal sanitary commissions to see that the consumer receives a palatable product.

The poultry business is of great economic importance, and the sale of ultraviolet disinfecting lamps is being promoted to reduce the spread of infectious diseases among large flocks of chickens. This is reported possible when there is a regular attendant to service the lamps. On the other hand, there is also a large economic waste and loss of capital when the small scale poultry raiser has not the time or patience to dust off the lamp "every day" to keep it at maximum efficiency, and discontinues its use. In the light of present evidence the Council does not accept the application of disinfecting lamps in the poultry business.

The use of ultraviolet lamps for disinfecting theaters, barracks, industrial plants, assembly halls, waiting rooms, schools, buses for transporting school children, street cars and the like, is on the borderline of applications that the Council is not convinced it should accept without fundamental qualifications that are not enforceable, for the following reasons: (1) because the population cannot be controlled; (2) because of the dramatic appeal to the public that inevitably will lead to exploitation by unscrupulous sales promoters; (3) because of "the futility of trying to stop colds among school children by irradiating only their classrooms[9] and not controlling their surroundings when they are not in the classroom," and (4) because statistical data are so variable. These data indicate that, although ultraviolet radiant disinfection of air can be substituted for actual air displacement in reducing cross infection in chickenpox, measles and mumps,[10] the uncertainty (as measured by the number of absences due to colds) ranges from a negative value (more absences from the irradiated school than from the control school) to definite positive improvement in attendance.

Probably the best controlled observations on reduction of cross infection were obtained at the U. S. Naval Training Center, Camp Sampson, N. Y., where observations were made on large groups of recruits housed in barracks as follows: (1) barracks irradiated with high intensity germicidal lamps; (2) alternate barracks having low intensity germicidal lamps, and (3) barracks used as controls in which there were no germicidal lamps.

The results of this investigation,[11] which extended over a period of six months (December to May) are impressive and instructive in showing that the incidence of respiratory illness in the barracks irradiated with low intensity ultraviolet lamps followed the same undulations that occurred in the adjacent control barracks, whereas in the barracks irradiated with a high intensity there was a definite reduction in the incidence of respiratory illness—a reduction estimated at 25 per cent for the entire period of observation of respiratory illness in the high intensity irradiated group as compared with the control group, "and not due to chance." These data are confirmed in a prolonged series of observations, during the winter of 1945-1946, at the Great Lakes Naval Training Center.[12] In this report data are given showing that ultraviolet irradiation of the floors and upper air in barracks, housing recruits, resulted in a 19.2 over-all reduction in total respiratory disease. Considering streptococcus disease (scarlet fever plus tonsillitis and pharyngitis having strongly positive throat cultures), a 24 per cent reduction in the incidence of disease was observed in the radiated group.

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8. Disinfection by Light, editorial, Brit. M. J. **2**: 707, 1940.

9. Wells, W. F.: Measurement of Air Borne Infection by the *Disinfection of Air*, Am. J. M. Sc. **209**: 177-180, 1945. Wells, W. F.; Wells, Mildred W., and Wilder, T. S.: Am. J. Hyg. **35**: 97-121, 1942.

10. Wells, M. W.: Ventilation in the Spread of Chickenpox and Measles Within School Rooms, J. A. M. A. **129**: 197-200 (Sept. 15) 1945.

11. Wheeler, S. M.; Ingraham, H. S.; Hollaender, A.: Gershon-Cohen, J., and Brown, E. W.: Ultraviolet Light Control of Air Borne Infections in a Naval Training Center, Am. J. Pub. Health **35**: 457-468, 1945.

12. Miller, W. R.; Jarrett, E. T.; Willmon, T. L.; Hollaender, A.; Brown, E. W.; Lewandowski, T., and Stone, R. S.: Evaluation of Ultraviolet Radiation & Dust Control Measures in the Control of Respiratory Disease at a Naval Training Center, J. Infect. Diseases **82**: 86-100 (Jan.-Feb.) 1948.

In the opinion of the authors of this report[12] the results of their studies do not warrant the general application of ultraviolet radiation for control of air-borne infection in barracks.

An average reduction of 25 per cent in respiratory infection seems to be a conservative estimate of the effectiveness that can be expected of ultraviolet irradiation. In this connection it is relevant to cite a recent report issued by the New York State Department of Health,[13] which states that ultraviolet radiation seemed to have a definite effect in modifying the spread of measles in the classrooms. However, on the basis of these observations the authors state specifically that they are not recommending routine installation of ultraviolet lamps in classrooms.

A good illustration of the difficulty of preventing possible cross infection among children is a recent instance in which several kindergarten children shared their much-chewed "bubble-gum" (which in itself rapidly becomes an unsanitary material) with a child who was not permitted to have such gum.

Evidently the existing state and municipal health and sanitary commissions, staffed with competent, financially disinterested personnel and vested with legal authority to enforce safety regulations, are the proper authorities to consider these proposed applications of ultraviolet disinfection.

II. REQUIREMENTS FOR ACCEPTANCE OF ULTRAVIOLET LAMPS FOR DISINFECTING AIR

On the basis of the foregoing considerations the Council on Physical Medicine has decided to continue its previously announced policy[1] of accepting ultraviolet lamps, as an adjuvant, for disinfecting air in hospitals, nurseries and operating rooms (relatively free from dust) as practiced by present day empiric methods.

Clinical evidence submitted to the Council shows that under properly controlled conditions killing of air-borne micro-organisms by ultraviolet rays may be used to supplement other methods of disinfecting air for prevention of cross infection in contagious wards in nurseries and hospitals and for reducing air-borne infection of wounds in operating rooms. The deleterious effects of ozone generated by ultraviolet lamps are recognized. The Council therefore requires for acceptability of ultraviolet disinfecting lamps that, under suitable ventilation, in the space near the occupants of the room the concentration of ozone shall not exceed 1 part in 10,000,000.[14] However, in view of the recent researches by Witheridge and Yaglou[15] showing that a much lower concentration (1 part in 25,000,000) is irritating to the mucous membranes of the upper respiratory tract, this specification of 1 part in 10,000,000 is tentative, awaiting confirmation of the evidence that a lower concentration of ozone is desirable in nurseries and hospital rooms occupied twenty-four hours a day. If the odor of ozone is distinctly perceptible the Council recommends increased ventilation.

Recently manufacturers have determined on the manufacture of two kinds of ultraviolet disinfecting lamps: (1) the type "L" lamp that generates a low amount of ozone and (2) the type "H" lamp that produces a high amount of ozone. The Council accepts only the type "L" lamp, that generates practically no ozone.

In considering ultraviolet generators for disinfecting purposes the Council makes no distinction between lamps for use in air conditioning ducts and lamps for use in open rooms in which there is only a slow circulation of air. In both cases a sufficient number of lamps must be provided to insure adequate disinfection of the air as determined by approved culture tests or other accepted procedures. So that an ultraviolet output above the minimum value for adequate disinfection may be maintained, the Council recommends that the ultraviolet intensity of each lamp unit be measured at least once a month.

To comply with the Council's requirements the ultraviolet spectral energy distribution of the disinfecting lamp shall be comparable in lethal effectiveness with the low vapor pressure mercury discharge tube, in which the dominant radiation is of wavelength 2,537A.

The minimum intensity at right angles to and at a distance of 1 meter from the plane of the lamp tube in its fixture shall not be less than the germicidal equivalent of 20 microwatts per square centimeter of homogeneous radiation of wavelength 2,537A. The useful life of the lamp shall not be less than four thousand hours. During this period the ultraviolet output shall not fall below the herein specified minimum intensity. To meet this requirement the lamp may be provided with a voltage regulator to compensate for the decrease in intensity of ultraviolet with usage; or the lamp may emit a sufficient excess of ultraviolet radiation when new, so that the output shall not fall below the specified minimum value (20 μW/cm.^{2} at 1 meter) in less than four thousand hours' operation. In either case the installation shall be provided with adequate safeguards against overexposure of the occupants of the room to ultraviolet radiation. The burner of the lamp shall be of glass or of suitably filter jacketed quartz, highly transparent to the emission line at 2,537A, and opaque to radiation of wavelengths shorter than 2,200A, to prevent the generation of an injurious amount of ozone, largely produced by these short wavelengths. To insure compliance with these requirements the lamp may consist of one, two or three tubes, mounted and operated as a unit.

For consideration of acceptance by the Council, the manufacturer shall submit a lamp unit in its fixture, permanently marked as to its useful life, and its radiant flux in microwatts per square centimeter of wavelength 2,537A, at 1 meter under the normal power input used to insure a useful life of not less than four thousand hours. *In addition the manufacturer* shall submit satisfactory clinical evidence, obtained over a period of not less than four winter months, of the effectiveness of an installation of such lamps in maintaining adequately sterilized conditions in the space (hospital, nursery) subjected to radiant disinfection.

Council on Foods and Nutrition

The following statement concerning the potential health hazards of pesticides has been approved for publication by the Council on Foods and Nutrition.

JAMES R. WILSON, M.D., *Secretary.*

HEALTH HAZARDS OF PESTICIDES

The Council on Foods and Nutrition of the American Medical Association is acutely aware of the toxicologic problems presented by the rapid introduction of synthetic organic pesticides and herbicides. The chemical contamination of foods with residues of these substances is but a part of the broader problem created by their wide use, for in addition to the danger from ingestion, the effects of inhalation and skin absorption must be determined.

The problem is created by the great number of new pesticides on the market. The appearance of these is creating an increasing volume of inquiries at Association headquarters. That danger exists is evidenced by the appalling lack of factual data concerning the effect of these substances when ingested with food. The chronic toxicity to man of most of the newer insecticides is entirely unexplored. In fact the majority are so new that their limitations and even their full scope of usefulness have not been established.

The Council recognizes the potential usefulness of newly developed pesticides and herbicides. At the same time it recognizes also the potential hazards to individual and public health of the unrestricted use of pesticides and herbicides which are placed on the open market before they have been adequately studied and their toxicologic properties determined. It is obvious that controls must be placed on the sale and distribution of products of unknown or incompletely known toxicity. The time to establish controls, voluntarily or otherwise, is now, before possible tragic consequences occur. The Council urges, therefore, that measures be taken immediately to insure adequate protection of the public.

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[13] Perkins, J. E., Bahlke, A. M., and Silverman, H. F.: Effect of Ultraviolet Irradiation on Spread of Measles in Large Central Schools, Am. J. Pub. Health **37**: 529, 1947.

[14] This specification of an upper limit of one part in 10,000,000 was recently confirmed by W. T. Anderson, Jr., Arch. Phys. Med. **28**: 705 (Nov.) 1947.

[15] Witheridge, W. N., and Yaglou, C. P.: Tr. Am. Soc. Heat. & Ventl. Eng. **45**: 509, 1939.

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SATURDAY, AUGUST 28, 1948

ALLEGED CANCER BIOTHERAPY

Roskin[1] and his associates of the University of Moscow have claimed that Trypanosoma cruzi, the causative agent of Chagas' disease, is positively cancerotropic. When injected into normal animals the trypanosomes multiply in the heart, spleen, liver, bone marrow and lymph nodes. In animals with malignant growth, however, the trypanosomes, they assert, are absent from these organs and are concentrated solely in the neoplasm. Thus localized the trypanosomes destroy the malignant growth, presumably caused by the formation or liberation of a specific cancerolytic substance. The Soviet biologists say that this cancerolysin can be extracted from artificial cultures of trypanosomes and is an effective cure for human cancer.

The trypanosome extract was tested on 18 patients with cancer of breast, larynx, uterus or lips. Destruction of the tumor, the Soviet investigators assert, was noted in 11 patients after daily subcutaneous injections of relatively large doses. In some cases softening and shrinking of the tumor was noted within eight days after the first injection. Healthy granulation appeared where the tumor sloughed. Recurrence was not observed in any one of the 11 successful cases.

These encouraging results have been received with skepticism by American investigtators caused by failure to confirm the basic experimental evidence underlying the alleged clinical victory. For example, Cohen[2] and his associates, of the California Institute of Technology, exposed thin slices of mouse carcinoma tissues to trypanosome extracts prepared according to the Soviet technic. Control tests were made with thin liver slices. Demonstrable carcinolytic effects were not noted microscopically. Specific carcinolysins, however, were demonstrated in parallel tests with certain bacterial filtrates (e.g., Sporosarcina ureae and Aspergillus fumigatus).

More detailed tests are currently reported by Hauschka and Goodwin[3] of the Institute for Cancer Research, Philadelphia. Eight different strains of T. cruzi were tested against five varieties of spontaneous and transplanted malignant tumors in over 1,000 experimental mice. The trypanosomes tested included all strains used by the Soviet investigators.

In their hands infection of the tumor mice with the more virulent T. cruzi strains resulted in a consistent inhibition of the tumor growth, but generally did not lengthen the life of cancer mice beyond that of untreated controls. In all cases tumor inhibition was accompanied by a loss of body weight, the weight loss being closely correlated with the virulence of the strain.

Hauschka found no evidence that any one of the eight strains was "positively tumerotropic," as claimed by the Soviet investigators. Injected into cancerous mice, the trypanosomes were only lightly present in the malignant growth, but were heavily concentrated in heart, liver, spleen, kidneys, small intestines and skeletal muscles, as in normal mice. From this the Philadelphia workers conclude that tumor inhibition by living T. cruzi does not appear to be due to an elective localization in the cancerous tissues, but to a general depletion of the host due to the infection. When the infection is checked by drugging with quinoline, the previously inhibited tumor resumes its usual growth rate, and the host eventually dies of cancer.

Culture lysates tested against cancerous mice gave no signs of an inhibiting or cancerolytic effect, and did not prolong life. Death among the treated mice was often sooner than among the untreated controls. From these negative results the Philadelphia investigators conclude that the alleged "endotoxin" of T. cruzi does not at present hold out much promise in practical clinical therapy.

PESTICIDES: CHEMICAL CONTAMINANTS OF FOODS

The development and use of new pesticides and herbicides have created public health hazards. Studies indicate that already many constituents of the American diet may be contaminated with materials of unknown toxicity used to destroy insect pests or weeds.

The insecticides include those materials which have been long in use such as lead arsenate, nicotine and fluorine compounds, and new materials, about which little is known, such as the organic phosphates, chlordan and many others, and DDT, which is probably intermediate between the other two.

The brands of new insecticides, fungicides and herbicides (weed killers), now on the market or contemplated, number several thousand. The rapidity with which this industry has added new basic materials since the introduction of DDT is phenomenal.

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[1] Roskin, G.: Am. Rev. Soviet Med. 4: 111, 1946. Klyueva, N. G., and Roskin, G.: ibid. 4: 127, 1946. Klyueva, N. G.: ibid. 4: 408, 1947.

[2] Cohen, A. L.; Borsook, H., and Dubnoff, J. W.: Proc. Soc. Exper. Biol. & Med. 66: 440. 1947.

[3] Hauschka, T. S., and Goodwin, M. B.: Science **107**: 600 (June) 1948.

The Council on Pharmacy and Chemistry and the Council on Foods and Nutrition are deeply concerned over this situation because so little is known about either the acute or chronic pathologic effects on man of these new pesticides. At its recent meeting the Council on Foods and Nutrition recognized the potential values inherent in effective pesticides. At the same time the Council recognized the health hazards involved in premature or careless use[1] of toxic substances.

When pesticides are poisonous to insects they are usually poisonous to man.[2] Their true value depends on a significant difference between the toxic effect on man and on insects. Even with this differential the amount ingested by man must be kept at a minimum. These toxic materials are potentially dangerous to those who come into direct contact with them as well as those who ingest the residues which remain on and in foods after their use in the fields. Some of the new poisons are difficult to remove; others are incorporated in the plant tissues and cannot be removed. The latter are particularly insidious.

Voluntary control by the producers and distributors of these substances should be instituted immediately. If voluntary control proves to be inadequate for the protection of the public, suitable legislation must be considered and effective means of control promptly established. At present governmental agencies find it difficult to protect the public from this potential hazard; existing agencies seem to doubt their authority and lack the funds to establish control. Prompt voluntary action by the industry is therefore imperative. The effectiveness of this action will determine the degree of governmental control ultimately required.

At a recent meeting of the Council on Foods and Nutrition the importance of the development of analytical methods for the detection of chemical contaminants was emphasized. This applies both to the whole molecule and to its degradation products. Important is the detection of the presence of pesticide residues by practical methods in fresh as well as in processed foods. The metabolism of insecticide residues and their acute and chronic pathologic effects on mammals must also be determined. Even though added controls may impede the development of pesticides, these are essential precautions which must be taken in order to avoid the danger of mass poisoning, which might well offset the potential benefits of the new agents.

The recognition of the toxicologic problems presented by the contamination of foods and beverages through the use of materials for the purpose of combating pests or the use of chemical technologic aids for improving the appearance, texture, flavor or lasting qualities of foods may well be the beginning of a new era in the science of foods and nutrition. The medical profession has long recognized that food must be free from bacterial contamination and that food must contain essential nutrients and be made to retain them in high degree during processing. Now physicians ask that foods be free from toxic residues of pesticides or other chemical technologic aids.

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[1] Report of the Council on Foods and Nutrition, J.A.M.A., this issue, p. 1603.

[2] Lehman, A. J.: The Toxicology of the Newer Agricultural Chemicals, read at the meeting of the Association of Food and Drug Officials of the United States, Portland, Maine, June 1948.

Current Comment

NOMENCLATURE OF BLOOD

A committee for clarification of the nomenclature of cells and diseases of the blood and blood-forming organs sponsored by the American Society of Clinical Pathologists and the American Medical Association has been functioning since October 1947.[1] The chairman is Dr. Edwin E. Osgood, chief of the Division of Experimental Medicine at the University of Oregon Medical School. The membership is composed of outstanding hematologists from all sections of the United States, including special representatives of the sponsoring societies. The committee has held three meetings, two in Chicago and one in San Francisco, and plans a fourth meeting in Buffalo during August. It has been agreed that the choice of preferred terms will not be based merely on historical priority or common usage but in general, should represent the simplest, clearest and most descriptive term possible. Consistency between related terms is considered essential. The committee has given detailed consideration to terminology in the erythrocytic, lymphocytic, granulocytic, monocytic, plasmocytic and thrombocytic series of cells. Agreements reached by those attending committee meetings are submitted to a wide group of committee members for final agreement. The committee has coordinated its work and cooperated with representatives of the American Medical Association Standard Nomenclature of Disease and Operations, in order that proposed changes may be incorporated in the new edition of Standard Nomenclature. In view of the confusion in hematologic terminology members of this committee have done excellent work so far in this field. Beneficial results might be expected from similar efforts in other medical fields where confusion of terminology exists.

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[1] First Report of the Committee for Clarification of the Nomenclature of Cells and Diseases of the Blood and Blood-forming Organs, Am. J. Clin. Path. **18**: 443-450 (May) 1948.

ORGANIZATION SECTION

Official Notes

REVIEWS OF MEDICAL MOTION PICTURES

The Committee on Medical Motion Pictures has prepared a booklet containing all of the Medical Motion Picture reviews published in THE JOURNAL, through Jan. 17, 1948. The purpose of these reviews is to provide a brief description and evaluation of motion pictures which are available to the medical profession. Each film is reviewed by competent authorities. This is *not* a list of films approved by the American Medical Association. One copy has been mailed to the secretary of each county and state medical society. Additional copies are available on request.

Washington Letter

(From Our Regular Correspondent)

Aug. 18, 1948.

Food and Drug Administration Issues Suppository Warning

A joint warning that some "nembutal" (pentobarbital sodium) suppositories manufactured before October 1947 contain from 40 to 223 per cent of the labeled amount of "nembutal" has been issued by the Food and Drug Administration and Abbott Laboratories. Untoward reactions were first reported nine months ago, but the Food and Drug Administration learned only recently that Abbott Laboratories, the manufacturer, had begun to recall those stocks of "nembutal" suppositories which are suspect. Accordingly, physicians, hospitals, druggists and consumers possessing any bearing the code number 710 T 292 or any smaller code number have been urged to return them to Abbott Laboratories, North Chicago, Ill. Suppositories with higher code numbers, or without the letter T, are not being recalled.

Health and Science Legislation Hearings in Print

Volume 4 of the Congressional hearings held in 1947-1948 on the Taft and the Murray-Wagner-Dingell national health bills are now in print. The latest volume is devoted to testimony presented to the health subcommittee of the Senate Labor and Public Welfare Committee by I. S. Falk, director, and Wilbur J. Cohen, assistant director, of the Bureau of Research and Statistics in Social Security Administration, and Dr. Maurice H. Friedman, a Washington physician. In addition, volume 4 contains a large quantity of documentary material entered in the lengthy record by witnesses and members of the committee. Another new publication is the printed transcript of a one day hearing held June 1, 1948, by the House Committee on Interstate and Foreign Commerce on National Science Foundation legislation. It contains statements by eight witnesses, the majority of whom supported establishment of a National Science Foundation.

Veterans Administration Planning Internship Program

Straight and rotating internships will be offered in Veterans Administration hospitals under the new training program recently authorized by Congress. Although the hospitals have not yet been designated and details are still unsettled, pending results of surveys now in progress, it has been decided that: (1) intern training will not be instituted in nonresidency hospitals; (2) adequate living quarters for interns will be a prerequisite, and (3) supervision will be by deans' committees. Annual pay will not exceed $1,800 a year, with quarters, subsistence and laundry to be furnished. Appointments will be made once each year, in accordance with the practice of medical schools and hospitals in general.

Dr. Overholser Heads Delegation to London

The Department of State announces that the United States delegation to the International Congress on Mental Health in London August 11-21 consists of chairman, Dr. Winfred Overholser, superintendent of St. Elizabeth's Hospital, Washington, D. C.; Ruth Adams, head of community nursing, Veterans Administration; Col. John M. Caldwell Jr., chief, neuropsychiatric consultants' division, Army Medical Department; Dr. Martha Eliot, associate chief, Children's Bureau; Dr. Robert Felix, head, mental hygiene division, U. S. Public Health Service; Capt. Frederick L. McDaniel, chief, professional division, Navy Bureau of Medicine and Surgery; Mary E. Switzer, assistant to the Administrator, Federal Security Agency, and Dr. Harvey J. Tompkins, chief, neuropsychiatry division, Veterans Administration, Department of Medicine and Surgery.

Food Intake of Urban Germans Held Inadequate

German urbanites in the American and British zones are not getting enough to eat, according to a report released by Tracy S. Voorhees, Assistant Secretary of the Army. A study was conducted last spring by a special mission comprising Dr. Leonard A. Scheele, Surgeon General, U. S. Public Health Service; Maj. Gen. Raymond W. Bliss, Surgeon General of the Army; Dr. John B. Youmans, dean, University of Illinois College of Medicine, and others. Farmers and rural dwellers are, in general, as well nourished as before the war, said the report, but inhabitants of cities have an average per capita intake of 2,200 calories, whereas it should be 2,540. It was noted that the German male population in the 20 to 39 age group averaged 132 pounds (59.9 Kg.) in body weight, compared with a minimum desirable weight of 148 pounds (67.1 Kg.).

Water Pollution Control Policies Adopted

Officials of Federal Works Agency and Federal Security Agency, including the Surgeon General of the U. S. Public Health Service, have agreed on general operational policies in carrying out the national water pollution control program recently enacted by Congress. The necessary appropriations will be requested of Congress in January. Federal authorities estimate that full participation by the various states in the huge program would entail, among other things, construction of sewerage systems and sewage disposal plants costing more than $3,000,000,000. The U. S. Public Health Service will operate its part of the project from fourteen field offices and the Federal Works Agency from nine divisional offices.

Pan American Medical Supply Agency Launched

The newly established medical supply division of Pan American Sanitary Bureau has been all but swamped in its first weeks of operation. By August 12 steps had been taken toward handling an estimated $3,000,000 in business, according to Leslie Atkins, head of the division, which is under general supervision of Dr. Fred L. Soper, director of the bureau. The bureau's procurement branch acts as a central service agency to the twenty Latin American republics desiring to purchase drugs, medical and surgical supplies, sanitary equipment, etc., in the United States.

V. A. Authorizes Release of Medical Data

A new technical bulletin by the Veterans Administration states: "Data as to the physical or mental condition of claimants or beneficiaries of the V. A. may be disclosed to the responsible officials of federal agencies and state, county and city health departments upon request, without obtaining prior consent of the claimants or beneficiaries. Information so supplied will be marked 'Confidential, official use only.'"

GOVERNMENT SERVICES

ARMY

RESIDENT TRAINING PROGRAM

The Surgeon General's Office announces that applications for the Military Resident Training Program in Army General Hospitals are being received in the Office of the Surgeon General. Under this training program any physician who qualifies for and accepts a commission in the Regular Army Medical Corps will be given the opportunity of competing for an approved residency in the field of his choice.

The specialty training available for newly commissioned officers under this program is as follows:

1. Senior residencies in thoracic surgery, orthopedics, pulmonary diseases, pathology, ophthalmology and physical medicine.

2. Residencies in orthopedics, pathology and physical medicine.

3. Assistant residencies in obstetrics, urology, thoracic surgery, dermatology, pediatrics, anesthesia, general surgery, orthopedics, internal medicine, psychiatry, pathology, ophthalmology, otolaryngology, radiology, physical medicine and clinical physicians' training.

Officers who are not selected to enter residency training on January 1, or July 1, 1949, will, if qualified, be furnished a certificate indicating the date on which they will enter approved professional training. The program is designed to insure that all qualified applicants will be given the opportunity of completing their requirements for certification by an American specialty board.

Oct. 1, 1949, has been established as the deadline for receipt of applications from physicians who are interested in participating in this program. Application blanks may be obtained by writing to the Surgeon General, Department of the Army, Washington 25, D. C.

ACTIVE DUTY FOR RESERVE OFFICERS

The Surgeon General on June 26 invited seven hundred medical service officers to fill openings for active tours of duty. New regulations permit reserve officers to be called for voluntary three year tours in the highest grade they held prior to processing for separation, up to lieutenant colonel. Under the Reserve Retirement Act, reserve officers will receive credit for retirement pay of 2½ per cent of base pay of their highest rank for each year of active service and ½ per cent for each year of inactive service. The classes of reserve officers most needed are biochemists, sanitary engineers, physiologists, psychologists, serologists and nutritionists. Age-in-grade restrictions have been removed so that officers beyond the usual age maximum for their rank are eligible for active duty; those under 30 years of age may apply for competitive tours of duty for commissioning in the Regular Army.

AWARDS AND COMMENDATIONS

Brigadier General Leon A. Fox

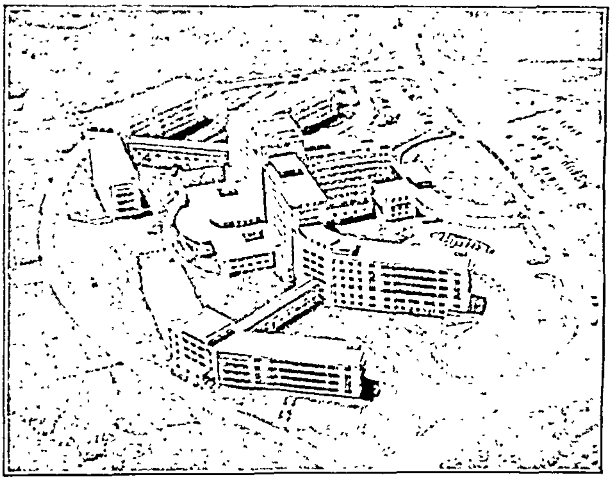
At a ceremony July 22 Brigadier General Leon A. Fox, United States Army, Retired, was decorated by the British Ambassador as an Honorary Commander of the Order of the British Empire. The citation read in part as follows: General Fox, as Field Director of the United States of America Typhus Commission, rendered most valuable assistance to the British Armies. The benefit of his advice and the services of the Typhus Commission were placed at our disposal, and the whole weight of his support was lent to reinforce our bids for supplies. When we were faced with the biggest typhus epidemic of modern times in Western Europe, it was, in no small measure, due to his help that we were able to successfully prevent an outbreak, which might have been devastating. His frequent visits to the 21st Army Group were of inestimable value in planning our antityphus campaign and, later, in the control of typhus. His help was a vital factor in controlling the spread of epidemic typhus in the British Zone.

MEDICAL CONSULTANTS IN JAPAN

General Headquarters, Far East Command, reports as of July 15 that five American medical consultants arrived in the Far East for a thirty day tour during which they will confer with medical officers in the field. The consultants are Drs Carlton N. Price, obstetrics and gynecology, Washington, D. C.; George C. Griffith, cardiology, Los Angeles; John M. Cotton, psychiatry, Ithaca, N. Y.; Clarence H. Snyder, orthopedic surgery, Grand Rapids, Mich., and Amos R. Koontz, surgery, Baltimore. They will visit Army hospitals throughout Japan, Korea and the Ryukyus Command, making ward visits, holding clinics and lecturing on the latest practices in medicine and surgery.

DEDICATE NEW TRIPLER HOSPITAL

Army officials announce that the new Tripler General Hospital on Moanalua Ridge in Honolulu, Hawaii, will be dedicated September 10 at a formal ceremony to which the public will be invited and will include an "open house" tour of the fifteen hundred bed hospital. The new Tripler will replace the 147th General Hospital, long familiar to Honolulans as "Old Tripler," opposite Fort Shafter. Prominent civilian and military officials and representatives of Hawaii's business and community life will participate in the ceremony marking the end of a four year period which began July 18, 1944, when Army engineers undertook the construction of this the newest and finest in the Army's hospital system.



Aerial view of Tripler General Hospital.

RESERVE NURSES AND RETIREMENT BENEFITS

Women officers of the Army Nurse Corps Reserve are eligible now for reserve retirement benefits under provisions of a law enacted by the 80th Congress. Retirement pay is at the rate of 2½ per cent of the pay of the highest rank held during the period of service, multiplied by the number of years of satisfactory service. After twenty years of satisfactory service, an Army nurse may discontinue her active participation in reserve affairs and still qualify for retirement at 60, or she may continue earning qualifying points until she reaches the age of 60, and retire at a higher rate up to 75 per cent of her base and longevity pay. The standards of satisfactory service as a reservist require that 50 qualifying points be accrued each year. Points may be earned by extended active duty, by short periods of active duty training, attendance at drills, and by membership in the Officers' Reserve Corps. Thus, even nurses who remain in civilian life and do not request extended active duty may accumulate points toward retirement.

NAVY

PERMANENT APPOINTMENT OF RESERVE OFFICERS

On June 3, 1948, the Secretary of the Navy, for, and in the name of, the President, appointed officers of the Naval Reserve to permanent grades. Naval Reserve Medical Officers listed, have by virtue of their permanent appointment, the same grade as their contemporaries in the Regular Navy.

To effect his appointment, each officer is required to have in his possession, suitable identification and positive evidence that he received a Certificate of Satisfactory Service if he has been released from active duty. He must also make a certified statement as to his physical condition and take a physical examination, if appropriate.

Public Law 305—79th Congress, approved Feb. 21, 1946, provides that Naval Reserve officers shall have on their return to an inactive status the highest grades and ranks in which, as determined by the Secretary of the Navy, they served satisfactorily under temporary appointments.

Any officer who does not desire to accept the appointment authorized shall submit a statement to that effect to the Chief of Naval Personnel via the Commandant of the appropriate Naval District, stating the reasons therefor and whether or not he (or she) desires to continue in the status of an officer of the Naval Reserve.

RESERVE OFFICERS ON ACTIVE DUTY

Lieuts. (jg) Paul S. Bamberg, Boston; Robert M. Hamill, Holyoke, Mass., and Earl R. Peters, Fort Blackmore, Va., Medical Corps Reserve officers, have volunteered for one year of active duty after completing their internships at the Naval Hospital, Chelsea, Md.

The following Medical Corps Reserve officers have been nominated for their first duty: Lieuts. (jg) William J. Browning III, Merchantsville, N. J.; Joseph J. Goralka, Chicago; Burton Hall, Omaha, Neb., and Duncan O. Montgomery, Corpus Christi, Texas.

POSTGRADUATE INSTRUCTION

The following additional medical officers have been nominated to attend courses of postgraduate instruction at the institutions indicated: Comdr. Melville M. Driskell, cardiology, Massachusetts General Hospital, Boston; Comdr. Robert S. Poos, preventive medicine, University of California School of Public Health, Berkeley; Comdr. William S. Wray, pediatrics, Naval Hospital, Chelsea, Mass.; Lieut. Comdr. Elmer R. King, radiological defense, Duke University, Durham, N. C.; Lieut. Herbert G. Stoecklein, dermatology and syphilology, Naval Hospital, San Diego, Calif.; Lieut. (jg) Frederick A. Clark Jr., internal medicine, Naval Hospital, San Diego, Calif.; Lieut. Richard S. Farr, radiation effects on hematopoiesis, University of Chicago; Lieut. (jg) James R. Hamilton, dermatology and syphilology, Naval Hospital, San Diego, Calif.; Lieut. (jg) Verne K. Harvey Jr., preventive medicine, University of California School of Public Health, Berkeley, and Lieut. (jg) Robert L. Hill, internal medicine, Naval Hospital, Long Beach, Calif. Lieut. Comdr. Harold R. Scanlin, residency in surgery, Naval Hospital, Long Beach, Calif.; Lieut. Gerald E. Wineinger, residency in otolaryngology, Naval Hospital, San Diego, Calif., and Lieut (jg) Harry C. Nordstrom, instruction in aviation medicine, Naval School of Aviation Medicine and Research, Pensacola, Fla.

SPECIALISTS IN THE NAVY

The Surgeon General announces that the following medical officers were recently certified by the American Specialty Boards, bringing the total number of certified specialists in the Navy to 155: Comdr. Lawrence L. Bean (surgery); Capt. Earl F. Evans (internal medicine); Capt. Herman A. Gross (surgery); Capt. Thomas G. Hays (surgery); Comdr. Harold Hirshland (obstetrics and gynecology); Comdr. Dunne W. Kirby (internal medicine); Capt. Edward P. Madden (obstetrics and gynecology); Comdr. George L. Tabor Jr. (ophthalmology); Lieut. Comdr. Samuel V. Thompson (psychiatry and neurology), and Lieut. (jg) John R. Carter (pathology).

CERTIFICATE OF ACHIEVEMENT

The Surgeon General's certificate of achievement was presented in August to the Holy Name College, Franciscan House of Studies, Catholic University of America, in a ceremony at the Naval Hospital, Bethesda, Md.. Capt. L. O. Stone, Commandant of the Hospital, made the presentation to Father Alban Maguire in recognition of outstanding services rendered to the Medical Department of the Navy during and immediately following the war years. The students assisted the Navy chaplains at the Naval Hospital with choir and religious services and were generous in making contributions to the blood bank.

PERSONAL

Comdr. Vernon E. Martens of St. Louis, Lieut. Walter H. Jarvis of Grand Saline, Texas, and Lieut. (jg) William E. Carter of Memphis, Tenn., have transferred from an active Reserve status to the Regular Navy Medical Corps.

MISCELLANEOUS

INDIAN SERVICE NEEDS PHYSICIANS

The Department of the Interior announces a reopening of a civil service examination for medical officer for service with the American Indians. No written examination on professional subjects is required. The examination consists of registration of credentials and supported statements as to qualifications and experience. Most of the Indian reservations where physicians are employed are located in states west of the Mississippi River. The 400,000 Indians in the United States and 30,000 Eskimos, Indians and Aleuts in Alaska who are beneficiaries of this service offer a variety of clinical material. The medical officer serves as the family physician and public health advisor and participates in the administration of small well equipped hospitals, of which the Indian Service operates sixty-six in the states and eight in Alaska. There are also some larger medical centers. The entrance salary is $5,232 or $6,235.20 per annum, depending on the qualifications of the applicant. An automobile is furnished for official use, annual educational and sick leave are provided, and the provisions of the United States Employment Compensation Commission Act and retirement apply. Information may be obtained from Dr. Ralph B. Snavely, Office of Indian Affairs, New Interior Building, Washington 25, D. C.

COURSE IN TECHNICS OF USING RADIOISOTOPES

The second four week course in the technics of using radioisotopes in research began August 2 at the Oak Ridge Institute of Nuclear Studies, Inc., Oak Ridge, Tenn. The institute, which is comprised of nineteen Southern universities, conducts a program of research and training in the nuclear sciences. Radioisotope training courses are under the direction of Dr. Ralph T. Overman, acting head of the Special Training Division of the institute, and the instructors are from various universities throughout the country. With these courses, leaders in the atomic energy field are conducting seminars and demonstrations, and the Oak Ridge National Laboratory, the center of radioisotope production for the Atomic Energy Commission, is assisting the institute in this activity. The current course in the technics of using radioisotopes is being attended by thirty-two members of the staffs of various universities, some as far west as Oregon and others as far east as Columbia University, New York. The staff members attending this course will have an important role in training future leaders in the medical aspects of atomic energy.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama

Brown, Clyde W. ....Birmingham
Davie, Robert N. ....West Blocton
Snoddy, Claude C. ....Birmingham

Arkansas

Riegler, Henry C. Jr. ....Little Rock

California

Clark, Shirley E. ....Orange
Crane, Louis B. ....Los Angeles
Dubrasich, Donald M. ....Watsonville
Palmer, Allan ....San Francisco
Roth, Merall ....Los Angeles
Samuels, Stanley ....Hollywood
Wissinger, Richard B. ....Crescent City

Colorado

Boyle, Richard E. ....Denver
DeBold, Conrand ....Loveland

Connecticut

Bennett, James G. ....Hartford
Carey, Thomas B. ....Conn.
Carlson, Robert I. ....New Haven
Chernoff, Hyman M. ....New Haven
DeBlasio, Guido A. ....New Haven
McLean, Charles E. ....Wallingford
Peters, Richard M. ....New Haven

District of Columbia

Curtin, Thomas E. ....Washington

Florida

Burnett, Stacy W. ....Bartow
Dewar, William D. ....Pensacola

Georgia

Adams, Harold W. ....Atlanta
Brooke, Jefferson P. ....Canton
Pitts, Robert O. III ....Atlanta
Smith, Stephen D. ....Rome
Thigpen, Corbett H. ....Macon

Illinois

Adland, Marvin L. ....Chicago
Adler, Harry F. ....Chicago
Belding, Hiram H. III ....Glencoe
Berger, Benjamin ....Windsor
Michels, Donald G. ....Oak Park
Nelson, Karl D. ....Princeton
Phillips, John A. ....Crystal Lake
Schwied, William E. ....Chicago
Wylie, Howard L. ....Chicago

Indiana

Babb, Forrest J. Jr. ....Indianapolis
Ballard, John E. ....Anderson
Barnes, Bruce S. ....Evansville
Bridges, William L. ....Knightstown
Buckner, George D. ....Fort Wayne
Mackey, John E. ....Evansville

Iowa

Allen, Robert B. ....Burlington
Coffey, James L. ....Fremont
Mathiasen, Emmett B. ....Council Bluffs
Skallerup, Glenn M. ....Walker

Kansas

Matassarin, Benjamin M. ....Lawrence
Neis, Delbert D. ....Eudora
Postma, Lowell A. ....Kansas City
Price, Edwin F. Jr. ....Lawrence

Maryland

Piermont, Edwin L. ....Baltimore

Massachusetts

Burke, Louis ....Chelsea
Miller, Gerald ....Cambridge

Michigan

Bullard, Rockwood W. Jr. ....St. Clair
Dewane, James N. ....Menominee

Michigan—Continued

Moore, Stanley A. ....Ann Arbor
Sokol, William M. ....Detroit
Wilson, Gerald S. ....Detroit
Zyla, Edward J. ....Detroit

Minnesota

Anderson, Werner W. ....Brainerd
Crenshaw, John L. Jr ....Rochester
Deranleau, Robert F. ....Minnesota
Nelson, Paul A. ....Minneapolis
Nerenberg, Samuel T ....St. Paul
Skogerboe, Rudolph B. ....Erskine
Spencer, Bernard J. ....Blue Earth
Thiem, Chester E. ....Gibbond

Missouri

Burch, Buford H. ....Kansas City
Dreyer, Carl J. ....Webster Groves
Siesener, Herbert H. ....St. Louis
Stephenson, Hugh E. Jr. ....Columbia

Montana

Cole, Burnett ....Miles City
Muller, John J. ....Hingham

Nebraska

Mease, Willis E. ....Broken Bow
Pollack, John D. ....Norfolk
Wagner, Donald J. ....Omaha

New Jersey

Cameron, Joseph H. ....Ocean City
Dingman, Donald D. ....Hohokus
Principato, Eugene R. ....Camden
Reilly, John J. Jr. ....Elizabeth
Rosenberg, Allan J. ....Camden
Slaff, Bertram A. ....Peterson
Sweeny, Ralph E. ....Elizabeth

New York

Acierno, Louis J. ....New York
Alsop, Reese F. ....New York
Barbaro, Anthony J. ....Harrison
Bluestone, Seymour S. ....Brooklyn
Brauns, Wilhelm H. ....Rochester
Campbell, William G. ....Churubusco
Coggeshall, Allan B. ....Pleasantville
Damask, Harold ....Bronx
Derrico, Nicholas A. ....New York
Dexter, Marvin J. ....Syracuse
Dombrowski, Edmund B. ....Brooklyn
Meadows, Burton T. ....Brooklyn
Sheedy, Kenneth J. ....Eggertsville
Shera, William R. ....Scarsdale
Terry, Jules S. ....New York
Youngwirth, Sol H. ....Brooklyn

North Carolina

Deaton, William R. Jr. ....Greensboro
Dortch, Hugh Jr. ....Goldsboro
Pate, Marion B. Jr. ....Fayetteville
Yow, Ellard M. ....Henderson

North Dakota

McCusker, Thomas E. ....Grand Forks

Ohio

Berley, Harry M. ....Yellow Springs
Corrill, Edgar M. ....Cincinnati
Cross, Charles J. ....Westerville
Cuthbertson, Donald B. ....Toledo
Dickey, Thomas O. Jr. ....Woodsfield
Dreyer, Russell P. ....Columbus
Douglass, Frederick M. Jr. ....Toledo
Miceli, Gregory S. ....Cincinnati
Rizzo, Russell P. ....Painesville

Oregon

Range, Robert L. ....Eugene

Pennsylvania

Amsterdam, Gerald H. ....Philadelphia
Ayres, John A. ....Huntingdon

Pennsylvania—Continued

Balshi, Stephen F. ....Bethlehem
Barclay, Paul L. Jr. ....Erie
Beckfield, William J. ....Ben Avon
Bell, William H. ....Brookville
Bernardin, Ronald M. ....Philadelphia
Birmingham, William E. ....Philadelphia
Blood, Raymond G. Jr. ....Philadelphia
Capobianco, Frank M. ....Bangor
Chamberlain, Bruce E. ....Wesleyville
Ciccantelli, Mark J. ....Philadelphia
Conrad, Stanley W. ....Philadelphia
Davis, Cornelius C. Jr. ....Philadelphia
Davis, William L. ....Ashland
Dugan, Robert R. ....Ardmore
London, Carl B. ....Philadelphia
Masten, John M. ....Philadelphia
Olson, Robert A. ....Johnstown
Savage, Peter J. ....Wilkes-Barre
Seely, Richard H. ....Morrisville
Taylor, Harry W. Jr. ....Philadelphia
Thompson, Robert A. ....Somerset
Wolf, Harold ....Philadelphia
Zeiler, William B. ....Munhall

South Carolina

Boozer, Albert M. ....Newberry
Davis, Lewis M. ....Donalds
McCoy, Edward G. ....Sumter
Mills, William L. ....Charleston
Timmons, Barney F. ....Hartsville

South Dakota

Bern, Gerhard O. ....Sioux Falls

Texas

Brown, Jack R. ....Abilene
Smith, Frank T. Jr. ....Freeport
Smith, Lloyd ....Mission
Spencer, Merrill P. ....Houston

Tennessee

Allen, Frank S. ....Memphis
Callison, Maston K. ....Memphis
Moore, John R. Jr. ....Nashville
Stagg, Adelbert L. ....Nashville

Utah

Barrett, William W. Jr. ....Ogden
Tingey, Ralph L. ....Salt Lake City
Wright, John K. ....Hyrum

Vermont

Sisson, William H. ....Burlington

Virginia

Allen, Miller S. Jr. ....Dublin
Rector, Robert R. ....Lexington

Washington

Berg, Ralph Jr. ....Spokane
Bergan, Donald E. ....Seattle
Davis, George C. ....Kirkland
Quay, Russell A. ....Alderwood Manor

West Virginia

Marple, William K. ....Huntington
Sampson, Roy B. Jr. ....Pemberton
White, John B. Jr. ....Moundsville

Wisconsin

Buesseler, John A. ....Madison
Schlaeger, Ralph ....Milwaukee
Smith, Nathan J. ....Wisconsin Rapids

Hawaii

Chang, Thomas Y. K. ....Wahiawa, Oahu
Nip, George H. H. ....Honolulu

Philippine Islands

Borja, Mariano F. ....Manila

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Appoint Assistant Dean.—Dr. John C. Talbot, assistant professor of preventive medicine, University of California Medical School, Berkeley-San Francisco, has been appointed assistant dean of the school, adding duties as chief premedical adviser. Dr. Talbot is a graduate of the university, 1939, and, after service in the Army Medical Corps, joined the staff of the medical school in 1946.

Plague in Ground Squirrels.—The U. S. Public Health Service reported plague infection proved under date of June 22 in pools of fleas from ground squirrels, Citellus beecheyi, taken in San Luis Obispo County as follows: Proved June 18, a pool of 172 fleas from 31 ground squirrels shot at Salinas Dam area (United States Reservation), 4 miles east and 2½ miles south of Santa Margarita; proved June 21, a pool of 58 fleas from 11 ground squirrels shot 3 miles west of Pozo on State Highway 178, and a pool of 207 fleas from 19 ground squirrels shot on a ranch on Pozo Road 2 miles east and 1 mile south of Santa Margarita.

Police Protection for Night Calls.—The Los Angeles Medical Association has made an agreement with the Los Angeles Police Department whereby police protection will be given to any physician when the physician deems such protection necessary. The doctor on emergency call will register the call with the Los Angeles Medical Exchange and call the police department, giving the address of the emergency call and the time that he expects to arrive there. The police department will dispatch a patrol car to the address, and the policeman will remain on duty until he is dismissed by the attending physician. Each branch of the association is compiling a list of doctors who are willing to make emergency calls in their respective communities.

COLORADO

Harvey Sethman Awarded Medal.—At the commencement exercises of the University of Colorado in Denver in June, the University's annual medal for outstanding public service was awarded to Harvey T. Sethman, Executive Secretary of the Colorado State Medical Society. Mr. Sethman, who has served the state society for nineteen years, is also managing editor of the *Rocky Mountain Medical Journal.*

Annual State Medical Meeting.—The annual session of the Colorado State Medical Society will be held at the Hotel Colorado, Glenwood Springs, September 22-25, under the presidency of Dr. John S. Bouslog, Denver. The scientific sessions beginning September 23 include the following guest speakers:

Francis H. Wright, Chicago, Purulent Meningitis in Childhood.
Ferdinand R. Schemm, Great Falls, Mont., Quantitative Requirements for Water of Seriously Ill Patients with Heart and Kidney Disease.
George F. Lull, Chicago, Secretary and General Manager, American Medical Association.
Henry W. Woltman, Rochester, Minn., Differential Diagnosis of Poliomyelitis.
Edward B. D. Neuhauser, Boston, Surgical Lesions in Childhood.
Louis Schwartz, Washington, D. C., Diagnosis and Treatment of Occupation Dermatitis.

Sports events will take place Wednesday afternoon and evening. At the joint meeting of the society and its auxiliary Friday evening Dr. Dwight Murray, Napa, Calif., member of the Board of Trustees of the American Medical Association, will speak. The banquet is scheduled for Saturday evening.

FLORIDA

Narcotic Violation.—The Bureau of Narcotics, Washington, D. C., reports that Dr. Dan E. Hardie, Miami, pleaded guilty to violation of the federal narcotic law and on May 11 was placed on probation for a period of five years.

New Public Health Workers.—Five new physicians have joined the ranks of public health personnel in Florida and will be assigned as health officers in counties where vacancies exist, or as assistant health officers. They are: Drs. Joseph H. Batsche, Cincinnati; Albert O. Ryan, Covington, Ky.; Maurice M. Hall, New Orleans; Charles O. Parker, Waycross, Ga., and Holland M. Carter, Greenville, S. C.

Tuberculosis Program Progress.—Since the Florida Tuberculosis Board, the Florida Tuberculosis and Health Association and the state health department coordinated their tuberculosis programs nine months ago, the number of roentgenograms of the chest taken has almost doubled. From October 1947 to June of this year, more than 300,000 persons were given roentgen examinations as compared to 155,763 during the first nine months of last year.

ILLINOIS

Dr. Grulee Presents Collection to Library.—Dr. Clifford G. Grulee, Evanston, has given his collection of books, periodicals and letters on children's diseases to John Crerar Library in Chicago. It includes nearly 5,000 books, including a fifteenth century book, the first on child diseases ever printed, besides fifteen books of the fifteenth century and twenty-two of the seventeenth century. Periodicals include bound volumes in eight languages. The collection also includes his correspondence as editor of the *American Journal of Diseases of Children* since 1923, and as secretary of the American Academy of Pediatrics.

Chicago

Dr. Huggins Awarded Fenwick Prize.—Dr. Charles Huggins, professor of urology at the University of Chicago School of Medicine, has been awarded the Fenwick Prize, a gold medal, by the Société Internationale D'Urologie for work on the endocrine control of cancer of the prostate.

Research in Biochemistry.—The University of Illinois College of Medicine has received $7,000 from Mead Johnson and Company, Evansville, Ind., to support a two year fellowship in research in biochemistry in the department of pediatrics, under the supervision of Dr. Henry G. Poncher, head of the department.

Postgraduate Courses.—The Chicago Medical Society will present two postgraduate courses this fall, at Thorne Hall, Northwestern University. The course in hematology and neurology will be given September 13-18 and another in cardiovascular and respiratory diseases September 20-25. The faculty includes leading teachers from throughout the United States who will present an intensive review of special fields for both the general practitioner and the specialist. Each course is limited to 100 and carries a fee of $50.

IOWA

State Medical Election.—At the annual meeting of the Iowa State Medical Society, Dr. James E. Reeder, Sioux City, was installed as president; Dr. Nathaniel G. Alcock, Iowa City, was made president-elect; Dr. Allan B. Phillips, Des Moines, secretary, and Dr. N. Boyd Anderson, Des Moines, treasurer.

Society News.—The Linn County Medical Society meeting, Cedar Rapids, will hear Dr. George W. Corner, Baltimore, speak on "Twins, Triplets, Quads and Quints" September 1. At the meeting on October 15, Dr. Max M. Strumia, Bryn Mawr Hospital, Bryn Mawr, Pa., will address the society on "Intravenous Protein Feeding."

MAINE

Dedicate Unit at Jackson Laboratory.—Dedication ceremonies were held August 7 marking the first completed unit of reconstruction of the Roscoe B. Jackson Memorial Laboratory at Bar Harbor. These buildings, a group for summer students, were made possible by a gift from the Ladies Auxiliary to the Veterans of Foreign Wars. Speakers included James R. Angell, LL.D., president of Jackson Laboratory, and Dr. James B. Murphy, head of cancer research at Rockefeller Institute, New York, a trustee of the laboratory.

MICHIGAN

Dr. Heustis Appointed State Health Commissioner.—Dr. Albert E. Heustis Jr., Coldwater, was appointed state commissioner of health August 3. He has been director of the county health department and the Community Health Center of Branch County since 1945 and was previously director of the Monroe County Health Department. Dr. Heustis was graduated from the University of Michigan Medical School, Ann Arbor, in 1936 and from 1937 to 1940 served as intern, assistant resident, resident and teaching assistant in the department of surgery of the university. In 1942 he received a Master of Public Health degree from Johns Hopkins University. He is a trustee of the Michigan Hospital Association and a member of its legislative committee and is vice president and a member of the board of directors of the Southwestern Michigan Hospital Council, a trustee and member of the state hospital relations committee of the Michigan Hospital Service and a nonresident lecturer in public health administration for the University of Michigan School of Public Health.

NEW YORK

State Department Positions Available.—The State of New York Department of Civil Service, Albany, will hold examinations October 2 for an associate cancer radiologist, a senior psychiatrist and a biochemist. These are open to residents of any state in the country On that date examinations will also be held for a junior pharmacist and a senior laboratory technician (tuberculosis), which will be limited to legal residents of the state.

Fellow in Industrial Psychiatry.—The first industrial psychiatry fellow in the School of Industrial and Labor Relations at Cornell University, Ithaca, will be Dr Graham C Taylor, Montreal, Canada. The fellowship is part of the school's new program to train psychiatrists for the industrial and labor relations field. Dr. Taylor will begin a two year program at the school in September, dividing his time during the fellowship between studies and research on the campus and first hand investigations in industrial plants.

New York City

Dr. Brooks to Head Physiology Department.—Chandler McC. Brooks, Ph.D., associate professor of physiology at the Johns Hopkins University School of Medicine, Baltimore, since 1933, has been appointed professor of physiology and pharmacology and director of that department at the Long Island College of Medicine. Dr. Brooks has recently returned from New Zealand and Australia, where he spent two years as a Guggenheim Fellow.

Emotional Problems of Disabled.—A grant of $73,500 from the Commonwealth Fund will be used at New York University-Bellevue Medical Center for a three year research project on the emotional problems of the physically disabled while undergoing rehabilitation training. Dr. Morris Grayson will direct the research. The project will evaluate the motivating factors in physical rehabilitation and the emotional factors that interfere with it and study what psychiatry can contribute in preparing persons for rehabilitation.

Civil Service Appointments Available.—The City of New York Civil Service Commission is opening applications September 15-30 for six positions:

Assistant medical examiner—appointment at $5,150
Neuropathologist, Grade 4—appointment at $4,650
Pathologist—appointment at $4,650
Director of Bureau of Tuberculosis, Grade 4—appointment at $7,500
Director, division of psychiatry—appointment at $7,500
Alienist (psychiatry), Grade 4—appointments as follows:
  1 at $6,650; 12 at $6,150; 1 at $5,790; 2 at $5,650; 3 at $5,150; 3 at $4,150

Applications may not be made by mail.

Diagnostic and Periodic Health Examination Service.—The department of health has announced plans for its new diagnostic and periodic health examination service. The diagnostic service will be available only to patients referred by private physicians, and the patient will be sent back to the referring physician for treatment. It is an extension of the existing consultation service of the department into fields involving chronic and noninfectious diseases, nutrition and mental hygiene and aims to meet the needs of families of ordinary means. The first "pilot clinic" will be opened in the department's Lower West Side Health Center at 303 Ninth Avenue, Manhattan. About 300 patients a month will be accepted for diagnostic consultation. Any physician in New York can make the service available to his patient by filling out a blank available at the department of health. A complete report will be sent to the referring physician. The service will be for ambulatory patients only.

The periodic health examination service will be provided for persons sent by their physicians and persons from groups selected for such study by the department of health. It will involve apparently well persons. The department is interested in making such examinations as a means of getting information that will indicate the true health status of persons at various age levels and as a means of emphasizing that such periodic examinations are advisable for adults. When disability is found, the patient will be advised to go to his private physician or to seek the service of a hospital clinic.

NORTH CAROLINA

Booklet on Blood Bank.—A 16 page booklet, "Management of a Blood Bank," which describes methods used at North Carolina Baptist Hospital and Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, is being distributed to hospitals throughout the state. The booklet was prepared for the North Carolina Maternal Welfare Committee by Dr. Mary I. Griffith, instructor in obstetrics and gynecology. Procedures and technics of setting up and operating a blood bank are fully discussed and illustrated.

OREGON

Annual State Medical Meeting.—The Oregon State Medical Society will hold its annual session at the Medford Hotel, Medford, September 15-18, under the presidency of Dr. James C. Hayes of that city. The guest speakers will be four clinicians from the University of Michigan Medical School, Ann Arbor:

Henry K. Ransom, Treatment of Diseases of the Breast.
Norman F. Miller, Diagnosis and Treatment of Carcinoma of the Cervix
Cyrus C. Sturgis, Medical Management of Thyroid Disease
Arthur C. Curtis, Cutaneous Manifestations of Systemic Disease

Roundtable luncheon discussions are scheduled for each day, the subjects being prevention and treatment of thromboembolism, Wednesday; hypertension, Thursday; management of bleeding of late pregnancy, Friday, and occupational and contact dermatoses, Saturday. The speaker at the annual banquet will be G. Herbert Smith, LL.D., president, Willamette University, Salem, on "Education in a Democracy."

PENNSYLVANIA

Personal.—Dr. Samuel L. Grossman, Harrisburg, was elected president of the Pennsylvania Society for Crippled Children and Adults at its silver anniversary meeting in May.——Dr. Russell S. Anderson, Erie, has been elected to the board of directors of the Pennsylvania Tuberculosis Society as the official representative of the Medical Society of the State of Pennsylvania.

Organize Trudeau Society.—The Pennsylvania Trudeau Society has recently been organized as the medical section of the Pennsylvania Tuberculosis Society with Dr. Frank A. Craig, director of clinics at the Henry Phipps Institute, Philadelphia, president, and Dr. Leon H. Collins Jr., Philadelphia, secretary-treasurer. The organization meeting was held at the close of the annual meeting and conference of the Pennsylvania Tuberculosis Society.

Philadelphia

Course in Diagnosis and Treatment of Cancer.—Temple University School of Medicine and Hospital is offering alumni and general practitioners a course in the early diagnosis and treatment of cancer, September 13-17. Drs. Elmer Hess, Erie, and George T. Pack, New York, will speak at the only evening program, September 15. There is no registration fee. Applications should be made to Dean William N. Parkinson at the university.

Research at Temple.—Temple University School of Medicine and Hospital has received the following grants from the U. S. Public Health Service: (1) $20,152 for continuation of the research project "Electrokymography of the Heart and Blood Vessels" by Drs. W. Edward Chamberlain, George C. Henny and Bert R. Boone; (2) $8,000 to finance one year's work by Dr. Machteld E. Sano on "The Lability of the Lymphomata"; (3) $4,000 to finance one year's work by Dr. Mona Spiegel-Adolf on problems of "Ultra-Spectrographic Studies of Nucleic Acids in Tumors"; (4) $10,000 to Dr. Valy Menkin on the problem of "The Relation of Cellular Injury to the Development of Neoplasia," also the "Chemotherapy of Experimental Leukemia," and (5) $18,500 on the problem "Physical and Physiological Studies of the Heart and Circulation." The National Advisory Health Council has also awarded a grant of $6,000 in support of research by Dr. Robert H. High on "Study of Effect of Streptomycin in Combination With Other Drugs in the Treatment of Tuberculosis in Infants and Children." From the Bureau of Medicine and Surgery, U. S. Navy, $6,180 to Robert H. Peckham, Ph.D., has been made for "The Experimental Determination of Neutrality in Sunglasses." Two awards from pharmaceutical companies include a grant of $27,555 from Smith, Kline & French for research in pharmacology and $1,200 from John Wyeth, Inc., for medical research.

Pittsburgh

Society Election.—At a meeting of the Pittsburgh Obstetrical and Gynecological Society Dr. James Hodgkiss was elected president and Dr. Clarence H. Ingram Jr., secretary.

Appointments to Psychiatric Institute.—Recently announced appointments to the staff of Western State Psychiatric Institute and Clinic include: Dr. Frederick L. Weniger, director of the outpatient division of the institute, and Dr. Ralph N. Zabarenko, associate research psychiatrist. In a reorganization of the division of neurophysiology in the department of research Robert H. Patton, Ph.D., has been named research neurophysiologist. Newly appointed resident fellows included Roger W. Russell, Ph.D., and Harry W. Braun, Ph.D., respectively associate professor of psychology and lecturer in psychology at the University of Pittsburgh. Dr. Robert A. Clark, clinical director of the institute, is on a year's leave of absence to attend the International Congress on Mental Health in London in August and to study under C. G. Jung at the Institute of Analytical Psychology in Switzerland.

TEXAS

Personal.—Dr. Webb Walker was honored at a testimonial dinner on his retirement as chairman of the board of the City-County Hospital, Fort Worth, June 3. Dr. Walker, who joined the board in 1918, is succeeded by Dr. Demetrius M. Rumph.

Appoint Professor of Biochemistry.—Wendell H. Griffith, Ph.D., professor of biochemistry, St. Louis University School of Medicine, St. Louis, has accepted appointment as professor of biochemistry and nutrition and chairman of the department at the University of Texas Medical Branch, Galveston. Dr. Griffith has been associated with the biochemistry department of St. Louis University School of Medicine since 1923. He served during World War II as colonel in the Sanitary Corps and was responsible for nutrition surveys among American troops.

WASHINGTON

Admnistrative Assistant Needed.—The state department of health is receiving applications for an administrative assistant in the Hospital Planning and Development Section. The position is in Seattle and carries a salary range of $295 to $360 per month. Duties will be to assist the head of the section in planning and supervising the collection, tabulation and analysis of data pertinent to hospital construction needs. Applications and information are available from the state department of health, Seattle.

Society News. — The Pacific Northwest Obstetrical and Gynecological Association was formed at a meeting in Spokane by representatives from the Northwestern district of the United States and Canada, including Alaska. Membership is limited to members of the profession who are specialists certified by either the American or the Canadian Board of Obstetrics and Gynecology. Officers elected were: Howard C. Stearns, Portland, Ore., president; E. Murray Blair, Vancouver, British Columbia, president-elect, and Richard D. Reekie, Spokane, secretary-treasurer.

WEST VIRGINIA

Center Changes Name. —The name of the Kanawha Valley Medical Center in South Charleston has been changed to "West Virginia Medical Center." The change was approved by the House of Delegates of the West Virginia State Medical Association. The type of service rendered will in no way be affected. The institution is being operated for the exclusive treatment and control of syphilis and gonorrhea for all of the fifty-five counties in West Virginia. Patients are referred to the center by private physicians and officials of local health departments.

Outbreak of Tracheobronchitis.—The recent outbreak of respiratory disease in Tucker County is considered to have been tracheobronchitis, according to a semifinal report submitted to the state department of health by the U. S. Public Health Service. A total of 27 cases was reported from the area, the first in February and the last one in June. The disease, which has been sporadic, has affected only infants and children. The 4 deaths occurred in children under 2 years of age. According to Dr. Newman H. Dyer, state health commissioner, a similar type of disease has been found during the past year in Mineral County, and in Cumberland, Md.

WISCONSIN

Form Public Health Council. — The Wisconsin Public Health Council, aimed at improving public health by disseminating public health information and encouraging the development of adequate public health services throughout the state, was formed May 12. It comprises forty-five citizens under the temporary chairmanship of William J. Deegan, city manager of Superior. The new organization will not duplicate existing agencies, but will be representative of all organized groups and individuals whose interest involve health.

Anesthesiologists to Meet.—The Wisconsin Society of Anesthesiologists invites all doctors in Wisconsin to a series of four panel discussions on the autonomic nervous system as it is concerned in all surgical operations, September 19, in the auditorium of the Service Memorial Institute, Madison. The last twenty or thirty minutes of each hour will be used for questions from the floor. There is an advance registration fee of $1; residents in hospitals are invited without fee but are requested to make their reservations in advance. Information may be obtained from Dr. William Kreul, 811 Main Street, Racine.

WYOMING

Annual State Medical Meeting.—The Wyoming State Medical Society will hold its annual meeting September 1-3 at the Connor Hotel and the Wyoming Union Building, Laramie, under the presidency of Dr. Emory W. DeKay, Laramie. Guest speakers include:

John B. Grow, Denver, Exploratory Thoracotomy in Obscure Intrathoracic Disease.
B. Marden Black, Rochester, Minn., Status of Goitrogenic Drugs, Radioiodine and Surgery in Treatment of Diseases of the Thyroid Gland.
Ward Darley, Denver, Diagnosis of the Active Rheumatic State.
Harold S. Morgan, Lincoln, Neb., Management of Breech Presentation.
Constantine F. Kemper, Denver, Changing Concepts About Diabetes Mellitus.
George F. Lull, Chicago, Secretary and General Manager, American Medical Association.
Ralph M. Stuck, Denver, Management of Head Injuries in General Practice.
Robert Ward, New York, Poliomyelitis—Distribution of Virus and Pathways of Spread.
Benedict J. Duffy, Rochester, N. Y., subject to be announced.

The Woman's Auxiliary will meet September 1-2 in conjunction with the state association.

PUERTO RICO

Number of Puerto Rico Doctors.—According to the Medical Association of Puerto Rico, a total of 190 Puerto Rican medical students have received free scholarships from the Insular Government to study in the United States and Mexico. Thirty-four of these students will receive their doctor's certificates this year. There are 752 doctors in active service in Puerto Rico, of whom 61 are foreigners who are practicing with special licenses. The new doctors will serve in government institutions for a period of five years.

Hospital Construction Program.—The U. S. Public Health Service has approved the hospital construction program, thus permitting Puerto Rico to take advantage of federal funds for this purpose. In addition to the construction to be undertaken with federal and insular funds, the Government of Puerto Rico has already under construction eighteen municipal hospitals and thirty public health units. While the Island has the necessary funds to take care of the hospital construction program during the next two years, operating expenses of the program will prevent Puerto Rico from taking advantage of federal appropriations for the program after the first two years of the five years contemplated in the construction already planned. It is estimated that for each bed provided the insular government will have to expend $1,500 annually for maintenance.

GENERAL

Reclaiming Used Gauze Sponges.—The Hospital Bureau of Standards and Supplies, Inc., has issued a report on "Reclaiming Used Gauze Sponges" by Dewey H. Palmer, research director. The seven page mimeographed report may be obtained from the Research Department, Hospital Bureau of Standards and Supplies, Inc., 247 Park Avenue, New York 17, for 50 cents.

Tuberculosis Death Rate at New Low.—According to the National Tuberculosis Association, the tuberculosis death rate in the United States reached a new low of 33.2 per 100,000 population in 1947. The increase in the number of new cases was credited to improved case-finding methods. The number of reported deaths from tuberculosis dropped below 50,000 for the first time with 47,636 deaths as compared with 50,911 in 1946.

Medical Illustrators' Meeting.—The Association of Medical illustrators will hold its third annual meeting in Chicago, September 27-30, at the Sheraton Hotel. The association, founded in 1945 in Chicago, is under the presidency of Mr. Willard C. Shepard, medical art director at W. B. Saunders Company. The first Brödel Memorial Lecture will be given at the annual banquet September 27 by Barry J. Anson, Ph.D., Northwestern University Medical School, Chicago.

Tuberculosis Sanatorium Directory.—The National Tuberculosis Association has issued its 1948 "Tuberculosis Sanatorium Directory" listing 830 institutions with 120,496 beds for patients with tuberculosis. Seventeen institutions with 2,940 beds are located in Alaska, Hawaii and Puerto Rico. Exclusive of beds in state mental and penal institutions, the total number available in 1947 was 99,179, an increase of 1,453 beds since 1942, when the last directory was published.

Association of Nurse Anesthetists.—The fifteenth annual meeting of the American Association of Nurse Anesthetists will be held in Atlantic City, N. J., September 20-23, with three general sessions emphasizing the clinical, theoretical and professional aspects of anesthesia. Speakers will include: Dr. Albert Faulconer, Rochester, Minn.; Dr. Alfred Blalock and

Miss Olive Berger, Johns Hopkins Hospital, Baltimore; Dr. Esther M. Greisheimer, Temple University School of Medicine, Philadelphia; Dr. Vincent P. J. Collins, Doctors' Hospital, New York, and Emanuel Hayt, attorney-at-law, New York.

Mortality Rate Remains Low.—According to the Institute of Life Insurance, New York, the health record among U. S. life insurance policyholders during the first half of this year has continued at or near the record low of last year. During the first six months tuberculosis has continued to decline to 40 per cent under that of ten years ago. The 1948 improvement in all major childhood diseases except measles over last year's record low brought the rate to a level of about one fifth that of ten years ago. The influenza death rate is well under last year's and about one third of that ten years ago. Only deaths due to heart disease and cancer show increases.

Human Genetics Society of America.—This recent organization aims to bring into closer contact investigators interested in human genetics and to deal with related problems. The membership at present is about 250, drawn from the fields of anthropology, child development, genetics, immunology, medicine, psychology, sociology, statistics and others. The president for 1948-1949 is Hermann J. Muller, D.Sc., Bloomington, Ind. The society will hold its first meeting at Washington, D. C., September 11-13. Information relative to membership may be obtained from the secretary, Herluf H. Strandskov, D.Sc., Department of Zoology, University of Chicago, Chicago 37.

Instructors of Medical Record Library Science.—The American Association of Medical Record Librarians will sponsor an institute for instructors in medical record library science October 13-16, in Los Angeles, if enough instructors are interested. Applicants other than present instructors must meet the following requirements: age, 23 to 45 years; college or university degree; graduation from an approved school for medical record librarians, and at least two years' medical record library experience. Tuition for others attending will be $25. Information may be secured from Mrs. Edna K. Huffman, American Association of Medical Record Librarians, 22 East Division Street, Chicago.

Society Elections.—The New England Dermatological Society has elected Dr. Francis M. Thurmon, Boston, president; Dr. G. Marshall Crawford, Brookline, Mass., secretary, and Dr. Mildred L. Ryan, Brockton, Mass., treasurer.——At the meeting of the American Society for the Study of Arteriosclerosis, Dr. William B. Kountz, St. Louis, was elected president; Dr. Otakar J. Pollak, Quincy, Mass., secretary-treasurer. The next annual scientific meeting will be held October 31-November 1 at the Hotel Knickerbocker, Chicago.——At the recent meeting of the Central Surgical Association, Dr. Henry K. Ransom, Ann Arbor, Mich., was installed as president; Dr. J. Dewey Bisgard, associate professor of surgery at the University of Nebraska College of Medicine, Omaha, president-elect; Dr. Walter G. Maddock, Chicago, secretary, and Dr. James T. Priestley, Rochester, Minn., treasurer.

Roentgen Ray Society Meeting.—The American Roentgen Ray Society will hold its annual meeting at the Palmer House, Chicago, September 14-17, under the presidency of Dr. Lawrence Reynolds, Detroit. The program includes a roundtable discussion of Bronchogenic Carcinoma and symposiums on the Diagnostic, Roentgenographic and Surgical Aspects of Congenital Heart Disease; Diagnosis and Treatment of Diseases of the Chest and Group Consultation; the Intensification of the Roentgenoscopic Screen Present Day Roentgenoscopes and Their Deficiencies and Advances in Radiology. Other papers will be presented by speakers from throughout the country. The Caldwell Lecture will be presented by Dr. Byrl R. Kirklin, Rochester, Minn., on "Graduate Education in Roentgenology." The annual banquet will be held Thursday evening.

Changes in Board of Obstetrics and Gynecology.—The American Board of Obstetrics and Gynecology in annual session in Washington, D. C., May 16-22, elected Dr. Walter T. Dannreuther, New York, president, and Dr. Paul Titus, Pittsburgh, secretary-treasurer. Dr. Daniel G. Morton, San Francisco, was appointed to fill the unexpired term of Dr. Edward A. Schumann, Philadelphia, representing the American Gynecological Society, and Dr. Robert A. Kimbrough Jr., Philadelphia, the unexpired term of Dr. Ludwig A. Emge, San Francisco, representing the Section on Obstetrics and Gynecology of the American Medical Association. The board at the examination meeting certified 231 candidates. A number of changes in board requirements and regulations were made. New bulletins are now available for distribution on application and give details of all new regulations. These relate both to candidates and to hospitals conducting residency services for training. Foremost are the following: 1. The ruling that applicants must receive adequate training in both obstetrics and gynecology has been defined as meaning a minimum of six months, full time, in the branch of either obstetrics or gynecology relegated to a minor role in a candidate's training and preference for practice. 2. Acceptable preceptorship training is defined. 3. The present regulation requiring at least six months of practice in the specialty following the completion of an acceptable training period has now been extended, effective Dec. 31, 1949, to a requirement of two years post-training practice limited to the specialty. 4. Specific requirements for approval of hospital services for residency training are outlined. 5. Effective immediately, there will be no further temporary approvals of hospital services for residency training. All future approvals will be based entirely on inspection following application. It is expected also that certain resurveys will result in withdrawal of present residency approval from institutions where the educational and training standards are not being maintained. The next scheduled examination (Part I), written examination and review of case histories, for all candidates will be held in various cities of the United States and Canada on Friday, Feb 4, 1949. Applications may be made until Nov. 1, 1948. Application forms and bulletins are sent on request made to American Board of Obstetrics and Gynecology, Inc., 1015 Highland Building, Pittsburgh 6, Pa.

FOREIGN

Great Britain

Arthritis Aid Units.—The Canadian Press reports that Lord Horder, physician to the King and a leader of the war on arthritic diseases, has planned a squad of two hundred mobile physical therapy units to carry the latest treatment to every small town in England. There will be two fully trained physical therapists to each truck. Trained operators of the electrical equipment have been traveling in Britain for more than a year in twelve trucks.

Germany

Max Planck Society.—*The New York Times* reports that a new German scientific association called the Max Planck Society for Advancement of Science has been founded with Dr. Otto Hahn, Nobel Prize winner who first split the uranium atom, as head. The society will take the place of the Kaiser Wilhelm Institute, which once sponsored more than fifty research associations but was dissolved by the Allied Control Council in 1946. Complete freedom of research has been guaranteed, subject only to the council's prohibition of military research. Ten other Nobel Prize winners have joined Dr. Hahn in founding the new society.

CORRECTION

"Demerol."—In the abstract "'Demerol' and Opium Alkaloids in Biliary Spasm," in THE JOURNAL, July 24, 1948, page 1163, the last sentence should read "as the pain is due to biliary obstruction other than spasm relief will not be afforded by the nitrites; morphine or meperidine may be given for the relief of this type of pain." In the abstract the last part of this sentence had been deleted.

Marriages

HARRY RANDOLPH HULL NICHOLAS III, Flanders, N. J., to DR. MARGARET HASLET DOYLE of Brooklyn in Bay Ridge, N. Y., June 3.

RALPH ULYATE WHIPPLE, West Englewood, N. J., to Miss Joan Dorothy Hopkins of Maidenhead, England, May 8.

ROBERT BIRCHALL, Port Washington, N. Y., to Miss Anne Lancaster Tinsley of Spartanburg, S. C., May 24.

KAM-FAI CHAN to Miss Lau-Chun Kwan, both of Hong Kong, China, in New York in June.

ROBERT EMMET GORDON, Brooklyn, to Miss Jeanne Frances Dillon in Newburgh, N. Y., June 5.

GRAHAM ALEXANDER VANCE, Bristol, Tenn., to Miss Martha Gordon Miller of Chicago, June 5.

ALEXANDER J. MOZZER, New York, to Miss Ann Kuczynski of Northampton, Mass., June 19.

ALFRED JOSEPH COLE, Baltimore, to Miss Roselda Katz of Shaker Heights, Ohio, June 22.

RICHARD P. KEATING, New York, to Miss Barbara Nogas of East Hampton, Conn., June 12.

WILLIAM PRICE GIVEN, New York, to DR. PHYLLIS CASSEDY, in Newburgh, N. Y., May 8.

Deaths

Samuel McClintock Hamill ⊕ died at his home in Philadelphia, May 3, aged 83, of cardiac failure. Dr. Hamill was born in Oak Hall, Pa., Nov. 3, 1864. He was graduated from Princeton and then was graduated from the University of Pennsylvania Department of Medicine in 1888. In 1892 he joined the faculty of the University of Pennsylvania and from 1901 to 1919 was professor of diseases of children at the old Philadelphia Polyclinic and College for Graduates in Medicine and at the University of Pennsylvania Graduate School of Medicine, 1919-1920. A specialist certified by the American Board of Pediatrics, Dr. Hamill was past president of the American Pediatric Society, the American Child Health Association of which he had been for many years member of the executive committee, the American Association for the Study and Prevention of Infant Mortality and of the Philadelphia Child Health Society. He was a founder and past president of the American Academy of Pediatrics and of the Philadelphia Pediatric Society, which presented him in 1933 with a medal for notable service and achievement in the field of child health. He was the first chairman of the section on pediatrics of the Medical Society of the State of Pennsylvania and in 1911 was chairman of the Section on Diseases of Children of the American Medical Association. In 1919 he was chosen one of three delegates from the United States to the International Conference on Public Health and Child Welfare in France. Dr. Hamill served in 1930 as chairman of Section I on Medical Service of President Hoover's White House Conference on Child Health and Protection. From 1933 to 1939 he was chairman of the Pennsylvania State Emergency Child Health Committee, and in 1936 the Medical Society of the State of Pennsylvania presented him with an illuminated manuscript in recognition of this service. The Philadelphia County Medical Society in 1939 conferred on Dr. Hamill the Strittmatter Award. He was a fellow of the College of Physicians of Philadelphia, a member of the Pathological Society of Philadelphia, Neurological Society of Philadelphia, Mental Hygiene Committee of Public Charities Association of Pennsylvania and the mayor's milk commission of Philadelphia. During 1917 and 1918 he was a member of the general medical board of the Council of National Defense, chairman of its National Child Welfare Committee, director of child welfare for the state of Pennsylvania and chief of the division of child hygiene of the Pennsylvania State Department of Health. Dr. Hamill was on the staff of St. Christopher's Hospital for Children, chief of pediatric departments of the Howard Hospital, Philadelphia Polyclinic Hospital and the Presbyterian Hospital, where he was consulting pediatrician. He was a member of the board of managers of the Babies' Hospital and board of directors of the Philadelphia Child Guidance Clinic, a former chairman of the health department, Council of Social Agencies, Welfare Federation of Philadelphia, vice president of Philadelphia Social Service Exchange and member of the Charities and Welfare Committee of the Philadelphia Chamber of Commerce. At one time Dr. Hamill was a member of the board of trustees of the Lawrenceville School and the Oak Lane Country Day School. In 1928 and 1929 he was president of the Society of the Alumni of the Medical Department of the University of Pennsylvania. In 1940 he was awarded the Doctor of Science degree from the University of Pennsylvania, and in 1941 the alumni award of merit.

Millard Knowlton ⊕ Hartford, Conn.; born in Colfax County, Neb., Feb. 18, 1875; Medical College of Indiana, Indianapolis, 1905; at one time participated in the tuberculosis control program for the New Jersey State Department of Health; received public health degree from Harvard-Massachusetts Institute of Technology School of Public Health; served with the U. S. Public Health Service Reserve; during World War I assigned to venereal disease control work in this country; other assignments included work with the Kansas State Board of Health and duty in Montana; did venereal disease control work in North Carolina from 1919 to 1921 and from there was detailed to Veterans Bureau until 1923; on April 1, 1923 came to the Connecticut State Department of Health as director of the bureau of preventable diseases, where he remained until his retirement in 1946; fellow of the American Public Health Association and a past president of the Connecticut Branch of the Society of American Bacteriologists; member of the Connecticut Public Health Association, American Society for the Advancement of Science and the American Epidemiological Society; died in St. Francis Hospital May 4, aged 73, of coronary thrombosis.

Marshall Peterson Gordon Jr., ⊕ Richmond, Va.; born in Richmond, Oct. 26, 1904; University of Virginia Department of Medicine, Charlottesville, 1927; interned at the Johns Hopkins Hospital in Baltimore, where he served a residency; interned at the University of Virginia Hospital in University; assistant professor of urology at the Medical College of Virginia and urologist for the hospital division of the college; specialist certified by the American Board of Urology; member of the American Urological Association and the Richmond Academy of Medicine; served in the medical corps of the U. S. Naval Reserve during World War II; on the staffs of the Retreat for the Sick, Stuart Circle, St. Elizabeth's and Sheltering Arms hospitals; died May 10, aged 43, of coronary thrombosis.

Grant Orante Favorite ⊕ Haddonfield, N. J.; born in Ortucchio, Italy, June 20, 1903; Hahnemann Medical College and Hospital of Philadelphia, 1927; associate in bacteriology and immunology at Jefferson Medical College in Philadelphia; served as professor of bacteriology at his alma mater; member of the American Society of Clinical Pathologists; fellow of the American College of Physicians; during World War II a major in the medical corps of the Army of the United States from September to November 1942; on the staff of the West Jersey Hospital in Camden, where the Grant O. Favorite Research Laboratory was established and named in his honor; died May 4, aged 44, of heart disease.

James Madison Batchelor, Waveland, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1895; at one time associate professor of clinical surgery at his alma mater; for many years practiced in New Orleans, where he was formerly president and professor of surgery at the Loyola Post-Graduate School of Medicine, superintendent of public health and chairman of the board of health for the parish of Orleans and city of New Orleans, consultant for the city board of health and on the staffs of Presbyterian and Charity hospitals; died in Baptist Hospital, New Orleans, May 17, aged 77, of complications following injuries received in a fall.

Wesley Emmet Gatewood ⊕ Portland, Ore.; born in Stockport, Ohio, March 7, 1891; Rush Medical College, Chicago, 1915; associate clinical professor of medicine at the University of Oregon Medical School; specialist certified by the American Board of Internal Medicine; member of the North Pacific Society of Internal Medicine and the Portland Academy of Medicine; formerly on the faculty of the State University of Iowa College of Medicine in Iowa City; served overseas during World War I; on the staffs of the Portland Sanitarium and Hospital, Emanuel Hospital and the Multnomah Hospital; died May 23, aged 57, of coronary thrombosis.

Heywood Hill Hopkins ⊕ Rochester, N. Y.; born in Thomasville, Ga., Sept. 13, 1896; Harvard Medical School, Boston, 1922; instructor in orthopedic surgery at the University of Rochester School of Medicine and Dentistry; specialist certified by the American Board of Orthopaedic Surgery, Inc.; member of the Rochester Academy of Medicine and the Rochester Pathological Society; affiliated with the Veterans Administration Hospital and the Memorial Hospital in Bath, the Genesee Hospital, Monroe County Hospital and the Strong Memorial Hospital; died May 13, aged 51, in an airplane accident.

John Falconer Sinclair ⊕ Philadelphia; born in Orange, N. J., Feb. 18, 1871; University of Pennsylvania Department of Medicine, Philadelphia, 1897; emeritus professor of pediatrics at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; specialist certified by the American Board of Pediatrics, Inc.; past president of the Philadelphia Pediatric Society; member of the American Academy of Pediatrics; one of the founders and formerly medical director of Babies' Hospital; served on the staff of Presbyterian Hospital; died May 11, aged 77, of arteriosclerosis and rheumatic heart disease.

William Schroeder Jr., Northport, N. Y.; born in Brooklyn, June 4, 1879; Long Island College Hospital, Brooklyn, 1901; member of the American Medical Association; fellow of the American College of Surgeons; served overseas during World War I and later with the Fourteenth Infantry of the Brooklyn National Guard; formerly chairman of the sanitation commission of New York City and commissioner of the department of hospitals; affiliated with Cumberland, Coney Island, Prospect Heights and Caledonian hospitals, Brooklyn; died May 1, aged 68, of coronary sclerosis.

Henry Hervey Abegg, Dougherty, Iowa; State University of Iowa College of Medicine, Iowa City, 1898; member of the American Medical Association; died May 11, aged 74, of heart disease and cirrhosis of the liver.

Nathan Addelson, Brookline, Mass.; Tufts College Medical School, Boston, 1908; died April 30, aged 66, of cerebral thrombosis.

Carlton Stewart Allen, Los Angeles; University of Southern California School of Medicine, Los Angeles, 1909; member of the American Medical Association; served during World Wars I and II; for many years assistant medical director of the state department of unemployment; died May 4, aged 63, of myocarditis.

Charles Edgar Allen Jr., ⊕ Baton Rouge, La.; Louisiana State University Medical Center, New Orleans, 1936; medical director of the Louisiana division of the Esso Standard Oil Company; member of the staffs of Baton Rouge General Hospital and Our Lady of the Lake Sanitarium, where he died May 17, aged 43, of polycystic kidney disease.

Thomas Jefferson Andrews, Faitbury, Neb.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1882; died in Lincoln April 10, aged 96, of cerebral hemorrhage.

John William Harmon Beach, Arlington, Ohio; Fort Wayne College of Medicine, 1898; member of the American Medical Association; served during World War I; died May 13, aged 75, of carcinoma.

Harry Hallowell Bowles ⊕ Summit, N. J.; University College of Medicine, Richmond, Va., 1909; fellow of the American College of Surgeons; served during World War I; for many years chief of staff of Overlook Hospital, where he resigned in 1946 and became consulting surgeon; died May 29, aged 63, of coronary thrombosis.

Thomas Patrick Boyle, Newark, N. J.; Baltimore Medical College, 1902; served during World War I; formerly on the staffs of St. James' Hospital and Babies' Hospital, Coit Memorial; died May 17, aged 71, of coronary occlusion.

Edward Pliny Brewer, Miami, Fla.; Dartmouth Medical School, Hanover, N. H., 1879; died May 10, aged 88, of senility.

John Cabot, Weehawken, N. J.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1886; at one time affiliated with the Roosevelt Hospital and Vanderbilt Clinic in New York; died May 12, aged 93, of chronic nephritis and arteriosclerosis.

Alexander Carlyle Cameron, Erie, Pa.; University of Pittsburgh School of Medicine, 1911; died May 9, aged 63, of rupture of right subclavian artery.

Alfred Cornwell, Bridgeton, N. J.; Jefferson Medical College of Philadelphia, 1894; died May 27, aged 77, of gastric carcinoma.

Ersom Mills Cunningham ⊕ Cassopolis, Mich.; Medical College of Indiana, Indianapolis, 1892; past president of the Cass County Medical Society; for many years on the staff of the Lee Memorial Hospital, Dowagiac, Mich., where he died May 13, aged 80, of cerebral hemorrhage.

Nelson Lloyd Deming, Daytona Beach, Fla.; Columbia University College of Physicians and Surgeons, New York, 1893; died May 1, aged 80, of coronary thrombosis.

William Devitt ⊕ Allenwood, Pa.; Medico-Chirurgical College of Philadelphia, 1902; member and past president of the American College of Chest Physicians; fellow of the American College of Physicians; specialist certified by the American Board of Internal Medicine; served as president of the Pennsylvania Tuberculosis Society and the Federation of American Sanatoria; medical director of Devitt's Camp, which he founded; died May 23, aged 73, of coronary occlusion.

Fred Strayer Diefendorf, Angola, N. Y.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1898; member of the American Medical Association; for many years health officer of the town of Evans and the village of Angola; died in the Gowanda State Homeopathic Hospital, Helmuth, May 19, aged 75, of arteriosclerosis and prostatic hypertrophy.

Otto G. Draper, Chicago; Missouri Medical College, St. Louis, 1898; member of the American Medical Association; on the staff of Henrotin Hospital; died in Round Lake, Ill., May 21, aged 79, of cerebral arteriosclerosis.

Maurice Joseph Drell ⊕ Seattle; University of Illinois College of Medicine, Chicago, 1940; specialist certified by the American Board of Ophthalmology; interned at the Cook County Hospital in Chicago; he served a residency in ophthalmology at the University of Chicago Clinics; affiliated with Harborview and Virginia Mason hospitals; died May 20, aged 30, of cardiovascular renal disease.

Frederick Warren Ellis ⊕ Newton Centre, Mass.; Harvard Medical School, Boston, 1881; an Affiliate Fellow of the American Medical Association; last original member of the American Physiological Society; member of the American Association for the Advancement of Science; died April 30, aged 91, of pulmonary tuberculosis.

Le Roy William Flora, Anchorage, Alaska; University of Minnesota Medical School, Minneapolis, 1940; certified by the National Board of Medical Examiners; member of the American Medical Association; served as a member of the Alaska Board of Medical Examiners; killed in a plane crash June 17, aged 40.

Dwight Bailey Fuller, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1892; also a dentist; formerly member of the Common Council; member of the Association of Military Surgeons of the United States; served on the staffs of the Polyclinic and Howard hospitals; died in Philadelphia General Hospital May 16, aged 84, of intracapsular fracture of left femur, as the result of a fall, arteriosclerosis and bronchopneumonia.

James Albert Fulton, Kansas City, Kan.; College of Physicians and Surgeons, Medical Department Kansas City University, Kansas City, 1903; member of the American Medical Association; served during World War I; past president of the board of education; formerly chief medical officer of the Kansas National Guard; one of the organizers and for many years president of the Brotherhood State Bank; for forty-four years anesthetist at Bethany Hospital, where he died May 9, aged 68, of coronary disease.

James Burton Gillis, Portland, Ore.; University of Oregon Medical School, Portland, 1911; died May 13, aged 72, of carcinoma of the bladder.

Horace Gledhill ⊕ Brooklyn; Jefferson Medical College of Philadelphia, 1923; on the staffs of the Methodist, Norwegian and Victory Memorial hospitals; died May 2, aged 49, of coronary disease.

John Calvin Greenfield, Avon, S. D.; Bennett Medical College, Chicago, 1898; member of the American Medical Association; died in Sioux City April 21, aged 72, of a malignant tumor.

Peter George Grimm ⊕ Spirit Lake, Iowa; Rush Medical College, Chicago, 1893; served as president of the Dickinson County Medical Society; for many years county coroner and surgeon for the Chicago, Milwaukee and St. Paul Railroad; died in Spirit Lake Hospital May 14, aged 76, of heart disease.

Harry M. Harman, Frenchtown, N. J.; Jefferson Medical College of Philadelphia, 1887; also a registered pharmacist; served as mayor of Frenchtown and as member and president of the school board; on the staff of the Easton (Pa.) Hospital; died in Mount Pleasant, May 25, aged 83, of carcinoma of the prostate.

Ernest C. Harris, Sylvester, Ga.; Atlanta College of Physicians and Surgeons, 1913; member of the American Medical Association; served as examining physician for the Selective Service for many years; died in Piedmont Hospital, Atlanta, April 26, aged 64, of cerebral hemorrhage.

William Norris Hubbard ⊕ New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1886; for many years affiliated with the Manhattan Eye, Ear, Nose and Throat Hospital; died April 21, aged 87.

Buel Latcher, Yonkers, N. Y.; Albany (N. Y.) Medical College, 1897; city health department district physician for many years; on the staff of St. John's Riverside Hospital; died in the Aurelia Osborn Fox Memorial Hospital, Oneonta, May 21, aged 73, of cirrhosis of the liver.

John Leedom ⊕ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1905; associate professor of surgery at the Temple University School of Medicine; died April 24, aged 66, of acute cardiac failure.

Robert Matthew Levin, Boston; University of Vermont College of Medicine, Burlington, 1938; associated with Massachusetts Memorial Hospitals; served overseas during World War II; died in South Paris, Maine, April 30, aged 34, of coronary occlusion.

Harriet Maynard Lewis, Portland, Me.; Woman's Medical College of Pennsylvania, Philadelphia, 1884; died in the Mercy Hospital April 16, aged 91, of cerebral hemorrhage.

Louis Pard L'Homme, Lowell, Mass.; College of Physicians and Surgeons, Boston, 1919; died April 12, aged 54, of cirrhosis of the liver.

Maurice Rosenthal Lohman ⊕ Fort Wayne, Ind.; University of Michigan Medical School, Ann Arbor, 1915; past president of the Indiana Tuberculosis Association; for many years president of the Allen County Tuberculosis Association; past president of the Fort Wayne and Allen County Medical Society; member of the board of directors of Irene Byron Sanatorium; died in St. Joseph Hospital April 29, aged 58, of bilateral pyelonephritis and hypertrophied prostate.

Clark Russell William Magill ⊕ Chicago; University of Illinois College of Medicine, Chicago, 1924; served during World War II; on the staff of Garfield Park Community Hospital and St. Anne's Hospital, where he died May 30, aged 50, of injuries received in an automobile accident.

Horatio Richmond Marsh, Long Beach, Wash.; New York Homeopathic Medical College and Hospital, New York, 1897; member of the American Medical Association; for many years a medical missionary in Alaska; member of the fire department; died in Warrenton, Ore., May 6, aged 74, of arteriosclerosis.

Dorothy Ruth Mattingly ⊕ Baton Rouge, La.; Louisiana State University School of Medicine, New Orleans, 1939; specialist certified by the American Board of Radiology, Inc.; served a residency at the Charity Hospital in New Orleans; on the staffs of Our Lady of the Lake Sanitarium and the Baton Rouge Hospital; died in Tucson, Ariz., April 23, aged 33, of hemorrhage from aneurysm of left vertebral artery.

George Wilson Terry Mills, Brooklyn; University and Bellevue Hospital Medical College, New York, 1902; member of the American Medical Association and the American Psychiatric Association; specialist certified by the American Board of Psychiatry and Neurology, Inc.; formerly medical superintendent of the Brooklyn State Hospital and the Creedmoor State Hospital in Queens Village, N. Y.; died in the Methodist Hospital May 8, aged 67, of gastric hemorrhage.

Donald Martin Norton ⊕ Medford, Wis.; Marquette University School of Medicine, Milwaukee, 1926; for many years secretary of the Price-Taylor Counties Medical Society; formerly fellow in medicine at the Mayo Foundation in Rochester, Minn.; city health officer; affiliated with the Medford Clinic-Hospital; died May 5, aged 50, of carcinoma of the liver.

Walter Orthner ⊕ Huntingdon, Pa.; Temple University School of Medicine, Philadelphia, 1930; formerly secretary of the Huntingdon County Medical Society; president of the board of health; on the staff of the J. C. Blair Memorial Hospital; died April 21, aged 47, of sarcoma.

Marcus Ostro ⊕ Baltimore; University of Maryland School of Medicine, Baltimore, 1914; member of the Radiological Society of North America, Inc., and the American College of Radiology; specialist certified by the American Board of Radiology; on the staffs of the Johns Hopkins University Hospital and Sinai Hospital, where he died May 12, aged 58, of subarachnoid hemorrhage.

Boris Rapoport ⊕ New York; Tufts College Medical School, Boston, 1914; specialist certified by the American Board of Anesthesiologists; member of the American Society of Anesthesiologists; formerly on the faculty of his alma mater; for many years chief anesthetist at the Beth Israel Hospital in Boston; since 1937 head of the department of anesthesia at the Hospital for Joint Diseases, where he died May 4, aged 59, of coronary thrombosis.

Jacob Reiner ⊕ Elizabeth, N. J.; University and Bellevue Hospital Medical College, New York, 1908; past president of the Union County Medical Society; fellow of the American College of Surgeons; served during World War I; during World War II examining physician for a local draft board; city school physician; on the staff of Elizabeth General Hospital; died May 9, aged 60, of coronary thrombosis.

Francis Llewellyn Rogers, Long Beach, Calif.; State University of Iowa College of Medicine, Iowa City, 1891; member of the Long Beach Eye, Ear, Nose and Throat Society and of the Los Angeles Society of Ophthalmology and Otolaryngology; one of the founders of Seaside Memorial Hospital; died April 30, aged 83, of uremia.

Charles Compton Roosa, Buffalo; University of Buffalo School of Medicine, 1899; died in Buffalo General Hospital May 9, aged 91, of carcinoma of the bladder and mitral stenosis.

William Asbury Rourk, Myrtle Beach, S. C.; Jefferson Medical College of Philadelphia, 1924; member of the American Medical Association; served as a member of the city council and city school board; died May 18, aged 50, of coronary thrombosis.

Charles Joseph Rowan ⊕ Laguna Beach, Calif.; Rush Medical College, Chicago, 1898; served on the faculties of his alma mater, State University of Iowa College of Medicine in Iowa City and the University of Southern California School of Medicine in Los Angeles; member of the American Surgical Association and Western Surgical Association; fellow of the American College of Surgeons; died in Los Angeles May 7, aged 73, of pulmonary embolism and chronic nephritis.

Robert Montfort Schley ⊕ Buffalo; Hahnemann Medical College and Hospital of Philadelphia, 1902; member of the American Psychiatric Association; specialist certified by the American Board of Psychiatry and Neurology, Inc.; on the staffs of the Millard Fillmore and Edward J. Meyer Memorial hospitals; psychiatrist to Erie County Probation Department; died May 5, aged 70, of myocarditis with congestive failure.

William Jefferson Smith, Williamsburg, Ky.; University of Louisville Medical Department, 1909; died April 21, aged 65, of cerebral hemorrhage and pneumonia.

William Henry Speer ⊕ Wilmington, Del.; University of Pennsylvania School of Medicine, Philadelphia, 1910; served as president and secretary of the Medical Society of Delaware; fellow of the American College of Surgeons; formerly mayor of Wilmington; served during World War I; formerly chief of staff of St. Francis Hospital; member and formerly chief of staff of Delaware Hospital, where he died May 3, aged 60, of pneumonia.

George Martin Spilka, Pittsburgh; Jefferson Medical College of Philadelphia, 1938; affiliated with St. John's Hospital; died April 4, aged 38, of pneumonia.

Carroll Mortimer St. Clair, Cambridge, Md.; Howard University College of Medicine, Washington, D. C., 1928; died in the Cambridge-Maryland Hospital April 1, aged 49, of coronary thrombosis.

George Thomas Watkins Jr. ⊕ Durham, N. C.; Jefferson Medical College of Philadelphia, 1915; affiliated with the Watts Hospital; died May 11, aged 56, of coronary thrombosis.

Kenneth Johnson Wilson ⊕ Oklahoma City, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1916; died April 23, aged 57, of carcinoma of the lungs.

DIED WHILE IN MILITARY SERVICE

Arthur Katz, Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1942; interned at Sinai Hospital; began active duty in the medical corps, Army of the United States, in August 1943; in July 1944 went overseas with 102d General Hospital to England; promoted to captain in January 1945; killed in a vehicle accident near Bensheim, Germany, Feb. 27, 1946, aged 28, in line of duty as medical officer of 7th Army Ordnance Technical School at Heidenheim, Germany.

Fred Coleman Mackler, New York; University of Virginia Department of Medicine, Charlottesville, 1944; interned at the Harlem Hospital, where he served a residency; began active duty as a first lieutenant in the medical corps, Army of the United States, May 1, 1946; promoted to captain; died in Walter Reed General Hospital, Washington, D. C., July 30, 1947, aged 26, of glioma.

Paul James Ritchie ⊕ Lieutenant Commander M.C., U. S. Navy, San Diego, Calif.; University of Southern California School of Medicine, Los Angeles, 1938; interned at California Hospital in Los Angeles; appointed a lieutenant (jg) in the medical corps of the U. S. Navy on May 16, 1938; died June 23, 1944, aged 32, when the plane in which he was a passenger crashed into the Pacific Ocean.

Benjamin Stoller, Brooklyn; New York Homeopathic Medical College and Flower Hospital, New York, 1922; began active duty as a captain in the medical corps, Army of the United States, in November 1942; died April 17, 1946, aged 50, of hypertension and coronary sclerosis.

Richard Provost Wilson ⊕ *Lieutenant Commander* M.C., U. S. Navy, Minneapolis; Syracuse University College of Medicine, 1936; interned at the Brooklyn Hospital; appointed a lieutenant (jg) in the medical corps of the U. S. Navy on May 8, 1939; died Feb. 26, 1944, aged 31, of injuries received when the plane in which he was a passenger crashed near the Naval Air Station, Olathe, Kan.

Thurston William Laraway, Hood River, Ore.; University of Oregon Medical School, Portland, 1924; formerly health officer of the village of Elk River; major, medical corps, Army of the United States; died in the Regional Hospital, Camp Joseph T. Robinson, Ark., July 9, 1945, aged 49, of pneumonitis.

Foreign Letters

PARIS

(From Our Regular Correspondent)

June 10, 1948.

Treatment of Tuberculous Laryngitis by Tyrothricin

At one of the last meetings of the Society of the Paris Hospitals, J. Fouquet presented about 50 cases of tuberculous laryngitis treated with two to three daily injections of streptomycin. He noted an improvement in the functional disorders within two to three days, the cicatrization of the anatomic lesions within two to three weeks. Infiltrating forms are slower in responding. He has discarded local streptomycin treatment by powder or aerosols. At the same meeting, P. Bourgeois and V. Dupont presented their results of local treatment of tuberculous laryngitis by tyrothricin. They gave four daily applications of a suspension of this antibiotic, the concentration being 0.5 or 1 mg. per cubic centimeter. The authors have noted the disappearance of pain and the removal of dysphagia in 7 cases out of 7 (100 per cent); improvement of edema in 3, improvement of ulcerations in 2, inappreciable effect on vegetations and no modifications of infiltrations. The authors emphasize the advantages offered by this treatment: (1) perfect tolerance; it is superior, in this respect, to streptomycin; (2) the treatment can be given without hospitalization; (3) it is less expensive than streptomycin. The authors are of the opinion that the association or the alternate use of tyrothricin and streptomycin could procure more complete anatomic recoveries.

New Method of Melanophore Diagnosis of Pregnancy

L. Servantie and F. Moretti have just perfected a melanophore method for the diagnosis of pregnancy. This test differs from the previous methods by the following characteristics: 1. Complete hypophysectomy of the frog (Rana esculenta) under binocular lens. 2. Verification of the test animal: microscopic examination of the interdigital membrane of the posterior leg; any animal not presenting a complete contraction of melanophores is to be rejected. Although decoloration be complete after five to six hours, the authors use the animal only on the day following hypophysectomy. 3. Establishment of a melanophoric index giving an objective and quantitative measure of the melanophoric potency; a reading is made under microscope half an hour and an hour after injection of a quantity of urine equal to 0.1 per cent of its weight in the dorsal lymphatic sac. 4. Elimination of the cause of error initiated by the agonic dilation of melanophores. The reading is valid if animals survive for two hours. 5. Perfection of a simple process for the concentration of the melanophorodilator hormone in the urines, when there is a doubt. The authors have performed more than 200 tests. This test has shown itself of an absolute specificity, security and fidelity, verified from the beginning to the end of the pregnancy. The result of this test has been constantly negative in the normal man and woman, in Addison's disease and pigmentary cirrhosis. The authors have found no paradoxic reaction when varying from 5 to 8 the p_H of injected urine. Beside its specificity, this process offers the advantages of rapidity, one hour in urgency cases, and also the use of an animal easily kept in the laboratory without any special precaution.

Attempts at Reanimation After Acute Anoxemia

Professor L. Binet, Dean of the Paris Faculty of Medicine, and M. Strumza have been successful in reviving animals after cessation of the respiratory action and of the beating of the heart by means of transfusing oxygenated blood through the carotid artery. The authors have made progress in this field. Through pulmonary oxygenation and transdiaphragmatic massage of the heart, they have revived asphyxiated dogs ten, fifteen and twenty minutes after stopping of the heart, when the reanimation process was begun from two to seven minutes and forty seconds after the heart had stopped. The technic is as follows: After laparotomy, the hand is slipped above the liver and thus its back is resting on the heart; forty to sixty times a minute pressure is put on the heart, in order to maintain an arterial tension of at least 60 to 100 mm. of mercury. At the same time, an effective artificial respiration is kept up, the trachea being connected with a container of pure oxygen. The subject regularly survives when reanimation is undertaken within two minutes and thirty seconds after the heart stops; survival is frequent after three minutes and thirty seconds and possible after seven minutes and thirty seconds. When the heart has resumed beating (ten to twenty minutes of massage being necessary), recurrence of respiration always follows. Associating oxygenotherapy with massage of the heart insures a necessary minimum of oxygenation to the tissues and, especially, to nervous centers and the heart. Certain medicaments, ineffective as long as the tissues are anoxemic, regain their efficiency after artificial oxygenation; in this way, an injection of epinephrine in a heart stopped for three minutes will induce hypertension only after three minutes and fifteen seconds of massage and oxygenation. The authors emphasize that manual transdiaphragmatic compressions of the heart, associated with inhalation of pure oxygen, surpass, as a method of reanimation in asphyxia, all other procedures.

TURKEY

(From Our Regular Correspondent)

Ankara, July 25, 1948.

Trachoma Campaign

Trachoma was endemic in the Eastern and Southeastern provinces of Turkey before the first World War and it became epidemic as the result of troop movements through Iraq, Transjordan, Syria and Palestine. In 1927 a survey sponsored by the Ministry of Health revealed that in some localities the rate of incidence was 10 to 30 per cent and in others 70 to 80 per cent. At the second national medical congress in Ankara in 1927 trachoma was a lively subject for discussion and a campaign against it was recommended. The trachoma control zone then included the provinces of Gaziantep, Urfa, Marash, Diyarbakir, Mardin, Malatya, Adana and Mersin, with the city of Gaziantep as central control station. The campaign started in 1930 with a small staff of specialists with six 100 bed hospitals and six dispensaries at their disposal; 78,620 persons, of whom more than half were in need of treatment, were examined. In 1934 there were ten 132 bed hospitals and 21 dispensaries; 87,815 persons were examined, of whom 47,105, or 53 per cent, were found infected and 1.6 per cent were blind from trachoma; treatment (eye drops) was given 2,059,786 times. In 1937 the eight provinces had units in thirty-six villages. In 1938 there were thirteen hospitals with 160 beds, and twenty-one dispensaries (patients requiring an operation remained in the hospital two to three weeks). Minor operations, curative and preventive treatment, as well as instruction concerning the prevention of trachoma, were given at the dispensaries. All operations, treatment and medicaments are free and paid for from the government budget. During 1938 of the 171,563 persons examined 111,954, or 65 per cent, were infected and 2.6 were blind from trachoma; treatment was given 4,742,661 times. In 1945 it became necessary to divide the trachoma area into two zones with control centers at Adana and Diyarbakir. In 1947 there were sixteen hospitals with 225 beds, thirty-four village units and sixty-nine dispensaries; 96,309 persons were examined; 45,311, or 55 per cent, found infected and 1.5 blind; treatment was given 6,527,455 times. At present there are thirty-eight hospitals with 225 beds, thirty-eight dispensaries and one hundred and seven village units.

Trachoma control work is at present carried on in fifteen provinces with a population of 3,623,986. In the trachoma campaign zone 1,910,632 persons, or 47.5 per cent, are trachomatous. At present there are 49 specialists, 127 sanitary inspectors, 3 visiting nurses, 16 hospital nurses and a clerical staff of 23 employed in the trachoma campaign. In the trachoma regions from 1 to 3 per cent are in the infectious stage and from 3 to 5 per cent are blind from chronic trachoma. Seriously ill persons are admitted to the hospitals; others receive treatment at the dispensaries. The personnel of the village units is responsible for finding trachoma-infected persons in the rural communities, for providing treatment or seeing to it that they get what they require at a dispensary or hospital.

Trachoma-infected children are sent to special schools. The extermination of flies and their breeding places is given special attention, also the examination of trades people handling food or drinks. To procure an efficient personnel, courses for the training of sanitary inspectors and nurses are held in the trachoma zones. Health education is an important part of the campaign: A million illustrated pamphlets and posters have been distributed; radio talks are given; special talks are given and motion pictures shown in schools and talks and motion pictures on trachoma prevention to mothers.

The zone directors make frequent inspection tours and once a month send a detailed report to the ministry of health.

Among the new plans for 1949 conducive to the eradication of trachoma are a demand for more allocation, more means of motor transportation, more medical and other personnel, more special schools for trachoma-infected children, letters of commendation and money rewards for especially good work, new laws and regulations and securing the cooperation of the United Nation's World Health Organization. The campaign is organized and directed by the trachoma division of the ministry of health. The ministry appoints physicians, nurses, sanitary inspectors and clerical personnel, who are all of the civil service.

ITALY

(From Our Regular Correspondent)

FLORENCE, July 2, 1948.

Cancer of the Prostate

This important problem was reviewed at the recent Congress of the Italian Society of Surgery. The first speaker, Prof. E. Mingazzini, reported on the diagnosis of carcinoma of the prostate and on indications for surgical intervention; he emphasized the importance of early diagnosis and the relation between hypertrophy and cancer of the prostate. The difficulties of early diagnosis are numerous, but elements of right judgment may be drawn from accurate evaluation of subjective urinary symptoms. Disturbances of micturition, which may be associated with hypertrophy as well as with cancer, have some different characteristics: the incidence of hematuria is greater in cancer (24 per cent against 8 per cent), while urinary retention presents lower percentages in cancer than in hypertrophy. Sudden irradiating pain before and after micturition, and occurring simultaneously with various other disturbances, seems characteristic of cancer of the prostate.

Diagnostic data may be revealed by objective examination, during which four possibilities may be present: (1) little or localized changes in the lobes of the prostate, which are smooth, not indurated and not painful; under these conditions a diagnosis is impossible; (2) increase in volume of the lobes of the prostate with more or less smooth appearance but in the presence of hard nodules; the diagnosis is difficult and dubious; (3) increased volume of the lobes of the prostate in the presence of small or median nodules which are disseminated and extremely hard; the diagnosis is certain; (4) the lobes of the prostate present a woodlike, hard consistence, without definite borders; under such circumstances the diagnosis becomes simple.

The changes which must be taken into consideration are as follows: the shape (deformation may occur in 83 per cent of the cases), the surface (which will be changed in 65.5 per cent), the consistence (increased in 92.4 per cent), pain (almost always present on palpation in the cancerous zone), and the border (uncertain in 50 per cent of the cases). The many tests which may be carried out to evaluate the clinical picture, such as examination of the urine, renal function tests and tests for eosinophilia, are of little value. Cystometric studies may be of doubtful value. Among the roentgenographic studies only vesiculography may furnish reliable data.

The chemical tests, such as Abderhalden's reaction, and those of Fuchs and Freund and Kaminer, may offer doubtful data; that applies also to studies of phosphatase; in cancer without metastasis, the phosphatase is normal or little increased; in cancer with metastasis the increase of phosphatase is considerable.

The disadvantage of biopsy is that it is difficult if puncture instruments are used.

Professor Mingazzini said that profound disagreement divides various authors on the question whether or not cancer of the prostate may be operable. Statistics show that the number of patients with operable cancer is limited. Young operated on 24 patients during a period of twenty-one years. Crevy operated on 3 of 275 patients whom he had seen in the course of seven years. Berringer carried out surgical intervention in 16 of 235 cases. In cases in which the tumor is associated with hypertrophy there is more ample indication for intervention.

In cases of circumscribed or localized tumors, removal is the method of choice, and preferably by the perineal route. All other types of treatment, such as endoscopic resection, ligature of the excretory ducts of the testicles, castration and the application of radium or roentgen rays were of little help.

The second part of the subject, hormone therapy of the cancer of the prostate, was reported on by Dr. Musiani. The estrogenic substances most frequently used are synthetic products: diethylstilbestrol, hexestrol and dienestrol. The last one is more effective than the two others and is particularly suitable for the treatment of recurrences. The estrus-producing compounds may be administered orally, subcutaneously or, better, intramuscularly.

The initial doses vary from 10 to 20 mg. per day, by mouth, until improvement is obtained; then maintenance treatment should be carried out with 0.25 mg. per day, continued without interruption. Immediate success may be obtained in 51 per cent of the cases, but the treatment should be considered only as a palliative, since recurrences are observed in a great number of cases over a period varying from eight months to two years. The improvement which may be obtained consists in the rapid disappearance of pain from metastasis, in the reduction of the primary tumor and improvement of the general condition.

Treatment with hormones brings about a degeneration of the cancerous epithelium not only in the primary tumor but also in the metastasis in the lymph nodes; changes in metastasis of bones can be demonstrated on roentgenographic examination in only 9 per cent of cases.

Adenocarcinoma seems to be the type of tumor which may be benefited best by hormone therapy. The majority of authors prefer combined treatment (orchiectomy associated with administration of estrus-producing compounds), because by this procedure the main source of the androgens may be removed.

Correspondence

THE TERMINOLOGY OF SOMATIC CHANGES ACCOMPANYING EMOTIONAL STATES

To the Editor:—A number of considerations have convinced us of the need for a specific term to denote certain bodily changes resulting from emotional disturbance. We have already proposed (The Journal **132:**1053, 1946) the term "emotogenic" to designate alterations in gastric function which may occur in association with affective states unrelated to the taking or conscious thought of food. In the present communication we will discuss the origin of this term and some of its broader uses and implications.

Our attention was first drawn to this problem when, in going over the literature on the effect of emotions on gastric secretion, we became aware that there is no way of knowing, when a paper bears the term "psychic effects" in its title, whether it deals with "appetite" secretion or emotionally conditioned secretion.

The stimulation of gastric secretion by emotional states acting over the vagal pathway is often termed a type of "psychic" secretion. Had not this term already been applied to another definite physiologic phenomenon there would be no objection to such usage. However, the term "psychic" secretion has become firmly rooted in physiologic literature as a designation for the secretion of gastric juice by the vagal reflex mechanism in which the sight or thought of food (in the presence of appetite) is the stimulus. This is the original sense in which the term was used by Pavlov.

After it had been demonstrated that gastric secretion in response to sham feeding could occur in the absence of the cortex, it was proposed that the term "cephalic" phase of gastric secretion be used to designate secretion which occurred in response to stimuli acting in the region of the head. The latter term includes, then, the psychic and appetite secretion of Pavlov as well as any secretion which may occur when stimuli (food) act in the region of the head but in the absence of cortical participation. Secretion occurring in association with emotional states cannot be considered a type of cephalic secretion, since the latter is a phase of digestive secretion, whereas an emotional secretion is not. The conventional classification of gastric secretion may then be presented in slightly revised form as follows:

I. Interdigestive period:
    1. Interdigestive or "continuous" phase (*occurring in the absence of any known stimulus*)
    2. Emotional phase
II. Digestive period:
    1. Cephalic phase
    2. Gastric phase
    3. Intestinal phase

In our psychosomatic studies on patients with peptic ulcer, we find that we can sometimes spend all morning exploring various aspects of the patient's history or his present environmental stresses without getting a "rise" out of his stomach, until finally he begins looking at his watch and trying to twist his head around to see how the kymographic tracing is progressing. If a period of gastric activity ensues, we are not certain whether it is "psychic" in that the conversation in itself, or the subject matter, has made him resentful, or whether it is "psychic" in the pavlovian sense due to the proximity of the lunch hour.

In view of these problems, we were led to adopt the term "emotogenic" to designate changes in motility and secretion accompanying affective states. Two further examples will suffice to illustrate the need for, and the use of, this term.

A decrease in gastric secretion associated with distaste or disgust for food which has an unpleasant odor or appearance is a "psychic" inhibition, whereas a decreased secretion associated with sorrow, or fear, or any emotion not related to food, is an "emotogenic" inhibition.

The second example involves a more finely drawn distinction. A period of elevated motility and secretion while a patient is sleeping is always of interest to us in view of the possible association with a dream. We always awaken the patient during or immediately after such a period to ask him whether he was dreaming, and if so, what the content of the dream was. Occasionally the dream concerns food and the question arises whether the gastric activity is psychic, i. e., associated with the thought of food, or whether it is emotogenic, i. e., associated with an unconscious emotional conflict symbolized by food. Obviously, a dream of eating may be experienced by a person who has no emotional conflict relating to or symbolized by food or eating. A person who does not get enough to eat is constantly preoccupied during his waking moments with thoughts of food; if he dreams of food, it is most likely a carry-over of his conscious thoughts. In this case, an increase in gastric activity during the dream would most reasonably be considered "psychic."

But, in working with ulcer patients we are dealing with the possibility raised by Alexander's theory; namely, that a dream of eating may be a symbol of the unconscious wish to be fed. Such a dream seemingly has no relation to the conscious thought of, or desire for, food because the ulcer patients under our observation are getting three meals and three interval feedings. Yet the conscious factor may enter in; ulcer patients are usually on a restricted diet and often express a longing for a juicy steak (fried in onions, as a rule). It may be that the nature of the food dreamed about might offer a clue as to whether an associated increase in gastric activity is psychic or emotogenic.

O. S., a 39 year old salesman with a ten year history of duodenal ulcer, had been boarded out with relatives at the age of 7, following the death of his mother. Throughout his childhood and adolescence he was tolerated, not loved. Of those years he has many bitter recollections, few pleasant ones.

During a motility and secretion study, while the patient was asleep a brief period of gastric activity occurred. On being awakened, the patient related a dream of a man in a white uniform tending a fruit stand at a busy intersection. The "busy intersection" is a well chosen symbol of our laboratory, and the significance of the "man in white" dispensing food seems obvious. Since fruit is not what a hungry man generally pictures when he thinks of eating, and since this patient professed no particular yearning for fruit, it may be that the food in this dream symbolizes the emotional conflict situation postulated by Alexander. If so, and if the observed gastric activity was indeed related to the dream, one might interpret this as an emotogenic hyperactivity of the stomach.

We have given due consideration to the applicability of the existing term "psychogenic" to the phenomena described, but there are two objections: First, such nomenclature is not specific for the physiologic processes concerned. That is, "psyche" refers to the mind or mental processes; whence arises the second objection; namely, that the word "psychogenic" carries the erroneous and unwelcome implication that there is a derangement of the mind or that the symptoms are "in the mind," i. e., are "imaginary."

By contrast the term herein proposed recognizes and gives credence to a symptom or physiologic aberration and places its origin squarely in the sphere of the emotions. Thus, we speak of emotogenic vomiting, emotogenic diarrhea, pain due to emotogenic dyssynergia of the colon, and so on. With this terminology, the inaccurate and clinically distasteful combining forms "psycho-" and "neuro-" not only are circumvented but are replaced by a precise nomenclature.

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Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Evidence: Party's Right to Continuance if Expert Witness Cannot Be Present.—The plaintiff sued for damages for personal injuries following a collision between an automobile operated by the plaintiff and a station wagon operated by the defendant. From a judgment for the plaintiff, the defendant appealed to the Supreme Court of Appeals of Virginia.

The defendant's main assignment of error on appeal concerned the action of the trial court in refusing to grant a continuance on the defendant's showing that his only expert witness would not be able to be present at the trial. The plaintiff, who before the accident was strong, healthy and brilliant, sustained substantial and permanent injuries, among which was a serious impairment of mental powers. The defendant's attorney employed a brain specialist to examine the plaintiff and later testify for the defendant as an expert witness. Furthermore, because of the extremely technical nature of brain injury cases, the defendant's attorney also planned to use the expert as a consultant during the trial to advise him in the cross examination of the plaintiff's experts. One week before the day set for the trial, this expert advised the defendant's attorney that he had made arrangements to leave Norfolk in five days for a vacation in Mexico City and would not return for about six weeks. The attorney said that he would try to obtain a continuance but that, failing to obtain it, he would not be willing to excuse him because he needed his help too much. In other words, if the court would not grant a continuance, the attorney said that he would have a subpoena issued to assure the expert's presence. The trial judge refused to grant a continuance and, in addition, advised the expert that he would not take disciplinary action against him if he failed to obey the subpoena.

When a litigant seeks the opinion and aid of an expert in a trial, said the Supreme Court, the relationship between the parties is different from that of an ordinary witness summoned to testify to some pertinent fact known to him. In the former case the duty of the witness to attend the trial and give testimony, or otherwise aid the litigants, is created by contract. In the latter case the duty of a witness to attend the trial and testify is a duty created by law and arises out of necessity in the administration of justice. A witness of either class, however, when properly served with a subpoena must attend the trial or be subject to punishment for contempt of court.

When the defendant's expert notified the attorney of his desire to be absent from Norfolk on the day of the trial, continued the Supreme Court, the attorney immediately moved the court for a continuance on the ground of such expected absence. This motion was overruled. Two days later the expert requested the court to excuse him from attending the trial, which request was granted over the objection of the defendant's attorney. The trial court held in effect that it was more important for the expert to take his vacation than it was for the defendant to have the benefit of his expert testimony and aid at the trial, an issue, said the Supreme Court, which should have been left to be settled between the attorney and the expert.

The plaintiff was demanding that defendant pay her $75,000. She was prepared to back this demand with the force of the testimony of seven physicians, each of whom later emphasized some particular phase of her disability. The defendant's attorney did not know at the time he made the motion just what the seven physicians would state. He did know that they were witnesses for the plaintiff and that they would testify on every phase of her distressing condition. He was not a brain specialist. He needed the aid of a medical expert to help him analyze the testimony of the physicians introduced by the plaintiff in order to cross examine them intelligently. This aid the expert could have given, in addition to giving the jury the benefit of an expert opinion on the plaintiff's condition stated from the defendant's point of view. In these circumstances, said the Supreme Court, the defendant's attorney could not state with any degree of accuracy the probable testimony of his expert. Indeed, the expert himself did not know what his opinion would be, as it depended on the result of his examination of the plaintiff and the history of her case as it would be outlined by the plaintiff's witnesses. His opinion might have been in accord with the views of the plaintiff's physicians, but he might have stated it in such language as would have tended to reduce the amount of compensation to which the jury believed the plaintiff was entitled. Regardless of the value or the weight which the jury might have given to his testimony, the defendant was entitled to have the jury weigh the opinion of the well known and reliable medical expert employed by him. While the evidence does not disclose that the defendant's attorney made an express promise to pay the expert a specific sum for his opinion and aid at the trial, the statements of the defendant's attorney and the letters of the expert to him clearly reveal that the attorney engaged him soon after the action was instituted, consulted him from time to time and had every reason to expect the expert's aid and cooperation throughout the trial.

There is not a scintilla of evidence which tends to support the conclusion that the motion for continuance was made for the purpose of delaying the trial. The decision of the trial court in granting the expert's request to be excused was prejudicial to the defendant in that it deprived him of the opportunity to present to the jury the testimony of the only expert witness the defendant had engaged and who, he had every reason to believe, would cooperate and aid him in the trial. The plaintiff, said the court, is entitled to substantial compensation, but in ascertaining the amount it was and is the duty of the trial court to give the defendant a fair opportunity to present the views of a medical expert employed by him. This was not done. The Supreme Court therefore reversed the judgment for the plaintiff and remanded the case for further hearing. *Bradley v. Poole, 47 S. E. (2d) 341 (Va., 1948).*

Legitimacy of Child Produced by Artificial Insemination.—The plaintiff wife filed a motion to determine the defendant's right to visit the minor child of the two parties. The motion was heard in the Supreme Court, Special Term, New York County, Part I.

The court assumed, in the light of the record and the concessions made by the defendant, that the plaintiff was artificially inseminated with the defendant's consent and that the child is not of the blood of the defendant. The court then held that the child had been potentially adopted or semiadopted by the defendant. In any event, said the court, in so far as this defendant is concerned, and with particular reference to visitation, he is entitled to the same rights as those acquired by a foster parent who has formally adopted a child, if not the same rights as those to which a natural parent in the circumstances would be entitled. Furthermore, said the court, assuming again that the plaintiff was artificially inseminated with the consent of the defendant, this child is not an illegitimate child. Indeed, logically and realistically the situation is no different from that pertaining in the case of a child born out of wedlock who is by law made legitimate on the marriage of the interested parties. The court said that it would not pass on the legal consequences in so far as property rights are concerned in a case of this character, nor would the court express an opinion on the propriety of procreation by the medium of artificial insemination. The latter problem particularly, said the court, is in the field of sociology, morality and religion. Accordingly, the defendant was granted the right to visit the minor child at certain specified times.—*Strnad v. Strnad, 78 N. Y. S. (2d) 390 (N. Y., 1948).*

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted

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Analysis of 435 Endoscopic Examinations from Bronchoscopic Service of Medical College of Alabama. G. E. Fisher and J. J. Hicks.—p. 344.

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*Sudden and Unexpected Natural Death: II. Coronary Artery Sclerosis. S. M. Rabson and M. Helperin.—p. 635.

Aid for Taking Precordial Electrocardiograms. J. E. F. Riseman.—p. 643.

Comparison of Blood Pressure in Lying and Standing Positions: Study of Five Hundred Men and Five Hundred Women. J. H. Currens.—p. 646.

Supradiaphragmatic Splanchnicectomy in Hypertension.—Isberg and Peet report on 384 patients with arterial hypertension, treated surgically by bilateral supradiaphragmatic splanchnicectomy and lower dorsal sympathetic ganglionectomy. Sixty per cent of patients with hypertensive heart disease were still living five to twelve years after splanchnicectomy. Of the hypertensive patients with normal hearts 93 per cent were still living five to twelve years after operation. Patients whose electrocardiograms show inverted T waves in leads I and II, or definite left axis deviation and abnormal T waves, have a 50 per cent chance for prolonged survival following splanchnicectomy. Of the patients still alive, 41 per cent of those with abnormal preoperative electrocardiograms recently showed significant improvement in their tracings five years or more after operation, and 44 per cent of those with preoperative cardiac enlargement recently showed significant decrease in heart size. Practically all patients who have shown improvement in electrocardiogram or decrease in heart size have maintained a significant reduction in blood pressure. Fifty per cent of hypertensive patients in whom an enlarged heart was demonstrated have not survived five to twelve years. Splanchnic resection is of no avail in cases of cardiac enlargement with a variation greater than 50 per cent of predicted normal for frontal area or transverse diameter. The patient with paroxysmal nocturnal dyspnea has little chance for benefit from splanchnic resection. Anginal seizures were frequently relieved after splanchnicectomy. Of patients with gallop rhythm prior to operation, almost a fourth have survived five years or more. The hypertensive patient in congestive heart failure which requires digitalization preparatory to splanchnicectomy stands 1 chance in 3 for prolonged survival following operation. Eight out of 11 hypertensive patients who had a coronary occlusion and were subsequently treated with splanchnic resection were still living five to nine years after operation. Comparing the spontaneous evolution of the electrocardiogram in hypertension in a control group with the evolution in hypertensive patients who had abnormal electrocardiagram prior to splanchnic resection, it may be said that splanchnicectomy has beneficially influenced the destiny of the hypertensive patients with abnormal electrocardiograms who have been fortunate enough to have lived five years and longer after operation.

Hereditary Disturbance in Cholesterol Metabolism and Atherosclerosis.—Boas and his associates say that the comparatively frequent appearance in the same person of arcus senilis, coronary atherosclerosis and elevated serum cholesterol suggests that they are more than coincidental. The authors studied 122 patients with symptoms of coronary artery disease and electrocardiographic evidence of myocardial damage, in whom symptoms appeared under 50 years of age. Each was examined for the presence of arcus senilis, xanthelasma and xanthoma. One or more serum cholesterol determinations were made by the method of Bloor. It was possible to investigate the families, chiefly siblings, of 50 of these patients. The average serum cholesterol for the 71 patients who exhibited hypercholesterolemia was 365 mg. per hundred cubic centimeters, and the average among the remaining 51 patients was 250 mg. per hundred cubic centimeters. Arcus senilis was exhibited by 22, xanthelasma by 12 and xanthomatosis by 3 of the group. The great majority with these stigmas had elevated serum cholesterol levels. Hypercholesterolemia (serum cholesterol of 300 mg. per hundred cubic centimeters or more) was found in all or most of the siblings of one third of fifty families of patients with coronary atherosclerosis. In 9 more families, one half of the siblings exhibited hypercholesterolemia. This study lends support to previous clinical investigations and indicates that a disturbance in cholesterol metabolism is probably concerned in the genesis of some instances of coronary atherosclerosis. It also suggests that altered cholesterol metabolism may be the common denominator in most patients with coronary artery disease and arcus senilis, or coronary artery disease and xanthelasma. One of the hereditary factors responsible for arteriosclerotic heart disease may reside in abnormal cholesterol metabolism.

Sclerosis of Coronary Artery and Sudden Death.—The observations reported by Rabson and Helperin were made in the course of necropsies in 2,030 cases in which death was unexpected in that the victims were apparently healthy at the time of death, and sudden because death took place usually within twenty-four hours after the onset of symptoms. The designation "natural death" indicates that death resulted exclusively from disease unassociated with external violence or poisoning. In 45 per cent of these cases death was attributed to diseases of heart and aorta. Of these, two thirds (30.4 per cent of the 2,030 cases) were caused by coronary arteriosclerosis. This percentage of coronary artery disease in the cardiac and aortic group corresponds almost exactly with that reported from Berlin, Germany, over an eight year period. Sudden death from coronary artery sclerosis occurred most frequently in white men. The three decades between 44 and 74 years contributed one and one-half times their percentage share of the population, but sudden death from this disease began to appear in the third decade. Death took place under no specific circumstances. In almost three fourths of the hearts, coronary artery sclerosis, and not fresh thrombosis, was responsible for vascular occlusion. In the remaining cases, a not always fresh thrombosis was encountered and an underlying sclerosis was always present. It is incorrect to attribute death to coronary thrombosis without indicating the underlying primary sclerotic disease of the arteries. Cardiac hypertrophy was found in 117 of 163 subjects. It was more prominent in the presence of myocardial fibrosis.

American Journal of Hygiene, Baltimore

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American Journal of Medical Sciences, Philadelphia

215:243-362 (March) 1948

*Streptomycin in Treatment of Tularemia. R. C. Berson and A. B. Harwell.—p. 243.
*Procaine Penicillin G in Oil: I. Plasma Concentrations; Preliminary Observations on Its Use in Pneumonia. W. P. Boger, J. E. Oritt, H. L. Israel and H. F. Flippin.—p. 250.
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Principles of Variolation as Exemplified by Subclinical Immunization in Poliomyelitis in Cooler and Warmer Climates. W. L. Aycock and G. F. Meadors.—p. 296.
Strategic and Tactical Influence of Disease in World War II. J. E. Gordon.—p. 311.
Oral Immunization. C. E. Dolman.—p. 327.

Streptomycin in Tularemia.—Berson and Harwell state that of 56 patients with tularemia treated with streptomycin in Veterans Administration hospitals 15 were examples of pleuropulmonary tularemia. The pleuropulmonary infection occurred as a complication of the ulceroglandular form of the disease in only 5 cases. In the remaining 10, no primary site of infection other than the lung or the pleura could be determined. Streptomycin, when administered after the twelfth day of illness, appears to have little effect on the course of suppurative lymphadenopathy. Liquefaction and spontaneous drainage of lymph nodes may occur in such circumstances, even though there is striking improvement in the other manifestations of the disease. Only 3 patients demonstrated sensitivity to streptomycin. In none of these cases was it necessary to discontinue the drug. Streptomycin was highly effective in the treatment of tularemia in every case in this series. Its effect was most dramatic in the acutely ill patient pursuing a stormy course. The total dosage used in the 56 cases varied from 1.9 to 20 Gm., averaging 8.1 Gm. There was no difference in the dosage used in the ulceroglandular and the pleuropulmonary cases. The duration of treatment varied from four to eighteen days, averaging 9.1 days. Patients with the pleuropulmonary form of the disease were treated an average of two days longer than those with the ulceroglandular form. No correlation between the duration of treatment and the completeness of recovery could be observed.

Procaine Penicillin G in Oil: Its Use in Pneumonia.—Boger and his associates say that procaine and penicillin G are combined in equimolecular quantities to form a crystalline salt relatively insoluble in water. These procaine penicillin crystals were suspended in both cottonseed and sesame oils so that each 1 cc. of material contained 300,000 units of penicillin and 125 mg. of procaine. Both preparations were employed in this investigation, procaine proving superior by reason of greater stability and fluidity. No local pain of systemic toxicity was observed in 50 patients to whom procaine penicillin G has been administered. The duration of penicillin plasma concentrations above 0.039 unit per cubic centimeter varied from six to thirty hours in a group of 9 ambulatory controls. In a group of 10 patients with pneumonia it varied from seven to seventy hours. The averages in the two groups were twelve hours and thirty-three hours, respectively. Eighteen of 23 patients with bacterial pneumonia recovered without complication following a single intramuscular injection of procaine penicillin G in oil. Two patients relapsed under this therapy and 3 failed to respond. On the basis of these preliminary data, it appears that a single injection of 300,000 units of procaine penicillin will, in the average patient, give assayable plasma concentrations of penicillin, or a suppressive antibacterial action, for at least twenty-four hours.

Myocardial Changes in Fatal Diphtheria.—Gore points out that the high incidence of diphtheria in portions of Europe constitutes a medical hazard to this country under modern conditions of communication. The introduction of large numbers of United States troops into areas where the endemic diphtheria rate was high resulted in a striking increase of the incidence of that disease among them. This report is based on records and slides of 221 fatal cases of diphtheria accumulated at the Army Institute of Pathology. Material from the heart was available for review in 205 of these, and 143 of the 205 cases involved myocarditis. A higher mortality in the presence of myocarditis largely explains why its incidence in postmortem studies is so much greater than in clinical reports of diphtheria. As the length of survival from the onset of diphtheria increases, the incidence of myocarditis rises. A similar time relation is true for neuritis. Postdiphtheric neuritis appears later and is less frequent than myocarditis. The hearts of patients with myocarditis are dilated, with flabby, pale, or mottled musculature. Frequently the hearts are enlarged. Microscopically, there is a primary toxic degeneration of the myocardial fibers. The inflammatory response, which culminates in scarring, appears to be secondary to the muscle injury. In one third of the cases the manifestations of myocarditis appeared at a time when the patient seemed to be well on his way to convalescence. The importance of administration of antitoxin early and in adequate quantities is reemphasized as a measure to prevent myocarditis (and neuritis). A shocklike state following diphtheria must be recognized as a frequent manifestation of myocardial weakness lest the vigorous administration of intravenous fluids to combat it result in a fatal termination.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

59:311-468 (March) 1948

Pneumoencephalographic Diagnosis in Presenile Dementias. P. Chodoff, A. Simon and W. Freeman.—p. 311.
*Roentgenologic Aspect of Sarcoidosis. A. J. Ackerman.—p. 318.
*Heberden's Nodes: VII. Roentgenologic and Clinical Appearance of Degenerative Joint Disease of Fingers. R. M. Stecher and H. Hauser.—p. 326.
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Pathognomonic Roentgen Sign of Retroperitoneal Abscess: Report of 2 Cases of Ruptured Appendix with Positive Roentgen Findings. G. C. Bird Jr., G. E. Fissel and B. R. Young.—p. 351.
Lymphosarcoma of Head and Neck. D. Catlin.—p. 354.
Pantopaque Myelography in Diagnosis of Arnold-Chiari Malformation Without Concomitant Skeletal or Central Nervous System Defects. B. S. Epstein.—p. 359.
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Effect of Adrenal Cortical Injury on Toxicity of Roentgen Rays. B. N. Craver.—p. 404.
Experimental Studies on Toxicity of Beta-(4-Hydroxy-3,5-Diiodophenyl)-Alpha-Phenyl-Propionic Acid (Priodax). J. Howard.—p. 408.
Two Danish Photofluorographic Cameras of Original Schmidt Type. R. H. Morgan, D. M. Gould and W. W. Van Allen.—p. 416.

Roentgenologic Aspect of Sarcoidosis.—Ackerman points out that sarcoid lesions of specific organs were thought to be separate disease entities and were described under various names depending on their localization, until greater experience led to recognition of these entities as a generalized disorder affecting the skin, lymph nodes, uveal tract and parotid gland, lungs and skeletal system. Recent observations tend to show that visceral organs are perhaps more frequently involved. The authors observed 19 cases of pulmonary sarcoidosis during the last three years in members of the armed forces. The 19 patients manifested practically no clinical evidence of disease and were detected usually in the course of routine examinations. The mediastinal and pulmonary lesions show fluctuations characterized by regression of the enlarged nodes and dissemination and less conspicuous regression of the pulmonary infiltrations. These may appear as miliary, nodular and occasionally confluent patchy densities scattered over large areas of the pulmonary parenchyma. There is no definite correlation between the morphologic changes and clinical symptoms produced by them. Absence of significant mediastinal adenopathy does not necessarily rule out pulmonary sarcoidosis or prove that these nodes are free from the disease. A previously existing adenopathy may have regressed sufficiently so that it is no longer recognizable. In view of the clinical experiences the prognosis in cases of pulmonary sarcoidosis should always be guarded. A definite diagnosis of sarcoidosis can be established only by a biopsy.

Heberden's Nodes.—Stecher and Hauser say that observations on nearly 7,000 persons revealed that Heberden's nodes were nearly ten times as common in women as in men, more common in white persons than in Negroes and that the incidence was definitely related to age, being rare in young persons but affecting about 30 per cent of white women in the ninth decade. It was further demonstrated that the occurrence of this form of degenerative disease of the joint was strongly influenced by heredity. The present study is based on observations, case histories, photographs and roentgenograms of over 100 patients with Heberden's nodes and on material assembled during the course of previous studies. The appearance of the nodes may range widely from Heberden's original description of "hard knobs about the size of a small pea." They may start as a fluctuant swelling, a myxomatous subcutaneous cyst or a synovial lesion in the skin, but develop from these to large bony deformities. Roentgenograms reveal enlargement of the ends of the bones with distortion of joint space and irregularity of the joint surface. Large spurs develop from the attachments of the flexor and the extensor tendons to the terminal phalanx. Such spurs seen only in lateral views have been heretofore largely overlooked. The distal ends of the middle phalanges undergo change of the bony structure with irregularity and a foamy arrangement of the trabeculae. Heberden's nodes, typical manifestations of degenerative joint disease of the terminal finger joints, are sometimes associated with degenerative joint disease of the proximal interphalangeal joints. Such association was noted in 40 per cent of the cases reviewed. Degenerative joint disease involves periarticular soft tissue, tendinous attachments and subchondral marrow spaces as well as the joint cartilage and the immediately underlying bone.

American Journal of Surgery, New York

75:529-642 (April) 1948

*Adenoma of Bronchus: Review of 15 Cases. E. A. Naclerio and L. Langer.—p. 532.
Analysis of Acute Craniocerebral Injuries. L. A. French.—p. 548.
*Osgood-Schlatter's Disease. W. W. Kridelbaugh and A. C. Wyman.—p. 553.
Treatment of Chronic Ulcers with Chlorophyll: Review of Series of 50 Cases. J. B. Cady and W. S. Morgan.—p. 562.
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Incisional Hernia Repaired with Tantalum Gauze. Preliminary Report. N. C. Jefferson and U. G. Dailey.—p. 575.
Use of Aponeurotic Flap in Inguinal Hernioplasty. A. A. Salvin.—p. 580.
Diagnosis of Acute Appendicitis in Tropics. C. P. Schlicke and S. B. Harper.—p. 582.
Tungsten Steel Gouge for Use in Nicola Operation. I. Stein.—p. 585.
Vascular Obstructed Acute Gallbladder. M. S. Rosenblatt.—p. 587.

Adenoma of Bronchus.—Naclerio and Langer point out that during the last decade an increasing number of bronchial adenomas have been discovered, the condition now being recognized as a definite clinical and pathologic entity. This tumor accounts for approximately 80 per cent of the benign bronchogenic growths. No unanimity of opinion exists regarding its origin, potential malignancy, relationship to cancer of the bronchus and its treatment. The disease is usually asymptomatic in the early stages, but not infrequently a dry, irritating cough is present. Hemoptysis is a cardinal symptom. As the tumor encroaches on the lumen of the bronchus, symptoms of partial or total obstruction may appear. Dyspnea is a frequent symptom. There have been episodes of pneumonia characterized by cough, mucopurulent sputum, fever and pain in the chest. As the tumor progresses, filling the lumen of the bronchus, destructive effects with irreparable damage to the lung develop so that the clinical picture is then one of either atelectasis, bronchiectasis, pulmonary abscess or empyema. The diagnostic procedures include plain roentgenography, section roentgenography, bronchography and bronchoscopy, the last being still the most decisive single diagnostic procedure available. The authors evaluate radiation therapy, bronchoscopic and surgical treatment. Case histories of 15 patients treated and cured by pulmonary resection, 10 by pneumonectomy and 5 by lobectomy are presented. Bronchial adenoma should be treated either by lobectomy or by pneumonectomy.

Osgood-Schlatter's Disease.—Although Osgood-Schlatter's disease (osteochondrosis of the tibial tubercle) is regarded as comparatively rare, Kridelbaugh and Wyman observed 13 cases of this disorder in the short period of nine weeks at a large Naval recruit training center. Nine of the patients gave a history of trauma. Most authors are of the opinion that conservative treatment with posterior splints, cylindrical casting, taping or ace bandaging over the tubercle and/or bed rest is the treatment of choice in early cases. The consensus favors a trial of such treatment before more radical measures are attempted. In the cases in which symptoms persist beyond four to six months under conservative therapy, there should be operative intervention. In the 13 cases reviewed here conservative treatment was employed while the patients were ambulatory and without restriction of their activity. Six of the patients showed improvement while the anterior part of the thigh was taped, 2 were not improved, 2 were made worse and 3 could not be followed. Making a rough estimate of the incidence of Osgood-Schlatter's disease on the basis of their material, the authors believe that the disease may occur in 0.14 per cent of males between the ages of 17 and 19.

American Review of Tuberculosis, New York

57:207-310 (March) 1948

*Incipiency and Evolution of Pulmonary Tuberculosis: I. Initial Manifestations of Disease. D. Reisner.—p. 207.
*Id.: II. Behavior of Initial Lesion and Course of Disease During Observation Period. D. Reisner.—p. 229.
Functional Pulmonary Capacity and Surgical Risk: Correlation Between Clinical Estimation and Functional Studies. L. Levy II, J. H. Seabury and E. Hull.—p. 254.
Arteriovenous Fistula of Lung: Its Hereditary and Clinical Aspects. A. Goldman.—p. 266.
Pulmonary Adenomatosis: Report of a Case. E. Hildebrand.—p. 281.
Effect of Diet on Experimental Tuberculosis of Mice. R. J. Dubos and Cynthia Pierce.—p. 287.
Chemistry of Lipids of Tubercle Bacilli: LXXIV. A Contribution to Study of Acid-Fastness of Acid-Fast Bacilli. N. Fethke and R. J. Anderson.—p. 294.

Initial Manifestations of Pulmonary Tuberculosis.—Routine periodic examinations of 344 persons who had been under observation because of a history of contact with a known case of tuberculosis provided the principal source for this study conducted by Reisner. Roentgenologically demonstrable lesions developed during the course of observation. In 248 patients the initial lesion was demonstrated within twelve months after a previous normal roentgenogram and in the remainder the interval was longer than one year. In white persons pulmonary tuberculosis usually begins as a small localized lesion. In nonwhite persons the disease often begins abruptly and reaches extensive proportions within a short time. The roentgenologic aspects suggest that the early manifestation of pulmonary tuberculosis is usually a lesion of predominantly exudative, pneumonic character. The usual roentgenologic manifestation of the early tuberculous lesion of limited extent is a localized small area of "soft" infiltration, ill-defined and of flocculent appearance. The circumscribed infiltrates were observed only in a few cases. In about 90 per cent of the cases the initial lesion was located in the so-called vulnerable zone of either the right or the left lung, an area comprising approximately the upper third of the pulmonic field. Most patients with early minimal pulmonary tuberculosis have no symptoms, and the only method available for detection of the truly incipient tuberculous lesion is routine roentgen examination of the chest at periodic intervals.

Behavior of Initial Tuberculous Lesion.—Reisner discusses the evolution of pulmonary tuberculosis in 340 cases in which roentgenologically demonstrable lesions had developed during the period of observation. Sixty-nine per cent of the patients were observed for more than two and up to ten years after the initial detection of the pulmonary lesion. The remainder were observed for less than two years. It was found that the initial lesions are nearly always unstable and that they exhibit a tendency to progression. The cumulative rate of progression, calculated on the basis of person-years of observation, amounted to 59 per cent in white persons and 88 per cent in nonwhite patients. The majority of destructive forms of pulmonary tuberculosis seem to have their origin in inconspicuous early minimal lesions. There is apparently no way of predicting the subsequent evolution of the incipient minimal lesion other than observation over a considerable period of time. Consistent differences were observed between white and nonwhite persons as regards the mode of onset, the course and ultimate outcome of the disease. Its greater severity in the nonwhite group is indicated by a greater frequency as well as a more rapid tempo of progression and by a case fatality rate four times higher than in white persons. The serious potentialities of minimal incipient lesions of pulmonary tuberculosis indicate the need for careful therapeutic management and extended follow-up.

Anesthesiology, New York

9:115-228 (March) 1948

Local Anesthetic Properties of Amidone (Dolophine). F. G. Everett. —p. 115.
Chicago Keysort Anesthesia Record. W. A. Conroy, W. H. Cassels and B. Stodsky.—p. 121.
Influence of Posture on Mechanics of Respiration and Vital Capacity. C. R. Stephen.—p. 134.
Pentothal-Curare Solution: Preliminary Report and Analysis of Its Use in 160 Cases. J. W. Baird, W. R. Johnson and F. H. Van Bergen. —p. 141.
New Method for Recording Effect of Various Agents on Caliber of Human Bronchial Tree. C. M. Landmesser and R. D. Dripps. —p. 159.
Studies on Parenteral Administration of Hydrogen Peroxide. A. L. Lorincz, J. J. Jacoby and H. M. Livingstone.—p. 162.
Erythroblastosis Fetalis Caused by Double Sensitization to Factors rh″ and Hr′. A. S. Weiner and G. J. Brancato.—p. 175.
Anesthetic Problems in Thoracic Surgery. E. R. Maurer.—p. 183.
Action of Procaine, Salicylate and Benzoate of Sodium on Excitability of Skeletal Muscle and of Nerve. T. Sollmann and J. J. Estable. —p. 188.

Annals of Western Medicine & Surgery, Los Angeles

2:143-192 (April) 1948. Partial Index

*Evaluation of Treatment for Cirrhosis of Liver. L. M. Morrison. —p. 143.
Recent Advances in Treatment of Syphilis. T. H. Sternberg.—p. 156.
Anesthesia for Upper Abdominal Surgery. B. H. Rosser.—p. 161.
Uteroscopy: Preliminary Report on New Developments. L. P. Belous and J. S. Rubin.—p. 165.

Treatment of Cirrhosis of Liver.—According to Morrison it is now a decade since Patek introduced the modern therapy of cirrhosis of the liver. Some confusion has arisen as to (1) which lipotropic agents to employ in the treatment of a patient with cirrhosis of the liver (choline, methionine, liver extract), (2) the reason for failure of treatment in some 50 per cent of patients, plus (3) some method of determining the prognosis. The author presents an analysis of 35 patients with hepatic cirrhosis of the nutritional deficiency type associated with chronic alcoholism. These patients were treated either by a modified Patek regimen or by a diet high in protein, high in carbohydrate and low in fat, oral choline, and parenteral aqueous, filtered liver extract. These patients were treated from 1940 to 1947. For comparison a "control" series of 20 patients is also presented who were treated from 1938 to 1940 by the then current use of mercurial diuretics and ammonium chloride with paracentesis for ascites, and a high carbohydrate diet with glucose intravenously for the cirrhotic patients with ascites. An additional 22 patients with hepatic cirrhosis not associated with nutritional deficiency or alcoholism were studied for comparative purposes. An attempt is made on the basis of liver punch biopsies to clarify the forms and stages of hepatic cirrhosis which were responsive to treatment and those which fail to respond to treatment. The results of the outlined therapy in the early stages of alcoholic cirrhosis of the liver were excellent; in the moderately advanced stages of alcoholic cirrhosis they were good. In the advanced (Laennec's) stage of alcoholic cirrhosis the treatment was a failure. The results of the outlined therapy in nonalcoholic cirrhosis of the liver were poor.

Archives of Physical Medicine, Chicago

29:199-250 (April) 1948. Partial Index

Challenge to Physical Medicine. H. E. Van Riper.—p. 199.
Electromyography in Kinesiologic Evaluations. W. Bierman and J. J. Yamshon.—p. 206.
Prevention of Postural Deformities in Children with Cerebral Palsy. W. M. Phelps and Robertine St. James.—p. 212.
*Oxygen Therapy in Poliomyelitis, a Tracheotomy Inhalator Incorporating Humidification and Optional Use of Positive Pressure for Oxygen Therapy in Patients with Tracheotomy. W. G. Kubicek, G. W. Holt, J. O. Elam and others.—p. 217.

Oxygen Therapy in Poliomyelitis.—Kubicek and his associates point out that of the 73 adult patients with bulbar poliomyelitis admitted to the University of Minnesota Hospitals, 39 were treated by tracheotomy for partial or complete obstruction of the airway. It was necessary to use a mechanical respirator on 21 of the 39 patients, because of failure of the central or peripheral respiratory mechanism. The construction and operation of a tracheotomy inhalator is presented. This apparatus provides humidification of the inspired air and has simple arrangements for the optional use of positive pressure during expiration and for increasing the positive pressure on inspiration as an emergency maneuver. Continuous use of the inhalator varied from four days to a maximal period of four weeks. The easily visualized excursions of the breathing bag and intermittent bubbling of the expired air through the manometer facilitated the watching of the critical patients.

Arizona Medicine, Phoenix

5:1-120 (March) 1948

Multiple Primary Carcinomas. D. W. Melick and O. O. Williams. —p. 29.
Nitrous Oxide Anesthesia with Curare for Pulmonary Resection. A. Urry.—p. 31.
Disseminated Coccidioidal Granuloma (Case Report). B. L. Snyder and G. K. Rogers.—p. 33.
Mediastinal Emphysema: a Case Report. A. B. Thompson.—p. 37.
Carcinoma of Rectum and Rectosigmoid. C. F. Dixon.—p. 41.
False Positive Serology; Its Interpretation and Management. K. C. Baker and C. J. White.—p. 45.
Diagnosis and Treatment of Carcinoma of Rectum. W. R. Manning. —p. 49.

Bulletin of Johns Hopkins Hospital, Baltimore

82:429-514 (April) 1948

Effect of Atropine and Estrogens on Intraocular Uterine Transplants in Rabbit. I. H. Kaiser.—p. 429.
Multi-Channel Strain-Gage Tokodynamometer: An Instrument for Studying Patterns of Uterine Contractions in Pregnant Women. S. R. M. Reynolds, O. O. Heard, P. Bruns and L. M. Hellman.—p. 446.
Oximeter Control of Arterial Oxygen Saturation in Anoxemia Studies. R. Penneys and C. B. Thomas.—p. 470.
Scottish Experiments in Social Medicine. A. Davidson.—p. 479.
Antethoracal Transplantation of Stomach in Treatment of Congenital Atresia of Thoracic Esophagus. A Preliminary Report. W. F. Reinhoff Jr.—p. 496.

Bull. of U. S. Army Med. Dept., Washington, D. C.

8:247-326 (April) 1948

What Every Medical Officer Should Know About the Atomic Bomb. —p. 269.
Cardiolipin Antigen in Kolmer Complement-Fixation Test for Syphilis. J. F. Kent, H. M. Boyd and R. W. Sanders.—p. 284.
Modern Management of Thyroid Disease. F. Lahey.—p. 294.
Medical Experiences in Luzon P. O. W. Camp No. 1. J. T. Kauer. —p. 302.
Surgical Management of Peptic Ulcers. S. Standard.—p. 310.
Atherosclerosis. W. Dock.—p. 316.

Delaware State Medical Journal, Wilmington

20:21-40 (Feb.) 1948

Present Status of Diabetes Mellitus 1947. L. B. Flinn.—p. 21.
Re: Poliomyelitis in Delaware, 1947. A. P. Hitchens.—p. 28.
Wilmington Board of Health and Rapid Treatment Centers for Syphilis. G. J. Boines.—p. 30.

20:41-64 (March) 1948

*Influence of Hesperidin C on Abnormal Capillary Fragility in Rheumatoid Arthritis Patients. P. J. Warter, H. L. Drezner and S. Horoschak.—p. 41.
Present Trends in Prepayment Medical and Hospital Plans. H. V. Mylee.—p. 45.

Hesperidin C for Capillary Fragility in Rheumatoid Arthritis.—In a group of patients with rheumatoid arthritis in whom capillary resistance was measured, Warter and his co-workers found 16 with borderline capillary fragility, 25 with severe capillary fragility and only 1 patient with normal capillary fragility. Forty patients with rheumatoid arthritis who had manifestations of abnormal capillary fragility have been treated and observed for three to twenty-four months. A combination of hesperidin 50 mg., a flavanone glucoside and ascorbic acid 50 mg., was found to be effective in restoring abnormal capillary fragility to normal in 90 per cent of the patients treated. Lemon peel infusion concentrate also restored abnormal capillary fragility, but a longer time and larger doses were required as compared to hesperidin C. Some patients showed fluctuations in capillary resistance due to acetylsalicylic acid, amphetamine sulfate, emotional stress and severe upper respiratory infections. Withdrawal of the drugs resulted in a rapid return to normal resistance. In patients with emotional stress and upper respiratory infection an increase in the dosage of hesperidin C maintained normal capillary resistance. High vitamin D and B complex therapy did not influence capillary fragility in the small group of patients used as controls. Protein hydrolysate with B complex did lower the sedimentation rate and favorably influenced the hemoglobin and red cell count, but there was no apparent beneficial effect on the abnormal capillary fragility. The authors suggest that hesperidin, a flavanone glucoside occurring in most varieties of citrus fruits, is essential for the absorption and retention of ascorbic acid, acting synergistically in maintaining normal capillary resistance. The correction of abnormal capillary fragility in patients with rheumatoid arthritis should be considered as only one of the phases to improve the patients' condition. This phase of treatment may enhance the efficacy of other therapeutic procedures.

Gastroenterology, Baltimore

10:349-574 (March) 1948

*Late Manifestations of Epidemic Infectious Hepatitis. W. Volwiler and J. A. Elliott Jr.—p. 349.
Paracolon Bacilli as Related to Chronic Dysentery Syndromes. C. R. Darnall.—p. 366.
Gastric Surgery: Review of Literature for 1946. S. F. Marshall and M. L. Gerber.—p. 377.
Pancreas: Contributions of Clinical Interest Made in 1946. R. Elman and C. A. Ross.—p. 399.
Sixty Years of Vagotomy: Review of Some 200 Articles. W. C. Alvarez.—p. 413.
Carcinoma of Pancreas: Operative Problems. H. C. Saltzstein and W. S. Johnson.—p. 442.
*Amebiasis in Veterans of World War II with Special Emphasis on Extra-Intestinal Complications, Including Case of Amebic Cerebellar Abscess. M. A. Spellberg and S. Zivin.—p. 452.
Description of Gastroscopic Appearance of Luetic Gastric Lesions in Late Acquired Syphilis. C. O. Patterson and M. O. Rouse.—p. 474.
Effect of Dietary Fat on Fecal Fat Excretion and Subjective Symptoms in Man. J. H. Annegers, J. H. Boutwell and A. C. Ivy.—p. 486.
Assay of Cholecystokinin and Influence of Vagotomy on Gall Bladder Response. W. J. Snape, H. F. Friedman and J. E. Thomas.—p. 496.
Experimental Study of Gastric Emptying in Vagotomized Dog. M. Feldman and S. Morrison.—p. 502.
Pharmacologic Aspects of Gastric Secretion: I. Effect of Opium Alkaloids and "Allied" Drug Demerol on Pouch Secretions in Dogs. K. A. Merendino.—p. 504.

Epidemic Infectious Hepatitis.—Volwiler and Elliott correlate clinical observations with laboratory data and liver biopsy histology in the late phases of hepatitis. Nine of 13 patients had persisting active hepatitis proved by needle biopsy four to forty-two months after the onset of jaundice. The remaining 4 had shown continuous mild clinical icterus eighteen months to twenty-one years following an illness typical of epidemic infectious hepatitis. The authors stress that late manifestations of epidemic infectious hepatitis include: (1) prolonged mild hepatitis which may last for several years without significant scarring; (2) progressive hepatic fibrosis associated with similar smoldering inflammation, and (3) continuous mild jaundice with normal histologic features and without abnormal liver function tests. Most likely to reflect persisting active inflammation are the 5 mg. sulfobromophthalein sodium test, the thymol turbidity test, the thymol flocculation test and the erythrocyte sedimentation rate. In cases of prolonged infectious hepatitis deep liver biopsies, such as may be obtained by trocar, are necessary for accurate evaluation of the state of the liver, and the histologic information obtained thereby is often essential to planning an intelligent therapeutic program.

Amebiasis in Veterans of World War II.—From January to August 1946, 12,000 patients were admitted to Hines Veterans Hospital; 58 of these were suffering from amebic colitis or its complications. In the last year before the war, of 9,000 admissions to this hospital only 8 were diagnosed as amebic colitis. The postwar incidence of this disease is therefore increased five times. All the cases were seen among veterans of World War II, although the general admission to this hospital includes a considerable number of World War I veterans. The authors observed a relationship between the exposure in tropical climates and the incidence of the disease. Fifteen cases of hepatic complications, indicative of a virulent infection, were observed in the 58 patients. The treatment of choice for hepatitis is emetine, and emetine plus aspiration for hepatic abscess. The wisdom of using emetine in carriers is doubted; the intestinal amebicides produce excellent results and are without danger. They do not require hospitalization of the patient. One case of amebic colitis complicated by a cerebellar abscess is reported, the second in the literature.

Journal of Clinical Investigation, Boston

27:165-298 (March) 1948. Partial Index

Oral and Parenteral Phenylalanine Requirements for Nitrogen Equilibrium in Man. R. D. Eckhardt and C. S. Davidson.—p. 165.
Blood Lactic Acid Response to Measured Exercise in Hypoxic Human Subjects. J. Tepperman and Helen M. Tepperman.—p. 176.
Influence of Clothing, Work, and Air Movement on Thermal Exchanges of Acclimatized Men in Various Hot Environments. N. A. Nelson, W. B. Shelley, S. M. Horvath and others.—p. 209.
*Further Studies of Effects of Insulin on Metabolism of Vitamin C. S. Sherry and E. P. Ralli.—p. 217.
Absorption of Orally Administered Emulsified Lipid in Normal Children and in Children with Steatorrhea. C. D. May and C. U. Lowe.—p. 226.
Clinical Application of Simple Method for Estimating "Gamma Globulin." B. V. Jager and M. Nickerson.—p. 231.
*Chemical, Clinical and Immunologic Studies on Products of Human Plasma Fractionation: XXXVI. Inactivation of Virus of Homologous Serum Hepatitis in Solutions of Normal Human Serum Albumin by Means of Heat. S. S. Gellis, J. R. Neefe, J. Stokes Jr. and others.—p. 239.
Serum Cholesterol Level of Prematurely Born Infant and Its Mother. M. J. Whitelaw.—p. 260.
Dephosphorylation of Adenosinetriphosphate by Normal and Pathologic Human Serums. A. Meister.—p. 263.
Effect of Exercise on Renal Plasma Flow and Filtration Rate of Normal and Cardiac Subjects. A. J. Merrill and W. H. Cargill.—p. 272.
Sensitivity of Tubercle Bacillus to Streptomycin Before and During Specific Therapy. J. F. Sadusk Jr., and W. E. Swift Jr.—p. 278.
Plasma Volume, Total Circulating Protein, and "Available Fluid" Abnormalities in Preeclampsia and Eclampsia. E. D. Freis and J. F. Kenny.—p. 283.
Cardiovascular Reactions to Emotional Stimuli: Effect on Cardiac Output, Arteriovenous Oxygen Difference, Arterial Pressure, and Peripheral Resistance. J. B. Hickam, W. H. Cargill and A. Golden.—p. 290.

Effects of Insulin on Metabolism of Vitamin C.—Sherry and Ralli investigated the mechanisms by which insulin causes a prompt fall in plasma and urinary vitamin C levels. Insulin caused these changes regardless of whether it was injected subcutaneously, intravenously or intramuscularly. There were significant differences in both the onset and duration of the effects of insulin on both the plasma levels and excretion of vitamin C, depending on the route of administration of the insulin. The effects of the insulin in each instance were transient and were followed by a period in which the plasma level and the urinary excretion were elevated. This was followed by a return of the vitamin C levels to normal. Studies in dogs, rats, guinea pigs and human beings showed that insulin had no effect in vitro and that insulin did not affect the synthesis of ascorbic acid. It is suggested that insulin causes a transient transfer of ascorbic acid from the plasma and extracellular fluid into the tissues, possibly for some catalytic function of ascorbic acid.

Heat for Inactivation of Virus of Serum Hepatitis in Albumin.—According to Gellis and his associates most epidemiologic investigations suggest that the risk of transmitting hepatitis is greater with plasma than with whole blood. This presumably depends on the practice of pooling the plasma from a number of donors, an occasional one of whom may harbor the virus, and of administering each pool to multiple recipients. The hepatitis viruses are known to be highly resistant to chemical and physical agents. They survive heating at 56 C. for one hour. They remain active for at least several years in the frozen state and withstand repeated thawing and refreezing. The remarkable thermal stability of human serum albumin solutions suggested the use of heat as the most likely method for the inactivation of the hepatitis virus. On the basis of limited experiments the virus of homologous serum hepatitis appeared to be inactivated when stabilized human albumin solutions to which the virus was added were heated at 60 C. and 64 C. for ten hours. This degree and duration of heating apparently do not seriously alter the measurable chemical or physical properties of the albumin. Heat treatment at 60 C. for ten hours in the final container is now a routine step in the preparation of human albumin solutions. Clinical use of albumin so prepared would appear to be free from the risk of transmission of active serum hepatitis virus.

Journal of Experimental Medicine, New York

87:259-368 (April) 1948

Chemical Studies in Host-Virus Interactions. Catherine B. Fowler and S. S. Cohen.—p. 259.

Production of Proteinase by Hemolytic Streptococci in Various Clinical Conditions. S. Rothbard and E. W. Todd.—p. 283.

Immunochemical Studies on Blood Groups: VI. Cross-Reaction Between Type XIV Antipneumococcal Horse Serum and Purified Blood Group A, B and O Substances From Hog and Human Sources. E. A. Kabat, A. Bendich, Ada E. Bezer and Vesta Knaub.—p. 295.

Nature of Virus Receptors of Red Cells. G. K. Hirst.—p. 301.

Effect of Desoxycorticosterone Acetate on Blood Pressure, Renal Function and Electrolyte Pattern in Intact Rat. S. M. Friedman, J. R. Polley and Constance L. Friedman.—p. 329.

Studies on Scrub Typhus (Tsutsugamushi Disease) III. Heterogenicity of Strains of R. Tsutsugamushi as Demonstrated by Cross-Vaccination Studies. F. L. Rights, J. E. Smadel and Elizabeth B. Jackson.—p. 339.

Food Protein Effect on Plasma Specific Gravity, Plasma Protein and Hematocrit Value. T. Addis, H. Gray and Evalyn Barrett.—p. 353.

Journal Industrial Hygiene & Toxicology, Baltimore

30:71-144 (March) 1948

Physiologic Response of Experimental Animals Following Absorption of 2-Amino-thiazole. W. B. Deichmann, K. V. Kitzmiller, F. F. Heyroth and S. Witherup.—p. 71.

Physiologic Response of Animals to 2-Aminodiazine and 2-Amino-4-Methyl Pyrimidine. J. F. Treon, H. Wright, K. V. Kitzmiller and W. J. Younker.—p. 79.

Comparative Toxicity of Cryolite for Rats and for Rabbits. E. J. Largent.—p. 92.

*Observations on Hydrazoic Acid. J. D. P. Graham, J. M. Rogan and D. G. Robertson.—p. 98.

Studies on Aerosols. I. Reduction of Dust Deposition in Lungs of Rabbits by Aqueous Aerosols. L. Dautrebande, B. Highman and W. C. Alford.—p. 103.

Id.: II. Coating and *Agglutinating of Dust Particles by Aqueous Aerosols.* L. Dautrebande, W. C. Alford and B. Highman.—p. 108.

Porphyrinuria in Lead Poisoned Dogs. K. Salomon and G. R. Cowgill.—p. 114.

Benign Pneumoconiosis Due to Tin Oxide: Case Report with Experimental Investigation of Radiographic Density of Tin Oxide Dust. E. P. Pendergrass and A. W. Pryde.—p. 119.

High Volume Air Sampling and Filter Weighing Method for Certain Aerosols. L. Silverman and F. J. Viles Jr.—p. 124.

Sampling Device for Average Gas Concentrations in Air. D. E. Goldman and J. A. Mathis.—p. 129.

Ventilation of Clothing and Tolerance of Man to Low Environmental Temperatures. S. M. Horvath.—p. 133.

Partition Coefficients of Fifty Compounds Between Olive Oil and Water at 20 C. R. Macy.—p. 140.

Hydrazoic Acid.—Graham and his associates say that in the course of routine medical examinations in an explosives factory one of them observed that the workmen employed in the manufacture of lead azide showed considerable lowering of blood pressure. Clinical investigations were carried out on ten workmen. Determinations of the hydrazoic acid content of the air in the lead azide plant were made on separate days in the area of maximum concentration. The workmen stated that symptoms were noted only when the fume concentration was high. Then they experienced headache, palpitation, occasional weakness and unsteadiness. On cessation of exposure to the fume recovery from palpitation was almost immediate. Recovery from headache occurred in from a quarter of an hour to an hour and a half. Clinical and laboratory examination of the workers who had been regularly exposed to hydrazoic acid fume over a period ranging from one to fifteen years failed to reveal pathologic change which could be attributed to this exposure. Exposure to hydrazoic acid gas caused a rapid and severe fall in both the systolic and diastolic blood pressures, which was associated with headache. Animal experiments showed that hydrazoic acid in high dosage is extremely toxic. Hydrazoic acid and sodium azide, administered to animals in small doses, cause mild respiratory stimulation, a fall in blood pressure and coronary dilatation. Hydrazoic acid in concentrations which appear to have no permanent adverse effects is a powerful hypotensive agent.

Journal of International College of Surgeons, Chicago

11:1-130 (Jan.-Feb.) 1948. Partial Index

Neuralgias of the Face: Diagnosis and Treatment. A. W. Adson.—p. 1.

Uterine Bleeding with Special Reference to Functional Type. E. Novak.—p. 9.

*Management of Surgical Lesions of Left Colon. C. Rosser.—p. 17.

Carcinoma and Uterine Fibromyomas. F. H. Falls.—p. 24.

*Surgical Aspects of Endometriosis. V. S. Counseller.—p. 29.

*Coronary Disease of Hip. F. A. Chandler.—p. 34.

Pes Tortus Congenitalis. G. L. Burke.—p. 37.

Partial Gastrectomy in Treatment of Perforated Gastric and Duodenal Ulcers. A. Bobbio.—p. 41.

Treatment of Inveterate Cystitis. R. Darget.—p. 49.

Liver Changes in Surgical Conditions of Gastro-Intestinal Tract. L. Efskind.—p. 52.

Pyogenic Infection of Minor Abrasions in Tropical Areas—Their Treatment with Penicillin. T. F. Rose.—p. 55.

Struma Lymphomatosa (Hashimoto's Disease): Report of Case. E. S. Sinaiko, C. H. Lawrence and I. Zitman.—p. 62.

Treatment of Prostatic Carcinoma. R. McCaffery and E. Hess.—p. 68.

Augmented Action of Anesthetics by Vitamin B_1. G. Bazzocchi and G. Bocchetti.—p. 72.

Personal Experience with Carcinoma of Rectosigmoid and Rectum in Private Practice. A. O. Wilensky.—p. 73.

Concept of Pyloric Balance in Ileus. W. Bartlett Jr.—p. 82.

Omphalocele. D. Kershner, I. C. Zuckerman and L. N. Kessler.—p. 89.

Surgical Lesions of Left Colon.—Diagnostic problems of lesions of the left colon are numerous, the distinction between malignant tumors and tumefaction due to peridiverticulitis being the most difficult. Present methods of preparing patients for colonic surgical measures, especially the administration of sulfasuxidine and phthalylsulfathiazole ("sulfathalidine"), tend to decrease the mortality and the morbidity in this surgical field. During the period January 1946 to July 1947 resection of 23 carcinomas of the left colon were performed by Rosser without fatality, peritonitis or serious infection of the wound. Definitive indications for multiple stage removal of the colonic tumor, including partial obstruction and infection, were present in 7 cases. Exploratory operations for possible colonic polyposis are justified in the presence of inconclusive radiologic observations because of the serious potentialities of the lesion. The surgeon, not the pathologist, must determine how extensive the surgical procedure shall be when a polyp is discovered in the colon. Ten cases of stenosis of end colostomies were observed, apparently due to a low grade inflammatory reaction causing retraction. For the prevention and repair of this type of stenosis Cattell's method of skin inversion was employed, to which the Sturmdorf stitch was applied with a silkworm suture to hold the skin more firmly and effectively in place.

Endometriosis.—Counseller believes that there is no pelvic operative procedure that at some time is not required for endometriosis or made more difficult by its presence. Since the symptoms of endometriosis are due to the presence of functioning ectopic endometrium, castration may cure the majority of patients, the exception to this being cases in which the chief symptoms are due to a mass in the pelvis, obstructed loops of bowel or massive adhesions. The ovaries of patients of any age group should not be removed unless it is necessary, but especially not those of patients less than 40 years of age. In spite of strong convictions in this regard, it was deemed necessary to produce castration in 30 per cent of the cases in which patients were less than 40 years of age, because the extensiveness of the endometriosis precluded its complete removal. More than 50 per cent of the patients with moderate or severe symptoms and physical indications of endometriosis require castration to relieve their symptoms. Some patients have the endometriosis confined to one removable adnexum or this plus a few removable implants. Either the endometriosis or the ovaries must be completely removed in order to obtain a surgical cure. A high percentage of secondary and tertiary pelvic lapatotomies are required because an incomplete operation was done previously for endometriosis. If the extensiveness of the endometriosis is such as to require castration, the procedure is not usually followed by the same intensity of menopausal symptoms as is common in castration for other reasons; the gradual destruction of ovarian tissue by the endometriosis may have progressed at the time of intervention to such an extent that the patient has been bordering on menopause for some time. During this period she may have unknowingly made a gradual nervous adjustment which the final complete withdrawal of ovarian secretion does not upset. Presacral neurectomy was done in a selected group of 20 cases in which the chief symptoms of dysmenorrhea and dyspareunia were due to deep implants in Douglas' cul-de-sac which could not be removed. This was combined with excision of the accessible implants and usually a suspension of an adherent retroverted uterus. Owing to careful selection of patients the results of this procedure have been good.

Coronary Disease of Hip.—According to Chandler, infarction of the head of the femur presents a group of symptoms dominated by pain, loss of function and bony collapse caused by anoxemia and other deficiency in arterial nutrition of the head of the femur, prolonged enough to result in appreciable degeneration, even necrosis of bone. In many respects the sequence of degenerative pathologic changes following impairment of the circulation in the head and neck of the femur parallels similar processes in cardiac coronary disease. The degree of degeneration and the effectiveness of repair depend on the extent of the vascular impairment and establishment of an adequate collateral circulation. The possibility of the embarrassment of circulation through the vessels lying in the synovial folds of the femoral neck by increased joint pressure, caused by effusion, must be kept in mind. Loss of hip function corresponds with degenerative changes resulting from inadequate blood supply and the resulting lack of nutrition. The concept of "coronary disease of the hip" will afford a better understanding of many of the pathologic processes encountered in the head and neck of the femur.

Journal-Lancet, Minneapolis

68:79-116 (March) 1948

Peripheral Circulatory Disease and General Practitioner. H. O. McPheeters.—p. 79.
Student Health Service in Massachusetts Institute of Technology. D. L. Farnsworth.—p. 87.
Parenteral Nutrition: Preoperative and Postoperative Use of Glucose, Amino Acids and Alcohol: Preliminary Study. C. O. Rice, J. H. Strickler, B. Orr and D. Sanderson.—p. 91.
Treatment of Syphilis, with Special Reference to Penicillin. P. A. O'Leary.—p. 96.
Stumbling Blocks in Treatment of Fractures. F. E. Clough.—p. 100.
Diagnosis and Treatment of Acute Vascular Occlusions in Extremities. N. W. Barker.—p. 104.

Journal of the Mount Sinai Hospital, New York

14:941-990 (March-April) 1948

*Spontaneous Rupture of Papillary Muscle of Heart: Report of Three Cases and Review of Literature. S. Davison.—p. 941.
Reversible Bronchiectasis. H. Hennell.—p. 954.
Treatment of Chronic Discoid Lupus Erythematosus with Naphuride Sodium. R. Yontef.—p. 959.
Venous Thrombosis and Peripheral Pulmonary Embolization: Part I. Chapter 2. Atypical Forms of Venous Thrombosis. H. Neuhof. —p. 962.

Rupture of Papillary Muscle of Heart.—Davison reports 3 instances of spontaneous rupture of a papillary muscle of the heart in 2 men aged 55 and 63, respectively, and in a woman aged 69. Only 26 cases of spontaneous rupture of a papillary muscle of the heart have been listed in the literature and 2 additional cases were added by courtesy of personal communications. The condition is rare and defies diagnosis except at necropsy because of the almost immediate death of the patient following such rupture. Its antemortem diagnosis was established for the first time in 1 of the author's cases, in which the presence of a rough, harsh, systolic murmur and a questionable diastolic murmur, heard best at the mitral area and associated with the picture of myocardial infarction, strongly suggested the possibility of recently ruptured papillary muscle of the left ventricle. The great majority of spontaneous papillary muscle rupture occurred secondary to coronary artery occlusion and associated myocardial infarction, but in several instances a coronary artery thrombus was not demonstrated and arteriosclerosis of the coronary arterial tree was minimal. The disproportion between myocardial nutritional demand and coronary blood flow conceivably may be responsible not only for extensive papillary muscle necrosis in the absence of striking coronary artery disease, but may also exaggerate the myocardial lesions even in the presence of a thrombotic coronary artery occlusion. Coronary insufficiency may be the common denominator in spontaneous rupture of a papillary muscle with or without coronary artery occlusion. A meager collateral blood supply to the superficial bulbospiral muscle which forms the left posterior papillary muscle may be a contributing factor. The clinical diagnosis of a ruptured papillary muscle may be considered in a patient with evidence of recent myocardial infarction and with a change in the character and intensity of a murmur which antedated the infarction. The murmur is usually mitral in position and systolic in time, and becomes loud and harsh.

Journal National Malaria Society, Columbia, S. C.

7:1-84 (March) 1948

Malaria—Its Denouement? M. D. Hollis.—p. 1.
Potentiation of Curative Action of 8-Aminoquinolines and Naphthoquinones in Avian Malaria. H. A. Walker and A. P. Richardson. —p. 4.
Malaria Control Trends on Impounded Waters of Tennessee Valley. E. L. Bishop and E. H. Hinman.—p. 12.
Studies on Imported Malarias. 7. Parasitologic Pattern of Relapsing Plasmodium Vivax in *Military Patients.* *D. E. Eyles and M. D. Young.*—p. 23.
Effect of 3,3'Methylenebis (4 Hydroxycoumarin) "Dicumarol" on P. Lophurae Infection in Ducks. R. H. Rigdon and B. E. McCain. —p. 38.
Experience with Use of Permanent Works for Control of Anophelines on Impounded Water. F. E. Gartrell and C. C. Kiker.—p. 44.
Relationship Between Infectiveness and Densities of Anopheles Quadrimaculatus in Malarious Area in South Carolina. A. A. Weathersbee and W. C. Frohne.—p. 59.
Plasmodium Malariae in School Surveys in South Carolina. G. E. McDaniel and F. M. Hemphill.—p. 65.

Journal of Neurosurgery, Springfield, Ill.

5:107-212 (March) 1948

Benign Cysts of Brain: Analysis with Comparison of Results of Operative and Non-Operative Treatment in 30 Cases. J. H. Drew and F. C. Grant.—p. 107.
Conservative Treatment of Third Ventricle Tumors. A. Ward and R. G. Spurling.—p. 124.
Posterior Fossa Meningiomas. E. Campbell and R. D. Whitfield. —p. 131.
Sacral Nerve Innervation of Human Bladder. R. F. Heimburger, L. W. Freeman and N. J. Wilde.—p. 154.
Physiologic Studies of Arteriovenous Anomalies of Brain. H. A. Shenkin, E. B. Spitz, F. C. Grant and S. S. Kety.—p. 165.
Psychometric Testing of Patients Who Had Brain Tumors Removed During Childhood. L. A. French.—p. 173.
Changes in Internal Carotid Pressure During Carotid and Jugular Occlusion and Their Clinical Significance. W. H. Sweet and H. S. Bennett.—p. 178.

Journal of Nutrition, Philadelphia

35:287-398 (March) 1948. Partial Index

Studies on Comparative Nutritive Value of Fats: X. Reputed Growth Promoting Activity of Vaccenic Acid. H. J. Deuel Jr., S. M. Greenberg, Evelyn E. Straub and others.—p. 301.
Production of Functional and Fatty Changes in Liver by Chronic Vitamin B Complex Deficiency, and Interrelationships with Protein Intake. V. A. Drill and T. A. Loomis.—p. 333.
Nutritive Quality and Trypsin Inhibitor Content of Soybean Flour Heated at Various Temperatures. R. J. Westfall and S. M. Hauge.—p. 379.
Relation of Thiamine Clearance to Blood Levels in Man. M. C. Blanchaer and Eileen Cameron.—p. 391.

Journal of Urology, Baltimore

59:267-500 (March) 1948. Partial Index

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*Retropubic Prostatectomy. O. S. Lowsley and A. Gentile —p. 281.
Hypertension Treated by Nephrectomy. J. G. Moore.—p. 297.
Thrombosis of Left Renal Artery with Hypertension: Case Report. J. D. Shea, J. W. Schwartz and R. E. Kobilak.—p. 302.
Spontaneous Perirenal Hematoma Secondary to Periarteritis Nodosa. C. A. Fort.—p. 307.
Metastatic Tumors of Ureter. D. Presman and L. Ehrlich.—p. 312.
Tuberculous Prostatic Urethritis: Suggestive Diagnostic Sign. J. K. Lattimer.—p. 326.
Priapism Due to Sickle Cell Anemia. B. Levand and R. Stept.—p. 328.
Proliferative Tumors of Ureter and Renal Pelvis, with Further Observations on Significance of "Epithelial Cell Nests": Six Case Reports. D. P. Fagerstrom.—p. 333.
Rational Theory of Intestinal Distention and Its Urological Application. R. C. Begg.—p. 358.
Genital Manifestations in Early Filariasis. E. W. Beach.—p. 371.
*Retropubic Prostatectomy: An Extravesical Technic: Report of 32 Cases. S. K. Bacon.—p. 376.
Do Patients with Cancer of Prostate Gland Show Abnormal Metabolism of Therapeutic Doses of Natural Estrogens? J. A. May and B. F. Stimmel.—p. 396.
Modification of Blair Procedure for Repair of Hypospadias. D. R. Smith and H. M. Blackfield.—p. 404.
Reconstruction of Lower Segment of Ureter with Tube made from Bladder Flap: Preliminary Report. R. W. Barnes and S. Farley. —p. 466.
Polycystic Kidney Disease. M. M. Mayers.—p. 471.
Surgical Treatment of Nephritis. M. E. Pesqueira and E. Henriquez I. —p. 484.
Best Method of Prostatectomy for Benign Adenoma. A. L. Rivas. —p. 491.
Retrocaval Ureter: Case Report. P. P. B. McElhinney and J. W. Dorsey.—p. 497.

Retropubic Prostatectomy.—Lowsley and Gentile performed retropubic prostatectomy as developed by Millin of London in 28 patients. They found that this operation is possible in almost every type of prostatic obstruction, but they consider it feasible under the following conditions: in many cases of large adenomatous prostates that can be removed in one stage, when the patient's general condition does not warrant a traumatizing operation, when a shorter period of hospitalization is vital to the patient's health, and when, because of the patient's age, the maintenance of sexual function must be considered. The results of the operation are most gratifying. The authors have had no deaths, no persistent urinary fistula and no postoperative incontinence of urine. The patient's convalescence is more rapid and satisfactory than after any other type of prostatectomy and the period of hospitalization is substantially reduced. There is earlier urinary control than after other types of prostatectomy.

Retropubic Prostatectomy, Extravesical Technic.—Bacon says that since he saw retropubic prostatectomy demonstrated by Millin of London and van Gulik of Amsterdam he has performed the operation in 32 cases. He stresses that the operation is anatomically sound as no important organs are disturbed or endangered. All obstructing tissue is removed, thereby eliminating the risk of recurrence. There is practically no danger of postoperative or delayed hemorrhage, nor of persistent fistula, prolonged infection or urethral stricture. The procedure is done in a highly vascular area so that exact and prompt ligation of precapsular veins must be carried out. The postoperative period is relatively short. Retropubic prostatectomy avoids the disasters and indignities (rectourethral fistula, incontinence and impotence) of perineal prostatectomy. It is not applicable to prostatic fibrosis, bladder neck contracture or extensive carcinoma.

Medical Annals of District of Columbia, Washington

17:71-134 (Feb.) 1948

Review of Biliary Tract Surgery for Six-Year Period at Doctors Hospital. W. R. Morris and J. C. Murphy.—p. 71.
Current Problems in Biliary Tract Disease. A. Behrend.—p. 77.
Recognition and Management of Esophageal Diseases. H. W. Schmidt. —p. 81.
Clinical Studies in Schizophrenia. A. M. Duval.—p. 92.
Myeloid Reaction in Acute Tuberculosis. J. Spier and L. E. Cluff. —p. 98.

17:135-190 (March) 1948

Discussion of Clinical Application of Titered or Quantitative Serologic Tests for Syphilis. S. R. Taggart.—p. 135.
False-Positive Serologic Test. J. W. Love and E. E. Barksdale.—p. 143.
Newer Developments in Anesthesia. E. B. Touhy.—p. 149.
Present Trends in Gastric Surgery. J. H. Garlock.—p. 153.
Pregnancy Associated with Polyostotic Fibrous Dysplasia. R. B. Nelson. —p. 157.

Medicine, Baltimore

27:1-138 (Feb.) 1948

Surgical Relief of Severe Angina Pectoris: Methods Employed and End Results in 83 Patients. J. C. White and E. F. Bland.—p. 1.
Cinchopen (Atophan): A Critical Review. W. C. Hueper.—p. 43.
Potassium and Periodic Paralysis: Metabolic Study and Physiological Considerations. H. Gass, M. Cherkasky and N. Savitsky.—p. 105.

Military Surgeon, Washington, D. C.

102:251-334 (April) 1948. Partial Index

Mediterranean Medical Cruise—February, 1944. J. R. Darnall.—p. 251.
Medical Aspects of Atomic Energy. G. M. Lyon.—p. 269.
Preventive Medicine in Postwar Army. T. F. Whayne.—p. 274.
Some Problems Facing Naval Medical Officer in Arctic. H. B. Eisberg. —p. 278.
Medical Department Problems in Cold Weather Operations. F. J. Knoblauch.—p. 283.
Battle of Grand Central Palace: Observations at Induction Station. L. Carp.—p. 285.
*Dyspepsia in the Army—Mental Disease in Soldiers with Gastrointestinal Complaints. M. Kraemer.—p. 292.
Future of Army Medical Department. R. W. Bliss.—p. 298.

Dyspepsia in the Army.—Kraemer says that in the first World War a digestive neurosis was diagnosed in over one third of the patients admitted to the gastrointestinal service of a United States Army General Hospital. From the author's experience in station hospitals in the United States and a general hospital in the European Theater, despite more adequate roentgen and laboratory helps toward establishing a disease entity than were available in the last war, the incidence of psychoneuroses and allied disorders was as great or greater. The author comments on the high incidence of a history of dyspepsia in soldiers who were admitted to the neuropsychiatric service and on the reasons why many mentally unfit men in the Army were not recognized and eliminated. He is convinced that attempts at rehabilitation of persons with dyspepsia lead nowhere unless a special diet and protected existence can be provided. At best, these patients are fussy eaters. Numerous foods disagree with them. No regular army mess is adequate for them. A few might be retained as service personnel in large hospitals in the United States.

Missouri State Medical Assn. Journal, St. Louis

45:171-248 (March) 1948

Acute Perforation in Gastric Carcinoma. J. Modlin.—p. 187.
Principles in Treatment of Benign Prostate Enlargement. A. L. Stockwell.—p. 189.
Gout: Review of Diagnosis and Management. P. O. Hagemann.—p. 192.
Missouri State Blind Program. A. J. Baer, Jr.—p. 195.
Amputation by Pressure Necrosis: Description of Simple Device. C. E. Sanders.—p. 196.
Significance of Potassium and Bromide in Metabolism. R. Uhlmann. —p. 198.
Recurrent Mumps Versus Recurrent Parotitis: Case Reports. C. L. Kline and L. S. Highsmith.—p. 200.

45:249-320 (April) 1948

Unusual Anomalies of Gallbladder and Bile Duct. B. L. Sinner.—p. 265.
Occurrence of Endemic Typhus Fever in Kansas City, Missouri. V. B. Buhler and M. J. Mueller.—p. 267.
Benign Polyp of Jejunum Causing Unexplained Hemorrhage: Case Report. J. C. Edwards.—p. 273.
Urine vs. Blood Serum in Friedman's Test for Pregnancy. C. F. Kent. —p. 275.
Pyloric Obstruction Due to Gastric Diverticulum: Report of Case. J. G. Probstein and L. A. Sachar.—p. 276.
Critical Analysis of Recent Methods of Treatment of Thromboembolic Disease. H. M. Wiley; J. A. Ossman and E. D. Sugarbaker.—p. 278.

New England Journal of Medicine, Boston

238:421-456 (March 25) 1948

*Treatment of Arterial Embolism. R. Warren and R. R. Linton.—p. 421.
Idiopathic Hyperlipemia. W. C. Hopgood.—p. 429.
*Streptomycin Treatment in Acute Brucellosis: Report of Case with Review of Literature. C. Howe and J. T. Heyl.—p. 431.
Value of Special Auricular Lead and of Carotid-Sinus Pressure in Electrocardiographic Diagnosis of Tachycardias and Other Disorders of Heart Beat. L. B. Ellis, L. W. Lannan and J. M. Faulkner.—p. 434.
Diabetes. E. P. Joslin, L. P. Krall, C. C. Bailey and others.—p. 437.
Intradural Lipoma of Sacral Canal. Spina Bifida Occulta.—p. 443.
Congenital Atresia of Hepatic and Cystic Ducts.—p. 446.

Treatment of Arterial Embolism.—Warren and Linton cite the various new measures that permit conservative treatment of arterial occlusion, such as intermittent positive and negative pressure, interruption of the sympathetic pathways, either surgically or otherwise, or the use of heparin. It was with these new treatments in mind that the authors decided to investigate what place, if any, embolectomy should play in the treatment of arterial occlusion. They investigated the records of 98 patients who had 172 arterial emboli during the period 1937 to 1946. Conservative treatment was available during the whole ten year period. In 1937 and 1938 the principal conservative methods used were papaverine, paravertebral procaine block and the pavex boot for the administration of intermittent suction and pressure. After 1939 the pavex boot gave place largely to intermittent venous occlusion and the oscillating bed. The use of the other conservative methods was continued. Since most of the nonoperative methods were used in combination, their efficacy cannot be evaluated individually. Twenty-one patients were operated on, 4 having two operations each. Four emboli were removed in 3 patients who died so soon that the effect of operation on the limbs could not be determined, but of 21 patients in whom results could be analyzed, 18 survived. In the 3 cases in which the limbs were lost there was technical difficulty in removing the embolus, in 2 cases because the clot was adherent to the artery. In nearly two thirds of conservatively treated arterial emboli the limb was preserved. Thirty-eight of the 98 patients died in the hospital. Although available conservative weapons are valuable adjuncts to surgery, surgical embolectomy is the treatment of choice in peripheral artery embolism.

Streptomycin in Acute Brucellosis.—Howe and Heyl review previous reports on the use of streptomycin in acute brucellosis. Because of equivocal results observed to date the authors present an instance of infection due to Brucellus abortus, in which streptomycin was used with some evidence of therapeutic effect. The patient was a man aged 52 who two weeks before admission had had a shaking chill, which was followed by daily afternoon elevations in temperature to 100 to 102 F. and profuse night sweats. He had consumed unpasteurized milk on numerous occasions. Streptomycin did not become available for use in this case until five weeks after the patient's admission, and a control period of observation in which no chemotherapeutic or antipyretic agents were administered was thus allowed. Fifty-eight days after the onset of the illness, a course of streptomycin was started. The patient was given a total of 60 Gm. in daily doses of 6 Gm. (1 Gm. every four hours) over a period of ten days. A review of previously reported cases of brucellosis treated with streptomycin indicates that patients in whom the highest blood levels of drug were maintained for even relatively short periods showed more signs of response than those in whom lower blood levels were maintained over relatively longer periods. Therapy at high dosage, however, is not without risk of streptomycin intoxication, as evidenced by the slight though definite vestibular impairment persisting in this patient.

238:457-492 (April 1) 1948

*Clinical Aspects of Normal Electroencephalogram in Epilepsy. J. A. Abbott and R. S. Schwab.—p. 457.
Spontaneous Pneumothorax: Clinical Study of 100 Consecutive Cases. R. M. Myerson.—p. 461.
*Streptomycin Treatment of Bacterial Endocarditis: Report of a Case. B. F. Massell, J. W. Zeller, J. W. Dow and D. Harting.—p. 464.
*Malaria: Observations on Treatment with Chloroquine (SN 7618) and Combined Quinine and Plasmochin. T. A. Warthin, S. A. Levine and R. R. Evans.—p. 467.
Exfoliative Dermatitis Due to Codeine. J. H. Moyer.—p. 469.
Diabetes. E. P. Joslin, L. P. Krall, C. C. Bailey and others. —p. 471.
Hypertrophy and Dilatation of Heart.—p. 477.
Bronchiogenic Carcinoma of Right Lower Lobe Bronchus, with Extension to Esophagus and Metastases to Mediastinal Lymph Nodes, Liver and Omentum.—p. 480.

Electroencephalogram in Epilepsy.—Abbott and Schwab investigated 193 patients attending the Epileptic Clinic of the Nerve Out-Patient Department at the Massachusetts General Hospital. Epileptic patients each showing at least one normal electroencephalogram between seizures and those showing only abnormal electroencephalograms between seizures were compared with reference to ten other aspects of the disease. All ten comparisons were favorable to the patients with normal records. In the patients with normal electroencephalograms there were later onset, fewer different kinds of spells, less frequent spells, greater response to medicine, more remissions while off medicine, more spells during sleep and greater ability to work, whereas patients with abnormal records had had spells in infancy, head injuries or other encephalopathies and positive family history of epilepsy.

Streptomycin in Bacterial Endocarditis.—Massell and his associates report the case of a girl, aged 9, in whom streptomycin proved effective in the treatment of endocarditis caused by a gram-negative organism belonging to the genus Hemophilus. The causative organism was isolated and its sensitivity to the drug in vitro determined before treatment was started. The concentration of streptomycin maintained in the blood was never less than twice and rose as high as fifteen times that required to inhibit the organism in vitro. A short intensive course of streptomycin eradicated the infection. The patient is perhaps first of this kind to recover without any other therapy than streptomycin, and the recovery followed a shorter course of treatment than would ordinarily be planned. Treatment was started with 2 Gm. of streptomycin daily, given in eight divided doses at three hour intervals by intramuscular injection. The patient improved during the first five days of treatment, until it became necessary to use a different brand of streptomycin. The second lot caused fever and local irritation so severe that treatment had to be discontinued after a total of only 13.5 Gm. had been given in six and a half days. The patient was well and active one year after the completion of therapy.

Malaria.—Warthin and his associates say that during the year of July 1946 to July 1947 125 patients with proved malaria due to Plasmodium vivax, all of Pacific origin, were admitted to the Veterans Administration Hospital, West Roxbury, Mass. All had received suppressive quinacrine therapy while stationed in malarial zones, and most had been given various doses of quinacrine for prior clinical attacks. Once a positive smear had been obtained, either of two methods of treatment was offered. Those who desired as short a period of hospitalization as possible were treated with chloroquine diphosphate. The dosage was 1 Gm. (four tablets, each containing 0.25 Gm. of the diphosphate) followed in eight hours by 0.5 Gm. (2 tablets). A single dose of 0.5 Gm. was administered on the second and third days of treatment. Most patients were discharged on that day, with instructions to take 0.5 Gm. (two tablets) every Sunday for five weeks. Patients who complained of over five recurrent attacks of malaria and those who were able to spend two weeks in the hospital were placed on the combined quinine-pamaquine regimen as outlined by Most and associates. Pamaquine naphthoate, in 0.02 Gm. doses, was administered every eight hours for fourteen days. Quinine sulfate was prescribed in 1 Gm. doses every eight hours for one day followed by 0.6 Gm. every eight hours for thirteen days. Follow-up examination was identical to that for patients treated with chloroquine. The authors found that chloroquine (SN 7618) is easier to administer and does not have the yellow dye discoloration effect of quinacrine. Clinically, it was no more effective in preventing relapses than quinacrine. The combined quinine and pamaquine regimen has greatly reduced the relapse rate.

Northwest Medicine, Seattle

47:165-236 (March) 1948

Differential Diagnosis and Treatment of Leukemias. E. E. Osgood. —p. 181.
Surgical Aspects of Hemorrhagic Diseases. A. J. Quick.—p. 186.
*Superficial Gangrene of Extremities Due to Ergot Poisoning. R. H. Loe. —p. 190.
Bacillus Pyocyaneus Septicemia: Report of Case. W. A. Chesledon, M. P. Starr and N. R. East.—p. 192.
Effectiveness of Propyl Thiouracil in Treatment of Hyperthyroidism. R. E. Hibbs and E. P. McCullagh.—p. 192.
Acute Benadryl Intoxication: Case Report. M. P. Starr Jr. and R. M. Rankin.—p. 195.
Diagnosis and Treatment of Stones in Common Bile Duct. J. W. Geehan.—p. 195.
Congenital Atresia of Bile Ducts. J. L. Vadheim and E. P. Nelson. —p. 197.
Varicose Veins of Lower Extremities. M. S. Rosenblatt.—p. 200.

Gangrene Due to Ergot Poisoning.—Loe presents the case of a man, aged 46, who was admitted to the hospital with gangrene of both feet. His present illness began twenty-one days previously, when he was undergoing treatment for jaundice and pruritus in another hospital. Approximately four days after the therapy was started he complained of burning sensations in his feet and legs, and the nurse discovered that both feet were turning black. His physician stated that he had given the patient six injections of "ergotrate" (0.2 mg. ergonovine maleate per ampule) over a period of three days, for the purpose of controlling a severe pruritus. The drug was discontinued as soon as the gangrene became apparent. Amputation was delayed because of the presence of arterial pulsations. Gradually the skin was exfoliated. The right foot healed without amputation, but parts of the toes of the left foot had to be amputated. The importance of recognizing the prodromal symptoms of ergotism cannot be overemphasized, for in this stage cessation of the administration of the drug and therapy can prevent irreparable damage. These symptoms are coldness, cramps and paresthesias such as tingling, numbness and burning. Paleness and mottling of the skin precede gangrene. Therapy should be directed at dilating the arteriolar vessels. Papaverine has been used successfully. Vascular exercises and reflex heat have also been employed. Use of heparin and "dicumarol" should also be of value in preventing or limiting the formation of thrombus. Theoretically lumbar sympathetic block should be beneficial when "ergotrate" is the acting agent but not when ergotamine tartrate is the offending factor, since the former acts centrally on the sympathetic nervous system and the latter on the myoneural junction. Development of gangrene does not call for immediate surgery. A period of waiting may demonstrate that a large part of the gangrenous area involves only the superficial layers of the skin. Reports indicate that relatively small doses of ergot may produce gangrene in persons who are susceptible to the drug.

Oklahoma State Medical Assn. Jour., Oklahoma City

41:79-114 (March) 1948

Leiomyosarcoma of Urinary Bladder. J. Fulcher.—p. 82.
Congenital Renal Anomalies and Complications. W. F. Lewis.—p. 83.
Present Day Management of Trachoma. F. D. Switzer.—p. 87.
Treatment of Mastoiditis. H. C. Ford.—p. 98.
Pelvic Thrombophlebitis. W. F. Thomas.—p. 91.

41:115-174 (April) 1948

Obstruction at Vesical Neck. C. D. Creevy.—p. 118.
Thromboembolism. R. G. Stoll.—p. 121.
Fresh Fractures of Carpal Scaphoid. L. S. Sell.—p. 124.
Simplified Safer Caudal Anesthesia. L. C. Northrup.—p. 126.
Acute Infectious Lymphocytosis: Case History Showing Central Nervous System Involvement. W. E. Parrish.—p. 128.

Philippine Medical Association Journal, Manila

24:61-94 (Feb.) 1948. **Partial Index**

Demerol and Scopolamine in Obstetrics. G. Rustia and L. Almeda.—p. 61.
Study of Maternal Deaths in the Philippine General Hospital. A. Baens.—p. 75.
Duration of Pregnancy in Filipino Women (Preliminary Report). C. B. Tejada.—p. 83.
Uterus Didelphys. J. S. Galang.—p. 89.
Treatment of Hyperemesis Gravidarum with Hormone and Vitamin. J. Hidalgo.—p. 93.

Plastic and Reconstructive Surgery, Baltimore

3:109-244 (March) 1948. **Partial Index**

Hemangioma: Evaluation of Treatment by Injection and Surgery. N. Owens and Kathryn L. Stephenson.—p. 109.
Surgical Correction of Developmental Deformities of Mandible. R. O. Dingman.—p. 124.
Langer's Lines and Facial Scars. L. R. Rubin.—p. 147.
Surgical Treatment of Recurrent Carcinoma of Breast and Chest Wall. K. L. Pickrell, J. W. Kelley and F. A. Marzoni.—p. 156.
Construction of Skin-Tube Esophagus, Following Surgical Treatment of Tracheo-esophageal Fistula. R. H. Ivy, H. R. Hawthorne and J. A. Ritter.—p. 173.
Stein-Estlander-Abbe Operation: A Centenary in Plastic Surgery. P. Fogh-Andersen.—p. 186.
Radical Excision and Skin Grafting of Leg Ulcers. D. Teplitsky, R. N. Shapiro and G. W. Robertson.—p. 189.
Tendon Transfer to Restore Abduction of Index Finger Using Extensor Pollicis Brevis. J. M. Bruner.—p. 197.
*Cancellous Bone Grafts for Restoration of Nasal Contour. B. C. Martin.—p. 202.
Early Maxillo-Facial Surgery, World War II. M. S. Travin.—p. 209.
Note on Use of Grated Cadaver Cartilage. J. Penn, J. Jankowitz and A. Bruwer.—p. 228.

Cancellous Bone Grafts for Nose.—Martin used cancellous bone for the restoration of the nasal contour in 15 cases. Six of these cases involved war injuries. The author uses the midcolumella incision because it gives the best exposure of the dorsum of the nose and the nasal spine of the maxilla. This incision makes it possible to dissect an adequate pocket for the strut. In undermining the dorsum of the nose an attempt is made to stay beneath the periosteum. An iliac crest is exposed and the cortical portion elevated with a saw. An appropriately sized block of cancellous bone is removed and shaped. A groove is placed in the posterior surface near the distal end of the graft which overlies the dorsum of the nose. The tip of the graft is elevated to the desired height and the length of the strut necessary is estimated. The strut is then cut off and fitted into the groove. The incision is closed and mattress sutures placed through the columella and tied over lead plates to relieve tension. Immobilization is effected by nasal packing and a nasal splint of lead plates. The grafts are usually secure in ten to fourteen days. The method was successful in all cases. The author feels that cancellous bone grafts are superior to autogenous cartilage. They are more easily secured; the site of the scar is well hidden and they are readily shaped and show no tendency to buckle or warp. They are more resistant to infection.

Radiology, Syracuse, N. Y.

50:283-438 (March) 1948

Therapeutic Radiology. D. Quick.—p. 283.
*Roentgen Treatment of Multiple Myeloma. L. H. Garland and B. R. Kennedy.—p. 297.
Histologic Changes in Squamous-Cell Carcinoma of Mouth and Oropharynx Produced by Fractionated External Roentgen Irradiation. J. W. Hall and M. Friedman.—p. 318.
Suppurative Bronchopneumonia with Cavitation. S. P. Perry and R. Shapiro.—p. 351.
Roentgen Findings in Functional Disturbances of Gastro-Intestinal Tract. P. C. Swenson and W. E. Manges.—p. 365.
*External Irradiation with Roentgen Rays and Radium in Treatment of Human Leukemias, Lymphomas, and Allied Disorders of Hemopoietic System. Anna Hamann.—p. 378.
Chemotherapy in Human Lymphomas, Leukemias, and Allied Disorders of Hemopoietic System. C. L. Spurr, T. R. Smith and L. O. Jacobson.—p. 387.
Simple Pelvimeter to be Used with Triangulation Method of Pelvimetry. T. A. Kendig.—p. 395.

Roentgen Treatment of Multiple Myeloma.—Garland and Kennedy review the results of roentgen treatment of multiple myeloma as reported in the literature and in a series of 13 patients, 6 men and 7 women between the ages of 31 and 72 years, treated at the San Francisco Hospital. In the latter series the maximum tissue dosage to any one lesion, calculated to the middle of the principal tumor in the area treated, varied from 200 r in one day to 2,800 r in twenty days. Six of the patients showed improvement, 6 were not appreciably benefited and 1 had incomplete treatment. One of the patients survived over nine years and is still living; he is ambulatory and in good clinical condition, despite an initial grave paraplegia. The average survival for the remaining patients with proved myelomas treated roentgenologically was 10.4 months, while that of the untreated patients was only 2.3 months. These results are distinctly inferior to those of Batts, who reported a survival period of twenty-three months in an irradiated group and six months in an untreated group. This difference may be due to variation in the stage of the disease in the two groups, plus variation in the roentgen dosage in some of the authors' cases. Adequate irradiation of patients with multiple myeloma is still worth attempting, though the results will unquestionably disappoint those who accept commonly published statements that these lesions are "very radiosensitive."

Irradiation in Leukemia and Allied Disorders.—Hamann reviews 337 cases of blood dyscrasias in 203 men and 134 women treated by external irradiation in Billings Hospital, Chicago, during the period 1929 to 1945. One hundred and ten patients had leukemia, 143 had Hodgkin's disease, 77 had lymphosarcoma and 7 had polycythemia rubra vera. In one group of patients in advanced stages of Hodgkin's disease and lymphosarcoma who had received extensive irradiation with decreasing response, treatment was carried on with nitrogen mustards (beta-chloroethylamines). A second group of patients with the same diseases, with or without previous roentgen therapy, were referred for local irradiation after nitrogen mustards had failed to decrease the size of large tumors. In an obese woman with a reticulum cell sarcoma confined to the pelvic lymph nodes, intravaginal application of radium followed external roentgen irradiation. In a patient in the final stage of Hodgkin's disease an analgesic effect was obtained with a radium mold. Roentgen therapy of leukemia, Hodgkin's disease and lymphosarcoma, judiciously given with the present methods, is an effective palliative measure with a great safety margin and few complications. It finds its broadest indication as local irradiation of the various foci of disease. The efficacy of total body irradiation as to a systemic effect and the effect on generalized and subclinical foci is less clearcut. It is in these respects that the therapeutic use of radioactive isotopes and chemical compounds might be advantageous, but the author's experience with nitrogen mustard compounds does not yet allow valid conclusions. The high dosage required for effective roentgen therapy of polycythemia vera does not allow frequent courses of treatment.

Review of Gastroenterology, New York

15:261-348 (April) 1948

*Ultraviolet Blood Irradiation Therapy in Acute Virus and Virus-Like Infections. G. P. Miley and J. Christensen.—p. 271.
*Pathogenesis of Adenomatous Polyps in Relation to Malignancy of Large Bowel. H. E. Bacon and G. G. Broad.—p. 284.
Prevention of Gastroduodenal Ulcer. D. Cook.—p. 296.
Applied Anatomy of Infants and Children in Proctology. S. Schapiro.—p. 307.
New Protein Hydrolysate for Treatment of Peptic Ulcer. N. Steinberg.—p. 319.

Ultraviolet Blood Radiation Therapy.—Miley and Christensen treated 79 consecutive patients who had acute virus or virus-like infections with ultraviolet radiation of the blood. The technic of this therapy consists of withdrawing approximately 3 per cent of a patient's total blood volume, citrating the withdrawn blood and immediately passing the citrated blood through a Knott hemoirradiator, which exposes the blood safely and efficiently to high intensity ultraviolet rays. The irradiated blood is then returned to the patient's venous circulation. All the 43 patient's with early and of the 27 with moderately advanced infection rapidly recovered, and 8 of 9 of the apparently moribund ones. The subsidence of toxic symptoms in patients with poliomyelitis of bulbospinal and spinal type, with primary atypical or "virus" pneumonia, with mumps and with acute herpes, occurred with striking regularity within twenty-four to seventy-two hours. No ill effects were noted. The mechanism by which this method acts is not definitely known, but it seems highly probable that the resistance of the host is raised rapidly and efficiently by a direct stimulating and energizing effect after the intravenous induction of ultraviolet energy. It is strongly suggested that ultraviolet irradiation of the blood may be observed to be the ideal method of controlling acute virus or virus-like infections safely and efficiently.

Pathogenesis of Adenomatous Polyps.—According to Bacon and Broad, five factors point to a close relationship between intestinal adenoma and cancer: Intestinal adenomas develop into the malignant state in a significant proportion of cases. The appearance of adenomas precedes or accompanies the general cancer age group. The sigmoid and rectum contain the greatest numbers of carcinomas of the large bowel; the frequency of the location of intestinal adenomas is likewise the greatest in the same area of the large intestine. There is a frequent coexistence of cancer and adenomatous polyps in the same person. A patient who has the inherent tendency toward having intestinal adenomas may have one or more of them, cancer in the same region, or various combinations of both. Intestinal adenomas are to be considered as premalignant lesions and should be treated by destruction or removal.

Texas State Journal of Medicine, Fort Worth

43:671-742 (March) 1948

Treatment of Diabetes Mellitus in Children. W. E. Nelson.—p. 677.
Diverticulosis and Diverticulitis. J. T. Boyd.—p. 681.
Early Ambulation Following Major Surgery. R. H. Bell.—p. 686.
Controversial Details of Complete Hysterectomy. H. O. Jones.—p. 688.
Preglaucoma. S. K. Stroud.—p. 690.
Adenomatoid (Angiomatoid) Formations of Genital Organs. H. Davenport Jr.—p. 694.
Houston's Welcome. W. H. Hamrick.—p. 698.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

23:1-68 (March) 1948

*Pediatric Approach to Tonsillectomy. J. A. Glover.—p. 1.
Further Observations on Significance of Blood Pyruvic Acid Level in Infancy. E. C. Allibone.—p. 7.
Puberty Growth of Boys. R. W. B. Ellis.—p. 17.
Etiologic Aspects of Gastro-Enteritis. E. Hinden.—p. 27.
Salicylate Therapy in Children. G. F. Maggioni.—p. 40.
The pH of Mouth in Newborn Infant. J. Thomson.—p. 48.
Azotemia in Infancy. S. A. Doxiadis.—p. 50.

Pediatric Approach to Tonsillectomy.—Glover believes that pediatricians should approach the problem of tonsillectomy with caution. The incidence of tonsillectomy remains excessive, particularly in children between 5 and 7 years of age. This age distribution suggests that many tonsillectomies are performed because of enlargements which are either physiologic, associated with the great changes in development during this critical period, or immunologic responses to the unaccustomed infections met with on entry to school or to the sepsis resulting from the decay of the primary teeth. Tonsils cannot be determined as "diseased" or "infected" by clinical examination. As their function includes the arrest of pathogenic organisms, the fact that these can be found in them is no justification for operation. Tonsillectomy should command the respect due to a major operation. In some cases it is followed by unpleasant sequelae. It has a mortality which, though small, is larger than is generally appreciated. Tonsillar remnants may be more harmful than the original tonsils. The most reliable indication is the occurrence of frequently repeated attacks of acute tonsillitis which cannot be explained by extraneous infection. Indications such as frequent colds, chronic nasal catarrh and otitis media are misleading. To remove the tonsils to cure sinusitis is to put the cart before the horse. Certain other conditions including bronchitis, asthma and nephritis are definitely contraindications. The value of the operation in benefiting acute rheumatism is doubtful. The incidence of otitis and mastoid disease is the same or perhaps slightly increased in the tonsillectomized, while their liability to bronchitis and pneumonia is increased.

British Medical Journal, London

1:427-484 (March 6) 1948

Chondromalacia Patellae. C. Gray.—p. 427.
*Vitamin D in Treatment of Cutaneous Tuberculosis. G. B. Dowling, Suzette Gauvain and E. G. Macrae.—p. 430.
Hypertension: Etiology and Surgical Treatment. G. Bourne.—p. 435.
*Role of Sympathetic Nerve in Cancerous Pain: Inquiry on 300 Cases. M. Dargent.—p. 440.
Aseptic Necrosis of Pancreas Due to Arterial Thrombosis in Malignant Hypertension. W. Pagel and A. L. Woolf.—p. 442.
*"Temporal Arteritis": Aspects of Subacute Arteritis in Later Life. G. H. Jennings.—p. 443.
Three Cases of Synovioma. V. C. J. Harris.—p. 447.
Balantidial Dysentery: Report of a Fatal Case in Assam. A. A. Miller and C. R. Peck.—p. 448.
Intrauterine Rupture of the Umbilical Cord. G. Bancroft-Livingston.—p. 449.

Vitamin D in Cutaneous Tuberculosis.—Dowling and and his associates report 44 cases of lupus treated with calciferol. Of the 34 adult patients, 30 have been discharged free from clinical evidence of lupus, and in the remaining 4 treatment is being continued. Of the 30 patients who have been discharged, 8 at some time showed signs of relapse. These relapses have responded well to further treatment. Many of the adults appeared to be worse during the early weeks of treatment with increase in redness and swelling and occasionally spontaneous ulceration. This was followed by gradual subsidence, pallor, and shrinkage of inflammatory swelling. Evidence of tuberculosis has disappeared in 7 of 10 children treated with calciferol; in the other 3 treatment is being continued. Calciferol was given also to 31 adults with noncutaneous tuberculosis. Most of them had tuberculous adenitis of the neck. Tuberculous tenosynovitis, peritonitis, bladder disease, dactylitis and disease of various joints were also treated. The results have been good, particularly with the lymph nodes. Subsequent excision has been made easy. Calciferol appears to have no direct action on the tubercle bacillus. It has an effect similar to that of the

Gerson-Herrmannsdorfer diet, cod liver oil, heliotherapy and light baths—in all of which the common factor is a relative abundance of vitamin D—but it produces this effect far more rapidly and completely than the older methods. Since local manifestations of tuberculosis are part of a general disease, the patient requires good food, fresh air and adequate rest.

Sympathetic Nerve in Cancerous Pain.—According to Dargent, pain-relieving operations on the sympathetic nerve in patients with evolutive carcinoma have been widely discussed. The inquiry he started in 1940 under the direction of Leriche has enabled him to gather anatomicopathologic data, to define the clinical features of sympathetic pain and to determine the limits of such operations. At first, the author performed after a successful cocaine infiltration test, surgical sympathetic nerve resections. Since only temporary relief was obtained, he gave up this operation, as he found that repeated cocaine infiltrations had produced more lasting results. He has performed over 300 infiltrations of cervical, thoracic and lumbar portions of the sympathetic trunk. He injects from 20 to 40 cc. of a 1 per cent solution of "scurocain" (procaine hydrochloride). Anatomic studies revealed that lesions are to be found in the sympathetic trunk and ganglions, as well as signs of reaction in the arterial wall in contact with cancerous lymph nodes—which explains the sympathetic origin of pain in some cases of evolutive cancer. The involvement of the sympathetic nerve in pain due to compression or involvement of peripheral nerves and pain produced by periosteal lesions is of a more accessory character. The pain is greatly relieved by cocaine infiltrations of the sympathetic trunks. This procedure, which is simple, should be preferred to operations on the sympathetic nerve.

"Temporal Arteritis."—The disorder appears mainly in persons over 60 years of age. Severe protracted headaches and signs of inflammation of the temporal arteries often appear early and facilitate diagnosis, but it seems that the term "temporal arteritis" is inadequate. Although inflammation of the temporal arteries has characterized nearly all the cases described, the whole aspect has been that of a prolonged general infection with widespread, if patchy, arterial involvement. Jennings believes that this condition probably occurs more frequently than is suggested by the approximately 44 cases hitherto reported in the literature. Four recent cases illustrate the chief features of "temporal arteritis," such as its occurrence in the aged, the persistence and severity of the headaches, the protracted course, the widespread involvement of the arteries and pathologic aspects which suggest that the arteries are involved in a low grade inflammation which differs to some extent from other known forms of arteritis. Treatment is chiefly palliative; a combination of acetylsalicylic acid and phenacetin will give hours of relief in all but the most severe cases. The addition of diacetylmorphine or codeine will be required in the more severe cases to give sleep at night. Removal of a part of an inflammed temporal artery has been found to diminish the headache in some cases.

Indian Medical Gazette, Calcutta

82:511-558 (Sept.) 1947. Partial Index

*Treatment of Relapsing Malaria with Specific Antimalarial Drugs in Combination with Penicillin. P. L. Deshmukh.—p. 511.

Clinical Features of Murine Typhus. B. Bhattacharjya.—p. 514.

Scrub Typhus: Variations in Clinical Symptoms and Strains. S. L. Kalra.—p. 516.

*Sulfadiazine in Treatment of Cholera. C. L. Pasricha, B. M. Paul, A. C. D. Gupta and A. K. Das.—p. 518.

*Sulfaguanidine in Treatment of Cholera. C. L. Pasricha, B. M. Paul, A. C. D. Gupta and A. K. Das.—p. 518.

Antimalarials and Penicillin in Treatment of Malaria.—With a view of finding a treatment that will check the acute attack and also control the relapses of malaria, Deshmukh investigated the effect of quinine in conjunction with penicillin. Of the 6 successfully treated cases, 2 typical cases are reported. Penicillin seems to have a synergic action on quinine in the control of acute attacks of malaria. Penicillin in conjunction with quinine and quinacrine is believed to be useful in controlling quickly the acute attacks and the relapses. The treatment is based on the rationale that the usual specific antimalarial drugs control the erythrocytic stage while penicillin controls the pre-erythrocytic stage of the malarial parasite.

Sulfadiazine in Cholera.—Comparing the effects of the usual supportive treatment in 423 cholera patients with the results obtained when this treatment was combined with sulfadiazine in 425 patients, Pasricha and associates found that the death rates in the two groups were 9.5 and 8.2 per cent, respectively. Another series of 451 patients treated with sulfadiazine was compared with a parallel series of 463 treated with sulfaguanidine. The mortality in the sulfadiazine series was 7.9 per cent, whereas in the sulfaguanidine series it was 4.3 per cent. These results indicate that sulfadiazine has no appreciable effect on the mortality of cholera.

Sulfaguanidine in Cholera.—A series of 1,118 hospitalized cholera patients were treated with sulfaguanidine, and the death rate was 3.7 per cent. A parallel series of 1,170 controls were treated in exactly the same way but not given sulfaguanidine, and the death rate was 7.5 per cent. A series of 60 cholera patients were treated with sulfaguanidine in village homes. No supportive treatment was possible. The death rate in this series was 18.3 per cent, whereas in a parallel control series of 59 cases, the death rate was 40.7 per cent. Sulfaguanidine is thus of considerable value in the treatment of cholera.

Lancet, London

1:353-392 (March 6) 1948

Connections of Frontal Lobes of Brain. W. E. Le Gros Clark.—p. 353.

Functions of Frontal Lobes. W. R. Russell.—p. 356.

Imbalance of Vitamins with Particular Reference to Folic Acid. L. S. P. Davidson and R. H. Girdwood.—p. 360.

Melioidosis Treated with Sulfonamides and Penicillin. E. J. Harries, A. A. G. Lewis, J. W. B. Waring and E. J. Dowling.—p. 363.

Myanesin in Hyperkinetic States. A. R. Hunter and Joan M. Waterfall.—p. 366.

Myanesin as Aid to Anesthesia in Children. H. B. Wilson and Helen E. Gordon.—p. 367.

1:393-432 (March 13) 1948

Brachial Neuralgia. W. R. Brain.—p. 393.

Formation of Hepatic Glycogen in Normal Africans and in Those Suffering from Malignant Malnutrition. E. G. Holmes and H. C. Trowell.—p. 395.

Spinal Cord Lesions in Cerebrospinal Fever: Report of 4 Cases. J. W. A. Turner.—p. 398.

Necrobacillosis: Report of 2 Cases. G. D. Owen and M. S. Spink.—p. 402.

Recovery of Streptomycin from Urine. J. Miller and D. Rowley.—p. 404.

Carcinoid Causing Obstruction. G. J. Fraenkel.—p. 404.

Massive Tonsillar Lymphatic Adenitis. J. D. Gray and J. Garson.—p. 406.

Clicking Pneumothorax Related to Walking. A. B. Black.—p. 408.

Medical Journal of Australia, Sydney

1:221-248 (Feb. 21) 1948

Regulation of Body Temperature. C. Brooks.—p. 221.

Diagnosis, Prevention and Treatment of Puerperal Infection. A. M. Hill and H. M. Butler.—p. 227.

1:249-284 (Feb. 28) 1948

Nonsuppurative Hepatitis: Study of Acute and Chronic Forms with Special Reference to Biochemical and Histologic Changes. I. J. Wood, W. E. King, P. J. Parsons and others.—p. 249.

Control of Sex and Reproductive Functions. C. Brooks.—p. 261.

1:285-320 (March 6) 1948. Partial Index

Proteins in Health and Disease. F. S. Hansman.—p. 285.

Role of Appetite and Hunger in Control of Nutritional Balance. C. Brooks.—p. 292.

Hemangioxanthoma of Brain: Study of 8 Cases of So-Called "Pseudo-Xanthomatous" Hemangioblastoma. V. J. McGovern and B. D. Wyke.—p. 297.

Proceedings of Royal Society of Medicine, London

41:73-132 (Feb.) 1948. Partial Index

Modern Trends in Prostatic Surgery. W. W. Galbraith.—p. 73.

*Influence of Small Animal Breeder on Biologic Research. R. E. Glover.—p. 85.

Breeding of Laboratory Animals and Biologic Research.—Glover shows that the worker in biology depends in no small measure on the quality of the animals available to him for experimental purposes. The breeder who provides the stock plays an important role, for the conditions under which animals are raised in the breeding establishments may profoundly influence the results of the scientific worker. The author has confined himself to three phases of the care and maintenance of normal stock: (1) the influence of diet on susceptibility and resistance; (2) the influence of disease, particularly latent infections, on biologic research, and (3) steps which may be taken to coordinate and improve breeding animals.

Acta Ophthalmologica, Copenhagen

25:353-464 (Nr. 4) 1947. Partial Index

*Maternal Rubella During Pregnancy as Cause of Congenital Cataract and other Congenital Malformations. M. Bardram and P. Broendstrup.—p. 353.
Aqueous Veins. T. L. Thomassen.—p. 369.
Medicinal Treatment of Intraocular Hypertension (Action of Diisopropylfluorophosphonate). R. Weekers.—p. 377
Roentgen Treatment of Scleritis. O. Blegvad.—p. 397
Rosacea in Corneal Graft. M. Katavisto.—p. 417
Histamine Content of Aqueous Humor During Intravenous Injection of Histamine. N. Emmelin and E. Palm.—p. 439

Maternal Rubella and Congenital Malformations.—Bardram and Broendstrup report 8 infants with cataract and other congenital defects, such as microphthalmos, buphthalmos, pigmentary degeneration of the retina, incomplete iris coloboma, cardiac disease and long fingers and trunk. The mothers in all of these cases had had rubella during the first months of pregnancy. Observations in these cases confirm the causal relationship between congenital malformations and rubella in the mother as reported from several parts of the world.

Acta Tuberculosea Scandinavica, Copenhagen

21:241-322 (No. 4) 1947

Postexamination of BCG Material. E. Tornell.—p. 241
Optimum Time for Intrapleural Pneumonolysis. S. Anttila.—p. 274.
*Tuberculous Primary Infection in 3 Children, Occurring in Connection with Fall into Highly Contaminated River Water. V. Gaustad.—p. 281.
Pathogenity and Changeability of Strains of Mycobacterium Tuberculosis. E. Lammela.—p. 292.

Tuberculosis Following Fall Into Contaminated River Water.—Gaustad reports observations on 3 children who accidentally fell into a river which was greatly contaminated with sewage. In 2 of the children erythema nodosum developed, with positive tuberculin reaction and pulmonary changes from four to five weeks after the accident. In the third child a positive reaction to tuberculin and hilar adenitis with pulmonary infiltration were found on examination ten weeks after the accident. There were no clues to any tuberculous source of infection within the children's families or kindergartens. The possibility of infection with tuberculosis on the occasion of the accidental immersion thus remains. The sewage from a sanatorium and from a nursing home for tubercular patients empties into the river about 300 meters upstream from the site of the accident. After inoculation of river water into guinea pigs, tuberculosis developed in several of the animals.

Annales Paediatrici, Basel

170:57-112 (Feb.) 1948. Partial Index

*Twenty Years BCG Vaccination in Sweden. A. Wallgren.—p. 57.
Dextrin-Maltose Mixtures in Feeding of Infants. F. Petuely.—p. 96.
Icterus Gravis: Treatment by Exsanguination Transfusion. I. Heyman and B. Z. Werbin.—p. 109.

Twenty Years of Vaccination with BCG in Sweden.—According to Wallgren, vaccination with BCG was introduced in Sweden in 1927. The vaccine is given intradermally. To prevent inoculation of persons already infected with tuberculosis, a negative tuberculin test must be obtained prior to the vaccination. After BCG inoculation the person must be protected against virulent infection for from six to eight weeks. The dose used was 0.05 mg. Until 1947 more than 500,000 persons have been vaccinated in Sweden, and the frequency of the BCG vaccinations is increasing, so that during 1947 probably more than 250,000 persons have been vaccinated. There are no signs that the BCG bacilli have regained their original virulence. The duration of the immunity produced by BCG differs individually but lasts as a rule from five to ten years. It appears to give protection against the immediate results of a virulent primary infection, i. e., against the clinical primary tuberculosis, miliary tuberculosis and tuberculous meningitis, to a certain extent also against pleurisy and pulmonary tuberculosis with cavity formation as far as it is the sequel of primary tuberculosis of the lung. Not much can be expected from BCG vaccination as a prophylactic against late secondary tuberculous infections such as skeletal or renal tuberculosis and ordinary phthisis.

Deutsche medizinische Wochenschrift, Stuttgart

73:33-64 (Jan. 23) 1948. Partial Index

Cushing's Syndrome, Thymus Tumor and Landouzy's Tuberculosis. H. Siegmund.—p. 33.
Nutritional Defects from Standpoint of Central Regulation. F. Bertram.—p. 36.
Allergic Cholecystopathy and Secondary Infectious Cholecystitis After Dysentery. W. Stockinger.—p. 42.
*Toxic Reactive Changes in Nuclei of Leukocytes. (Pseudo-Pelger) F. Heckner.—p. 47.
Methylthiouracil in Treatment of Hyperthyroidism. K. Beckmann—p. 49.
Progress in Chemotherapy of Allergic Disorders. H. Sarre.—p. 50

Toxic Reactive Changes in Nuclei of Leukocytes (Pseudo-Pelger).—Heckner describes peculiar nuclear changes in leukocytes, which were observed in 6 cases of enteritis or enterocolitis and in 1 case of typhoid. Morphologically the nuclear changes could not be differentiated from Pelger's nuclear anomaly of the leukocytes. However, whereas Pelger's nuclear anomaly is hereditary and permanent, in the cases under consideration the anomaly disappeared simultaneously with the symptoms of the enteritis or typhoid. Studies of the bone marrow and of the blood suggest a toxic cause of the nuclear anomaly. The change is not like an ordinary deviation to the left. Differentiation from true Pelger's nuclear anomaly is possible by watching the course of the disease. The author suggests that in blood pictures with decided deviation to the left, but without leukocytosis, a careful search should be made for the presence of pseudo-Pelger cells.

Helvetica Medica Acta, Basel

15:105-220 (March) 1948. Partial Index

*Treatment of Leukemia with Roentgen Radiation, Arsenic and Urethane. S. Moeschlin.—p. 107.
*Transition from Boeck's Disease to Miliary Tuberculosis. Contribution to Problem of "Atypical" Tuberculosis. U. Frey.—p. 129.
Clinical Significance of Bicycle Ergometer Tests for Evaluation of Reduced Capacity for Work, with Remarks on Behavior of Lactic Acid in Blood During and After Work in Various Diseases. B. Jasinski.—p. 152.

Treatment of Leukemia.—Moeschlin states that urethane, arsenic and roentgen irradiation exert only a palliative effect on leukemia. One should try to limit treatment to urethane or arsenic as long as possible because administration of these drugs in therapeutic doses prevents mitosis of the pathologically degenerated cell groups. In contrast to roentgen irradiation it does not affect the erythropoiesis. Roentgen irradiation should be practiced in cases which from the beginning are not amenable to treatment with drugs or in cases which become refractory after prolonged treatment with drugs. Irradiation is a valuable supplement to the treatment with drugs in patients with a very large spleen or with extensive involvement of lymph nodes in spite of improvement of the blood picture. Urethane is the treatment of choice for chronic leukosis because the drug has no toxic effects. Its mode of action is probably that of an elective control of the karyokinesis of the pathologically degenerated leukemic cells and a stimulating effect on the erythropoiesis. Satisfactory results were obtained against chronic myeloid leukemia with continued oral administration of 5 to 15 drops of Fowler's solution (solution of potassium arsenite) three times per day. With this treatment the capacity for work was maintained in a woman for nine years. Urethane was administered by mouth in doses of 3 to 4 Gm. per day. In the majority of cases the decrease in the number of granulocytes began only after ten to fourteen days. In contrast to Paterson, the author used urethane for continued treatment in small daily doses of 0.5 to 2 Gm. to prevent a new increase in the number of immature cells in the blood after the leukocyte values had been restored to normal. Advanced cases seem to be benefited by this treatment. The terminal occurrence of paramyeloblastic leukosis which characterizes the transition of chronic myelocytic leukosis into an acute form cannot be prevented by any of the available methods of treatment. This applies also to the primary paramyeloblastic forms of leukosis in which temporary remissions may be obtained with arsenic and frequent blood transfusions.

Boeck's Disease and Miliary Tuberculosis.—Frey reports the case of a man aged 29 who died from tuberculous meningitis. The family history was negative for tuberculosis. Three and a half years before his death the patient had headache, respiratory difficulty and irritative cough; he was tired and his capacity for work was reduced. Large lymphomas of the hilus of the lung were demonstrated on roentgenologic examination, but the lungs and the heart were normal. The course of the disease was benign and the patient's general condition was hardly impaired. The patient became seriously ill three and a half years later, and death occurred fourteen days after his admission to the hospital. The necropsy revealed fibrous degenerated granulomas in the lungs, liver, kidneys and spleen which resembled those of Boeck's disease. In addition to these granulomatous foci with definite tendency to fibroid degeneration, typical fresh miliary tubercles were present in the same organs. Definite transition from Boeck's disease to typical miliary tuberculosis with the classic picture of tuberculous leptomeningitis was demonstrated on microscopic examination. In cases reported in the literature as Boeck's disease the entire organism has been affected because of hematogenous dissemination. Some of these cases showed considerable similarity to chronic miliary tuberculosis. The author's case supports the concept of the tuberculous etiology of Boeck's disease. From the pathologic point of view its differentiation from tuberculosis does not seem justified. The term atypical tuberculosis of Boeck's type is suggested. The prognosis of this form of atypical tuberculosis is not always favorable because of the possible change to miliary tuberculosis.

Maandschrift voor Kindergeneeskunde, Leyden

16:33-64 (Feb.) 1948. Partial Index

*Connection Between Hepatic and Skeletal Defects. H. de Roever-Bonnet.—p. 33.
Investigation on Congenital Deformities of Extremities in Tyrol. Vera Erismann.—p. 50.
Extensive Subcutaneous Emphysema in Mild Infections of Air Passages. T. K. Gwan.—p. 59.

Connection Between Hepatic and Skeletal Defects.—According to de Roever-Bonnet malformations of the skeleton are met with in different types of hepatic disease. These skeletal disturbances occasionally resemble rickets clinically as well as roentgenologically. Results of animal experiments indicate that the presence of bile is necessary for the absorption of vitamin D in the intestine and that the liver plays an important part in the internal metabolism of vitamin D. It is probable that the liver also exerts a special influence on the metabolism of calcium. In a boy aged 15 who had been well up to the age of 14 cirrhosis of the liver was accompanied by osteoporosis. The second patient had been hospitalized for the first time in 1928, as an infant aged 9 months, with symptoms of hepatomegalia glycogenica. In later years he was repeatedly hospitalized on account of hepatic and osseous lesions. He is now 21 years of age and manifests an osteoporosis that has existed for years. The author concludes that in the presence of chronic parenchymatous disease of the liver attention must be paid to the development of osteoporosis, which requires special treatment.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

92:153-228 (Jan. 17) 1948. Partial Index

*Treatment of Erysipeloid with Penicillin. T. A. J. van Doormaal.—p. 165.
Temporal Arteritis. G. F. van Balen and J. de Bruyne.—p. 170.
Epidemic Cerebrospinal Meningitis in the Army. J. W. Baunders and J. van der Veen.—p. 178.
"Blue Baby" with Congenital Stenosis of Pulmonary Artery. I. Boerema.—p. 184.

Penicillin in Treatment of Erysipeloid.—Van Doormaal points out that the disorder which is caused by Erysipelothrix rhusiopathiae appears in human subjects in different clinical forms: a benign form, which usually remains localized, a serious generalized cutaneous disorder and a septicemic form that may or may not be accompanied by cutaneous lesions and which may become complicated by endocarditis. There is an allergic form which may become complicated not only by endocarditis but also by arthritis, meningitis, lymphadenitis, optic neuritis, intracranial abscess and necrosis of bone. Since this generally mild disease may sometimes assume a serious form, penicillin has been used in treatment. The author observed 3 cases in which complete recovery was obtained following administration of a total dose of 500,000 units of penicillin, a dose of 20,000 units being injected every three hours. Treatment with penicillin seems to be superior to serum therapy and does not involve the risks of serum sickness. Although penicillin therapy has the disadvantage that it requires hospitalization, it should be used for the severe and prolonged cases.

92:533-596 (Feb. 21) 1948. Partial Index

Hydrogen Ion Exponent (*p*H) of Several Fluids Used in Bandaging. G. J. N. Vleugels Schutter.—p. 541.
*Folic Acid Therapy in Hematologic Practice. G. Houpst.—p. 557.
Influence of War and Season on Tuberculosis of Lymph Nodes in Rotterdam. M. Straub and H. E. Schornagel.—p. 563.

Folic Acid in Hematologic Practice.—The first of the 3 cases presented by Houpst concerns a woman, aged 48, who had achrestic anemia, anemia of the hyperchromic type with free hydrochloric acid in the gastric secretion. Liver extracts were without effect, but the administration of folic acid tablets effected rapid improvement and finally permanent recovery. The second case reviewed is that of a woman, aged 68, in whom granulocytopenia developed following intramuscular injections of sulfapyridine. Treatment with folic acid produced an increase in the leukocytic count, but because the supply of folic acid was short at the time, this increase could not be maintained. The third case was one of essential thrombopenia in a woman aged 50, in whose skin, particularly of the thighs, large blue spots developed spontaneously. In other regions small red spots developed. Examination of the blood revealed thrombopenia Treatment with folic acid, hydrochloric acid and reduced iron resulted in the disappearance of the bluish spots and in an increase in the thrombocytes. This increase could be maintained with the aid of folic acid, and the clinical symptoms of thrombopenia disappeared.

Nordisk Medicin, Stockholm

37:103-150 (Jan. 16) 1948. Partial Index

Isoimmunization in Pregnancy: Review. B. Broman.—p. 103.
*"Etiology of Toxemia of Pregnancy." S. Gagner, R. Grubb and S. Sjöstedt.—p. 105.
Megalocytic Anemia in Infants. G. Edgren and Elsa Segerdahl.—p. 117.
Myelomatosis with Marked Hepatic Changes. T. Frölander-Ulf.—p. 121.
*Papillomas of Renal Pelvis. Kaare Liavaag.—p. 131.
Disappearance of Polymorphonuclear Leukocytes on Stirring: Source of Error in Leukocyte Count. N. Andresen and E. Praetorius.—p. 134.

Etiology of Toxemia of Pregnancy.—Gagner and his associates observed that in 7 of their 22 cases of toxemia of pregnancy, the father belonged to blood group O, in 7 the mother belonged to the father's blood group and in 2 the mother's group was AB. They refute the statement made by Edlén and his associates that if the father belongs to the O group or if the father's and mother's blood groups are homologous or if the mother belongs to the AB group toxemia of pregnancy does not occur (*Nord. med.* **36**:2281, 1947), and they question the suggested desensitization therapy, namely, injection of serum from the father into the mother in presumptive cases of toxemia. The procedure, they say, may cause injury to the fetus and must be considered as contraindicated unless investigation excludes this possibility.

Papilloma of the Renal Pelvis.—Four cases are described. Liavaag says that in the first 2 cases, in which papilloma of the renal pelvis was considered preoperatively on the basis of the roentgenologic examination, hematuria dominated the picture; in the third case, in which secondary infection in the renal pelvis brought the patient to the physician, calcification in the tumor also suggested possible calculus, especially since infection of the urinary tract with stone formation frequently occurs in patients with double renal pelvis. The hematuria may be transient and of brief duration, as in the first case. Diagnosis before operation is often difficult. In the fourth instance, in a patient with a history of papilloma of the renal pelvis treated by nephrectomy without ureterectomy, constant hematuria and increasing anemia developed. A tumor in the bladder was removed by diathermy; microscopic examination showed cancer. Secondary papillomas may follow papilloma in the renal pelvis and often become maligant. Because of tumor spread to the ureter, treatment of papilloma in the renal pelvis should be nephrectomy with extirpation of the ureter, preferably with resection of the adjacent part of the bladder. Postoperative control should be continued for a longer time. Patients with papilloma of the bladder should be examined roentgenologically, with regard to primary papilloma of the renal pelvis.

37:151-198 (Jan. 23) 1948. Partial Index

Surgical Treatment of Otosclerosis. Review. G. Holmgren.—p. 151.
Causes of Hematemesis and Melena. P. Kirketerp.—p. 156.
Disorders of Small Intestine as Cause of Intestinal Hemorrhage. T. Olaussen.—p. 161.
Perforating Ulcer. J. E. Wangen.—p. 163.
Cancer of Colon. N. Paus.—p. 166.
Surgical Risk in and Persisting Symptoms After Gallstones. J. Swedberg.—p. 168.
Stomach Resection for Ulcer. Ruth Ramberg.—p. 172.
Plastic Surgery of Breast. T. Olaussen.—p. 177.
*Medical or Surgical Treatment of Thyrotoxicosis? A. Jervell and O. Klovstad.—p. 180.
*Osteochondritis Ischiopubica. L. Nitter.—p. 184.
Indirect Blow Percussion in Acute Appendicitis. N. A. Schested and J. Hein.—p. 188.
Decompression Treatment with Miller-Abbott Tube in Paralytic Ileus. H. Jensen.—p. 189.
Tight Ligamentum Teres Hepatis as Cause of Abdominal Disorders. T. Francis and E. Lykkegaard Nielsen.—p. 190.

Medical or Surgical Treatment of Thyrotoxicosis?—Jervell and Klovstad state that there were no postoperative deaths and that postoperative reactions were slight in their 109 cases of thyrotoxicosis treated operatively with subtotal strumectomy in 101 and hemistrumectomy in 8. Follow-up of 107 of the patients for from one to eight years showed satisfactory results in 103. Follow-up of from one to eight years of 51 of the 55 patients with thyrotoxicosis who were given continued iodine therapy showed good results in 35. In preoperative treatment methylthiouracil is not superior to iodine, requires a longer time and should be reserved for patients who are hypersensitive to iodine and who do not react satisfactorily to iodine. Methylthiouracil in permanent treatment in 20 patients with thyrotoxicosis gave good results in 11 patients observed up to two years. Severe intoxications occur mainly in the first weeks of methylthiouracil therapy, so that it should be possible by close observation to lessen the risk. The treatment must be continued a long time and calls for constant control. To what extent permanent recovery follows is still an open question. For the present methylthiouracil should be used in cases where the patient's age or special complications increase the operative risk, in recurrence after operation, and in mild cases with doubtful indication for operation. In many of these last iodine also gives good results. Methylthiouracil treatment may gain ground when more is known about the late results of the treatment. Less toxic and more effective derivatives of thiouracil may come into use.

Osteochondritis Ischiopubica.—Nitter reports 5 cases of osteochondritis ischiopubica in children, 1 case of septic, 4 of aseptic type. The entity was first described by van Neck in 1925. In 1941, 54 cases had been published in the literature. With delay or disturbance in ossification in the ischiopubic synchondrosis friction is believed to occur between the ends of the bones, and the resulting hyperemia and neoformation of inferior bone tissue lead to the inflammation characteristic of the disease. Roentgenologically osteoporosis and formation of cysts are seen, with destruction of bone; after weeks or months signs of recalcification and regeneration of bone appear. The so-called aseptic forms generally recede without intervention. In the usual mild cases the patients should be kept as quiet as possible till the symptoms abate. Permanent disability does not result. In children in whom vague pain suggests disease of the hip joint but the roentgen picture is negative, disturbances in ossification in ischiopubic synchondrosis should be considered.

Policlinico, Rome

55:65-96 (Jan. 19) 1948. Partial Index

*Experimental Macrocytic Anemia from Oral Administration of Streptomycin, and Restoration of Blood Picture to Normal by Administration of Folic Acid. T. Lucherini and L. Schiavetti.—p. 65.

Anemia Due to Streptomycin Cured with Folic Acid.—Animal experiments carried out by Lucherini and Schiavetti on rats and chickens demonstrated that streptomycin administered orally produces anemia of macrocytic type and granulocytopenia with hypoplasia of bone marrow. It is suggested that this effect of streptomycin is due to its bactericidal action on the intestinal flora. The hematologic picture as well as that of the bone marrow was restored rapidly to normal by the oral or parenteral administration of folic acid. The results of these experiments proved that in rats and chickens the bacterial flora of the intestinal canal plays an important part in the synthesis of folic acid.

Progrès Médical, Paris

76:129-144 (March 24) 1948

*Critical Study of Therapeutic Value of Streptomycin. C. Gernez, J. Minet, P. Nayrac and R. Pierret.—p. 131.

Therapeutic Value of Streptomycin.—Gernez and his co-workers treated 153 patients (70 of whom had tuberculous meningitis, 63 pulmonary tuberculosis, 7 infectious diseases and 13 miscellaneous infections) with streptomycin by intramuscular route. The dose varied from 1 to 3 Gm. per day in adults and from 1 to 1.5 Gm. in children. Satisfactory results were obtained with six as with three fractional doses per twenty-four hours. Rapid improvement resulted in 28 patients with tuberculous meningitis, but so far not 1 case of clinical recovery of more than five months' duration has been observed after the discontinuation of treatment. The prognosis of tuberculous meningitis with disseminated tubercles is less favorable than that of isolated meningitis. The disease is more severe in children than in adolescents and adults. The intramuscular administration of the drug seems to be as effective as the combined intramuscular and intraspinal administration. Permanent recovery was obtained in miliary tuberculosis, but the improvement did not protect the patient against meningeal complications. Streptomycin exerts a favorable effect on pharyngolaryngeal and tracheobronchial tuberculosis, but less regularly on recent ulcerocaseous pulmonary tuberculosis. Streptomycin is ineffective against fibrous tuberculosis of long duration and tuberculous empyema, but it has a decisive effect on cutaneous fistulas. The drug was well tolerated. Not a single strain of organism isolated before or after treatment with streptomycin showed a resistance to this antibiotic which would have been superior to 0.5 microgram in Dubos' liquid medium.

Revista Chilena de Pediatría, Santiago

18:811-896 (Nov.) 1947. Partial Index

Administration of Sulfathiazol to Tuberculous Children. A. Wiederhold.—p. 811.
*Physiologic Edema of the Newborn. R. Ortega and O. Jimenez.—p. 843.
Acute Anemia of Newborn Caused by Subaponeurotic Cephalohematoma. G. Gil.—p. 855.
*Variations in Treatment of Congenital Luxation of Hip. E. Diaz Bordeu.—p. 871.
Use and Abuse of Treatment with Massive Doses of Vitamin D. C. Ruiz.—p. 877.

Physiologic Edema of the Newborn.—Ortega and Jimenez observed edema of various intensity in 94 per cent of normal newborn infants. Because of this high incidence and the absence of pathologic conditions, the authors regard this edema as physiologic. In order to determine degrees of intensity, and in order to eliminate arbitrary estimates, the authors employed the McClure-Aldrich test for hydrophilia, making three hundred and thirty-eight tests in 60 newborn infants. There was a strict parallelism between the outcome of this test and the hydrophilia time in the first ten days of life; during the first twenty-four hours the average time was 167 seconds; on the ninth day of life it was 700 seconds. The proteinemia in the mother, in the blood of the umbilical cord and in the infants does not show changes to explain this edema. The authors suggest that the edema might be due to circulatory changes.

Congenital Dislocation of the Hip.—Diaz Bordeu calls attention to deformities which develop as the result of prolonged immobilization in patients with congenital disolcation of the hips. These inconveniences can be avoided by a modification of the classic treatment which was employed in 7 cases. The same position is used, with two short boots of molded plaster which are joined together with a stainless steel plate. This permits free movement of the hip, with the advantage of less deformities and better sanitation. The results obtained up to now have been highly satisfactory.

Riforma Medica, Naples

61:93-120 (Feb. 29) 1948. Partial Index

*Streptomycin by Tracheal Route in Treatment of Pulmonary Tuberculosis. F. Musotto and G. Paparopoli.—p. 93.

Streptomycin in Pulmonary Tuberculosis.—Streptomycin in one daily dose of 100 mg. was administered with good results to 15 patients with pulmonary tuberculosis. The drug was given by the transglotid route, through a nasal sound. The effects of the 100 mg. dose are as good as those of a much larger dose when the drug is given by the muscular route. The transglotid treatment either reduces or suppresses tubercle bacilli and bacteria in the sputum and greatly improves the general and pulmonary condition of the patient.

Sang, Paris

19:65-128 (No. 2) 1948. Partial Index

*New Hereditary Disease of Blood: Hereditary Methemoglobinemic Cyanosis. A. Codounis, G. Loucatos and E. Loutsides.—p. 65.

*New Method for Diagnosis of Hemophilia; Utilization of Venous Blood and Coagulated Capillaries. Comparison of Results Obtained in Hemophilia and in Other Hemorrhagic Syndromes. J. P. Soulier.—p. 78.

Attempt of Elucidation of Mechanism of Action of Nitrogen Mustard, N. M., and New Possibilities of Its Medical Application. J. Aleksandrowicz.—p. 94.

Some Diseases of Blood Treated with Mustard Gas. P. Chevallier, Mrs. Lamotte, S. Brion and Sabouraud.—p. 97.

Hereditary Methemoglobinemic Cyanosis.—Codounis and his co-workers report 14 cases of congenital idiopathic methemoglobinemia in 8 men and 6 women between the ages of 6 and 80 years, combined with familial cyanosis in 8. The 14 patients were all members of one geneologic tree comprising four successive generations, with 1 in the first, 2 in the second, 4 in the third and 7 in the fourth generation. Hereditary methemoglobinemic cyanosis should therefore be considered along with other hereditary diseases of the blood such as hemophilia, congenital hemolytic disease and certain varieties of anemia. This new hereditary disease is bound to the mutation of a chromosome gene, of a disease of genotype, transmitted as a dominant characteristic according to Mendel's law. Hereditary methemoglobinemic cyanosis can be transmitted by men as well as by women without predilection for either sex. The term hereditary methemoglobinemic cyanosis is suggested to replace that of congenital idiopathic cyanosis or familial cyanosis, since this new term comprises the three principal characters of that anomaly of the blood: cyanosis as the dominant clinical symptom, methemoglobinemia as the pathognomonic spectroscopic character of the disease, and its hereditary quality which includes its congenital as well as its familial character. The condition must be differentiated from cyanosis due to drug intoxication or to enterogenous autointoxication which may be combined with methemoglobinemia, but the latter is temporary only and is not hereditary. Reduction of the methemoglobin was obtained in vivo and in vitro with high doses of ascorbic acid administered intravenously or by mouth; the same result was obtained with methylene blue.

New Method for Diagnosis of Hemophilia.—Soulier does not consider prolongation of the coagulation time as a specific guide in diagnosis of hemophilia. A more accurate method suggested by the author consists of measuring the residual prothrombin in the serum after the coagulation of the blood and after immersion in a warm bath for four hours. This measuring was done with blood withdrawn by puncture of a finger, but precise and specific results were obtained with capillary blood alone. The method was applied to 13 patients with hemophilia, 3 of them adults between the ages of 19 and 41 years and 10 of them children between the ages of 7 months and 9 years. Nearly the whole amount of plasma prothrombin was still observed in the serum separated from venous blood as well as in that separated from capillary blood. The serum was brought into contact with standard thromboplastin for one minute, standard citrated fibrinogen was added and the coagulation time was determined; it was always below 8 seconds whether venous or capillary blood was used. Thus the tissue thromboplastin had masked but had not corrected the coagulation defect. Results obtained in normal persons showed that the time was about 20 seconds for a serum separated from venous blood. It varied from 30 to 60 seconds for a serum separated from capillary blood. This shows that a considerable part of the prothrombin of the blood was consumed (82 per cent in capillary blood). The same results as in normal persons were obtained in patients with hypoprothrombinemia, in patients to whom heparin was administered, in patients with purpura not associated with thrombopenia and in patients with pseudohemophilia. In patients with severe thrombopenia the deficient consumption of prothrombin from venous blood was nearly identical with that in persons with hemophilia, while the consumption of prothrombin from capillary blood was corrected at least partially, since the coagulation time was inferior to the normal one, but always above 10 seconds, thus differing from that in hemophilia. This method is an aid to diagnosis of hemophilia in infants.

Strasbourg Médical

108:1-10 (Jan. 5) 1948

Generalities Concerning Penicillin. R. Tulasne.—p. 1.

*Late Results of Treatment of Acute Osteomyelitis in Adolescents with Penicillin. R. Fontaine and A. Grosse—p. 3.

Penicillin in Acute Osteomyelitis.—Fontaine and Grosse treated 12 patients, 7 boys and 5 girls between the ages of 4 and 16 years, with acute osteomyelitis of the long bones, with penicillin. Five hundred thousand to 1,000,000 units of the drug were given in fractional doses every three hours by intramuscular route. Recovery resulted in 5 patients in whom penicillin therapy was started immediately at the onset of the disease. There was no abscess formation, nor were there any bony lesions revealed on roentgenologic examination. Follow-up continued for five to twelve months. An abscess without involvement of bone occurred in 1 case in which treatment was initiated fifteen days after the onset of the disease, but complete resolution was obtained. In 3 cases the general condition of the patients on admission was grave. Penicillin therapy was started within forty-eight hours to five days after the onset of the disease. There was a rapid improvement in the general condition with lowered temperature. Although these patients were saved, a chronic course with abscess and sequestrums could not be prevented. In the last 3 patients, penicillin therapy was commenced at the onset of the disease and apparently a complete resolution occurred; no bony lesions were revealed on roentgenologic examination. Within three weeks to two months abscesses, extensive lesions of chronic osteomyelitis type and periosteal hyperostosis occurred in the absence of general symptoms, with few local signs and with fatal septicemia in 1. Penicillin is not the treatment of choice in acute osteomyelitis; it may save the life of a patient with severe disease, and it may increase the incidence of recoveries in mild disease, but it does not prevent the severe types of bone suppuration.

Wiener medizinische Wochenschrift, Vienna

98:89-112 (March 6) 1948. Partial Index

Question of Advisability of Resection in Doubtful Cases of Ulcer. P. Huber.—p. 89.

Development of Surgical Treatment of Pulmonary Tuberculosis. F. Spath. —p. 91.

Spontaneous Subcutaneous Rupture of Rectus and of Obliquus Externus Abdominis Muscles. Sinani.—p. 93.

*New Test for Effective Vagotomy in Ulcer Disease. F. Mandl and H. Mannchen.—p. 97.

Vagotomy for Ulcer.—Mandl and Männchen performed subdiaphragmatic vagotomy on 35 patients with ulcer of the stomach, duodenum or jejunum during the period October 1947 to February 1948. Hess and Faltitschek demonstrated in 1924 that total acidity as well as free hydrochloric acid were increased in patients in whom blockade of the sympathetic nerve was carried out by administration of procaine hydrochloride. A preponderance of the vagus resulting from the elimination of the sympathetic nerve was regarded responsible for this increase in the secretion of acid and in the motility of the stomach. Blockade of the sympathetic nerve was performed on 21 of the 35 vagotomized patients. Results showed that there was still further increase in the acid values of 3 patients in whom not all of the vagus fibers which pass to the stomach have been interrupted. There was no change of the acid values in the remaining 18 patients in whom all the vagus fibers on the right and on the left side had been interrupted. The absence of an increase in acid values after blockade of the sympathetic nerve in vagotomized patients is a useful test of completeness of the vagotomy from the anatomic point of view.

Book Notices

A Primer of Cardiology. By George E. Burch, M.D., F.A.C.P., Associate Professor of Medicine, Tulane University School of Medicine, New Orleans, and Paul Reaser, M.D., Instructor in Medicine, Tulane University, School of Medicine. Fabrikoid. Price $4.50. Pp. 272, with 203 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1947.

These authors have attempted to perform the difficult task of writing a work on cardiology in less than three hundred pages. Considering the handicap that confronted them they have done well. They have presented some general anatomic considerations of the cardiovascular system. This is followed by a section dealing with the approach to the diagnosis of heart disease. The common types of heart disease are discussed, including the management and treatment of each variety. The final section of the book deals with the bedside diagnosis of the cardiac arrhythmias. Electrocardiography is disregarded. The authors refer the reader to monographs on this subject, apparently believing that this has no place in a primer. At the same time they refer to certain types of heart disease, for example infectious myocarditis, in which the diagnosis may be made only with the electrocardiograph.

In the section on physical signs of heart disease they dwell little on inspection, palpation and percussion. Auscultation, however, receives an undeserved amount of attention. Indeed, there is a discussion of the physical qualities of sound itself that adds little to the value of the book. There is a complicated equation having to do with sound which will mean little to the medical student, less to the student of elementary cardiology and nothing at all to the practicing cardiologist.

The authors state that the fourth heart sound, produced by auricular systole, is "not frequently heard on auscultation." It would be more correct to say that it is almost never heard on auscultation.

The authors' definition of a functional murmur is a bit confusing. It is usual to think of a functional murmur as one which occurs in the absence of structural alteration in the cardiovascular system. Yet the authors speak of the functional murmur due to the dilatation of the aortic or mitral ring. Surely the dilatation of the aortic ring is a structural change—a reversible one to be sure, but none the less structural.

The authors classify neurocirculatory asthenia as a cardiac dysfunction produced by a psychoneurosis. This may be true but will not be accepted without argument in some quarters, and it seems a bit inconsistent to suggest that the removal of foci of infection is good treatment for psychoneuroses.

The section on the management of congestive heart failure is obviously designed for the extremely severe cases. It is not wise to suggest that a diet containing less than 2 Gm. of sodium per day is necessary for the treatment of all cases of congestive failure. Such a diet is extremely unpalatable and, something that the authors fail to mention, is likely to cause vitamin deficiency. Such diets are usually reserved for the more extreme cases.

The section on the bedside diagnosis of cardiac arrhythmias is refreshing. It is usually assumed that the electrocardiograph is necessary for such diagnosis. The student seems to have lost interest in attempting to make such a diagnosis without the help of some precision instrument. Here the authors point out that it is quite possible to differentiate the arrhythmias in many instances without any instrumental help. However, their enthusiasm occasionally leads them astray. For example, it is seldom possible to differentiate, clinically, between the premature auricular contraction and the premature ventricular contraction. It is true that the pause following the premature ventricular contraction is usually longer than that following the premature auricular contraction, but the difference is a matter of hundredths of a second and one's fingers, ears or mind is not sufficiently acute to recognize this difference.

Also, the authors have totally disregarded the fact that the premature auricular contraction may under certain circumstances be followed by a complete compensatory pause. Indeed, one would conclude from the text that such a pause never occurred. In fact, it seldom occurs but it may and does occur rarely.

These examples of inaccuracies are more than likely due to the effort to save space. They probably represent the penalty that is paid for trying to crowd the subject into a limited number of pages. All in all the authors have turned in a good job on an extremely difficult assignment.

The Green World of the Naturalists: A Treasury of Five Centuries of Natural History in South America. Selected and Annotated with Biographical Sketches and Introduction by Victor Wolfgang von Hagen. Cloth. Price $5. Pp. 392. Greenberg, Publisher, 201 E. 57th St., New York 22, 1948.

This book is a collection of some of the most representative writings of twenty-five naturalists who studied and wrote of South America. Five centuries of the natural history of the "Green Continent" are unfolded in the words of Humboldt, Darwin, Bates, Tomlinson, Hudson, Beebe and Sanderson, to mention only a few of the illustrious adventurers chosen by Mr. von Hagen.

The author introduces the contribution of each with a biographic sketch of the men whose lives and work extended over a period from the beginning of the sixteenth century to the present time. The wonders of the "Green World" are fully described, together with the stories of the men who faced hardship and peril to write of them.

Tales of these hardy naturalist-explorers who pushed aside South America's frontiers, explored its dark brooding rivers, climbed the lofty Andes and struggled across scorching deserts and through dense jungles cannot fail to hold the reader's interest. How they substituted fact for fable, investigated the continent's natural phenomena, rediscovered rubber, painstakingly studied the plants and animals, measured the tides and charted the earth's surface makes a fascinating story of the penetration of the "Green Curtain" by a series of knowledge-hungry men down through the years.

The reader can live for a brief time with the fabulous people who existed behind the "Green Curtain" of the New World. He can see, through the eyes of the men who first saw it, and marvel at the strange plant and animal life that abounded there. For pleasant diversion, for an excursion into humid forests, along the broad Amazon, up into the coolness of the Andes and down again to torrid, treeless plains, this book is highly recommended.

Psychiatry for the Pediatrician. By Hale F. Shirley, M.D., Associate Professor of Pediatrics and Psychiatry, Executive Director of the Child Psychiatry Unit, Stanford University School of Medicine, San Francisco. Cloth. Price. $4.50. Pp. 442. The Commonwealth Fund, 41 E. 57th St., New York 22: Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, 1948.

This book is the product of the author's experience in the study and treatment of patients brought to the Stanford University Pediatric Psychiatric Unit and of his efforts as a teacher of medical students and resident pediatric staff members to make a basic training in child psychiatry a useful part of their training for pediatric and general practice. "It is intended to be an introduction to the subject; a primer as it were."

The author has succeeded well in his announced intention to keep his language simple but has not succeeded quite so well in observing another of his objectives, brevity. For example, under basic concepts in child guidance he has a discussion of enuresis that is repeated under development and habit training. In both of these, he repeats all the timeworn and largely discarded medical treatments for enuresis, even including Kragnogorski's inhuman and ineffective method of giving 5 Gm. of salt at bedtime. At the same time, he advances the psychogenic factors in the cause and treatment of enuresis in such an uncertain and roundabout fashion that one gets the idea that he has little faith in it as an effective method of treatment or as a principal cause. The general lack of specific instructions and dogmatic conclusion in that part of the book which deals with known physical disease is perhaps a natural result of the author's greater experience and self confidence when he writes of those problems which are preponderately in the psychic rather than in the somatic area of his field.

The foregoing criticism is more than balanced by the fact that the book covers nearly, if not all, of the psychiatric problems of children as they present themselves in practice. These problems and the role of the physician in their solution are so well presented that this book will be of great value to every practicing physician.

If the physician lacks experience, it will give him a sound, basic working knowledge of child psychiatry. If he has much knowledge and experience in this field, he will be encouraged to continue his work with renewed confidence and effectiveness by the author's clear and convincing statements of the fundamental nature of the child's needs as he strives to become a reasonable adult. For example: 1. "A large proportion of the behavior problems with which physicians have to deal can be understood in terms of growth." 2. "That just as food, shelter and protection against injury and disease are necessary for physical health and growth, so a favorable cultural environment is indispensable for the development of a well-balanced and socially adequate personality." 3. "It is too early to tell how much of the present reported findings, conclusions and opinions in regard to the phychiatric aspects of certain physical disease will prove to be well founded."

This book should be in every pediatric library for direct reference and for its excellent bibliography.

Phtisiologie infantile. Par Pierre Lowys, médecin-directeur du Sanatorium Le Roc des Fiz. Préface du Professeur R. Debré. Paper. Price, 2120 francs. Pp. 716, with 220 illustrations. Éditions médicales Flammarion, 22 Rue de Vaugirard, Paris 6^e, 1947.

This well prepared French volume is compiled on the basis of the author's extensive personal experiences, as well as those of his teachers, colleagues and predecessors. It comprises seven major parts under the titles Generalities, the Clinic, Diagnosis, Medical Treatment, Pneumothorax and Collapse Therapies, Surgical Treatment, and Hygiene and Prophylaxis. A chapter is devoted to the Ranke evolution of tuberculosis in three stages, and the importance of exogenous and hereditary infection and contagion from man and animal are considered in greater detail. Resistance—racial, age, sex, as well as traumatic and operational—is reviewed. The principal forms seen in the clinic are presented, and the evolution and prognosis given due consideration. Under diagnosis, examination, tuberculin reactions, bacteriologic examination of the sputum, the blood, etc., are reviewed as well as roentgenologic and roentgenoscopic technics and findings. In differential diagnosis, the various types and confusions are elucidated. Air, rest, food, intellectual and biologic and chemical therapies are presented, including symptomatic remedies. The methods and complications of collapse therapy are detailed from all aspects, and surgical measures applied to treatment are well presented. Under hygiene and prophylaxis are included disinfection, general hygiene, B.C.G. and the place of tuberculosis prophylaxis with consideration of the preventorium and sanatorium.

This excellent volume on infantile pulmonary tuberculosis is a well printed and sufficiently illustrated general text by a capable author, with adequate general information on tuberculosis included to make it clear. It is intended for students and those who wish to brush up on the subject covered.

Anatomie radiologique normale: Optique radiologique et dépistage des erreurs de lecture des clichés. Par Henry Tillier, électro-radiologiste des hôpitaux d'Alger, Alger. Paper. Price, 600 francs. Pp. 233, with 350 illustrations. G. Doin & C^{ie}, 8 Place de l'Odéon, Paris 6^e, 1947.

This book is not intended to be an all-inclusive atlas. It does not attempt to give the detailed technics for taking roentgenograms for various parts of the body. The illustrations are nearly all line drawings which do portray clearly the contours of normal bones. The authors emphasize particularly that different degrees of rotation of an extremity or a part of an extremity may produce marked differences in the shadows cast by the bones which are being studied.

Although the greater part of the text is concerned with the bones and joints, roentgenologic anatomy of the gastrointestinal and thoracic organs is also included.

It is well to remember—and this text definitely emphasizes the fact—that in order to interpret the abnormal the physician must first be thoroughly familiar with the normal roentgenologic anatomy.

Organic Form and Related Biological Problems. By S. J. Holmes. Cloth. Price, $5. Pp. 169, with 1 illustration. University of California Press, Berkeley 4, California; Cambridge University Press, Bentley House, 200 Euston Road, London, N. W. 1, 1948.

Among the most evasive of solution among biologic problems are problems of how plants and animals attain and maintain their form and organization. In the small book which is being reviewed, S. J. Holmes, who was among the earlier biologists who labored with these problems, has developed historically many of the proposed hypotheses together with their defending or opposing arguments. He has also attempted to add to the story such recent biologic information as may contribute to the solution of the problem.

In the first chapter, entitled "The Problem of Organic Form," the author has presented in a general way the questions which are to be answered. Starting with the points of view of Pflüger and Roux, he continues with those of Child, Driesch, McDougall, Cannon and others. Fortunately he directs his discussion away from teleologies and entelechies.

In the following twelve chapters the author deals with specific fields of investigation which have contributed to our understanding of development. The first of these is entitled "Building Through Functioning." In this chapter he discusses the contributions of causal explanations of homeostasis and other physiologic phenomena to our understanding of the development and maintenance of organic form. In the next chapter, on "Competition as an Integrative Factor," he develops Roux's conception of the struggle of the parts in development. Chapter V deals with "Chemical Equilibrium and Organic Integration." Here the author attempts to show how equilibrium, at first a problem of a single cell, becomes a problem of increasing complexity as development proceeds. Chapter IX concerns the contribution of a knowledge of cancer to our understanding of development. Chapter X is called "Genes versus Gradients." Here the author concludes: "there is little to justify the conclusion that gene activities are directed by gradients and much evidence for the reverse relation." The final chapter, as may have been suspected, deals with the subject of "Recapitulation and Its Supposed Causes." The chapter is primarily a historical treatment, but some attempt is made to add a new genetic point of view.

To those who have not followed the historical development of the many hypotheses which have been advanced as explanations of various aspects of development, the book may be highly recommended. It outlines in a clear style the concepts of many investigators and it attempts to integrate them. The book may be recommended particularly to the physician who sees the value of a broad understanding of what a human body is and how it came or comes into being and how it is maintained.

Les embolies de l'artère pulmonaire et des artères des membres: Physiologie pathologique et traitment. Par René Leriche, professeur au Collège de France. Paper. Price, 150 francs. Pp. 127, with 5 illustrations. Masson & Cie, 120 Boulevard Saint-Germain, Paris 6^e, 1947.

The output of French medical literature reaching us since the end of the war is considerable. Perhaps the authors were using their literary efforts as an escape against the horrors and misery which they witnessed during the German occupation. Certainly they were shut off from any outside source of information, which, in the case of original thinkers, may be more help than hindrance. Nobody could accuse Professor Leriche, who has just published his fourth volume of lectures on arterial diseases delivered at the Collège de France, of not having any original ideas. The present monograph deals with emboli, both pulmonary and peripheral arterial, and his conceptions summarized in this volume are the basis on which vascular surgery is practiced in this country today. It has been often said that some of the author's conceptions were devoid of experimental proof or lacked clinical confirmation. There is nothing, however, in this small monograph which had not been confirmed in time by adequate clinical studies, mostly from this country. Vascular surgery owes an everlasting debt to Leriche, who by sheer intuition and in spite of meager facilities has advanced the functional point of view in the treatment of acute vascular occlusions. This monograph is a brief summary of his twenty year old labors in this field.

Queries and Minor Notes

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

POLLEN EXTRACTS

To the Editor.—When pollen extracts have been prepared (ragweed, timothy, etc.) and sent through the mails in midsummer, should they be administered when the pressure of gas in the vial is such that it blows the piston out of the syringe?

Virginia M. Palmer, M.D., White Plains, N. Y.

Answer.—Any injectable solution packaged in cold weather and hermetically sealed will develop considerable pressure when the package is kept at a high temperature. This pressure should cause no concern. It is unlikely that any pollen extract would develop pressure through fermentation by living bacteria or yeasts and not show some visible turbidity. If fermentation was present, the extract would probably show considerable bubbling and foaming after the excess pressure had been released. The nature of the menstruum and preservative would give one some idea of any possible cause for decomposition. The question is best referred to the manufacturer of the extract.

POLIOMYELITIS

To the Editor:—During the summer of 1947 several patients had illnesses which could have been anterior poliomyelitis. The symptoms are mild, spinal fluid examinations were not diagnostic and residual paralysis was absent or minimal. We are, naturally, still anxious to make an accurate diagnosis in these cases and in similar cases in the future. Is it possible to make an accurate diagnosis following convalescence by titrating antibodies in the patients' serum? What laboratories do this work and what is the procedure for and cost of obtaining material?

M.D., Texas.

Answer.—During the summer of 1947, there were many thousands of such cases throughout most of the United States and Canada. Comprehensive laboratory and clinical studies of approximately 100 such patients indicated a diagnosis of anterior poliomyelitis, not only because the signs and symptoms were compatible with this disease but because (1) the virus of poliomyelitis could be recovered from the stools of many such patients, (2) characteristic changes in the spinal fluid were usually noted either during the acute stage or within three weeks of onset, and (3) attempts to isolate other viruses were unsuccessful. An attempt to confirm a diagnosis of poliomyelitis following convalescence by quantitating the virus-neutralizing capacity of acute and convalescent serums is not justified. The unreliability of this method may be explained by the fact that clinical poliomyelitis can be induced by several different immunologic types of the virus.

STATIC ELECTRICITY

To the Editor:—What is the explanation for the occurrence of static electricity in some persons and not in others? What measures can be employed to eliminate this phenomenon, especially with reference to light switches, bedding and door knobs? *M.D., District of Columbia.*

Answer.—Inherently there is no known physical reason for some persons to show static electric phenomena more than others. Factors such as moisture of skin, type of clothing (silk versus cotton), footwear, conductivity of soles of shoes and atmospheric conditions of humidity may make static effects more noticeable in different persons and indeed in the same person at different times. There are great differences in individual psychic reaction with respect to sensory electric shocks. Some persons seem to be "hurt" more by static sparks than others—furthermore, many persons are apprehensive about anything obviously electrical.

Static phenomena are always induced on relatively nonconducting objects. Good electrical conductivity instantly grounds any charges frictionally produced. The production of charge itself depends on the types of material rubbed together. One therefore expects static phenomena more from silk-leather, wool-wax or rubber, and rubber-concrete combinations. To avoid completely such effects, metallic contacts to ground or their equivalent should be provided. Parking lots have a flexible metal spring that brushes the automobile axles and carries static accumulations to the ground where drivers have to reach out and contact ticket collectors. Chains dragging below oil trucks accomplish the same purpose. The minute static accumulations that persons accumulate from scuffing carpets, removing silk garments, changing bedding or making up beds are absolutely harmless and trivial. Not so are possible contacts with light switches whose metal frames may not be properly grounded and hence may be at the power-line voltage above ground. A person touching such a faulty device, if he be well grounded himself as with damp shoes on a damp floor, or in water in a tub, may get the full voltage across a long bridge through his body with enough current flow to cause cardiac fibrillation or even worse. This, of course, has nothing to do with static.

HYPOSPRAY

To the Editor:—Please furnish information on the punctureless hypodermic needle and syringe. Has it proved practical and is it in general use? Is the "needle" an integral part of the syringe or can regular syringes be used with it? Who makes it? *M.D., Ohio.*

Answer.—The device to which this inquiry refers is probably "hypospray," which has recently received considerable publicity. This device operates on the principle that a stream of fluid ejected with high velocity through an extremely small opening can penetrate solid objects with considerable facility. This device consists of a metal tube surrounding a plunger which is pushed by means of a highly tempered spring against the fluid medicament contained in a metal cartridge. The fluid is rapidly forced through an opening of 75 to 80 microns in diameter located at one end of the metal tube. The end of the tube in which this opening is located is held against the skin, the trigger holding the spring is released, and the fluid in the cartridge penetrates the skin without pain and usually without leaving a readily visible mark.

The depth to which fluid can be injected by this device depends on the spring tension, the thickness of the skin and the viscosity of the fluid. The makers claim that it is impossible to give an accidental intravenous injection with this device. The device is still in the experimental stage and has not been marketed. Numerous investigations to determine its usefulness and limitations are under way, and until the results of these investigations become available, the use of "hypospray" cannot be recommended. The rights to "hypospray" are held by R. P. Scherer of Detroit.

MYASTHENIA GRAVIS

To the Editor:—A woman aged 34 has had myasthenia gravis for eight years, requiring neostigmine methylsulfate ampules daily. She is now seven months gravid and reports she has required no neostigmine for six weeks. Please advise regarding postpartum management. I anticipate that she will have some sort of severe withdrawal symptoms.

Lester J. Olson, M.D., Spooner, Wis.

Answer.—Many patients with myasthenia gravis who become pregnant have a partial or complete remission from the symptoms of myasthenia during the second or third trimester of pregnancy. The reason for this is unknown. Presumably the imbalance of the acetylcholine-cholinesterase reaction at the myoneural junction is affected by the pregnancy, possibly by some hormone elaborated by the placenta. All attempts to explain this restoration of function have resulted so far in failure. Extracts of the placenta have not favorably affected patients with myasthenia gravis, nor have endocrine preparations used in sufficient amounts to establish their effectiveness in producing bodily changes. Moreover, transfusion of whole blood from a woman seven months pregnant did not change the symptoms of a patient with myasthenia gravis.

Delivery of patients with myasthenia gravis who are in remission has been surprisingly normal, and in most cases there have been no withdrawal symptoms. Indeed the symptoms of myasthenia may not appear for two or three months after delivery, and then their appearance is gradual and not explosive. If symptoms of myasthenia develop within a few hours or days after delivery, these can always be controlled by intramuscular use of neostigmine methylsulfate. Ampules of 0.5 mg. of the drug should be injected one or two at a time, and they may be repeated at appropriate intervals until the symptoms of patient are under control. Subsequently, if the symptoms of myasthenia have reappeared, the patient should return to the taking of neostigmine bromide by mouth, a more satisfactory form of medication over long periods of time than injections given four times a day. One tablet of neostigmine bromide by mouth is roughly equivalent to 0.5 mg. of neostigmine methylsulfate by intramuscular injection.

POLLEN ALLERGY

To the Editor:—My wife, son and daughter have hay fever, and the daughter has asthma during the ragweed season. I have considered air-conditioning some of the home for their protection during the autumn months, but have not found an ideal arrangement. Please give information in this regard and state whether complete relief is obtainable from this type of procedure.

V. J. Horton, M.D., Calmar, Iowa.

Answer.—Air conditioning for relief of hay fever and pollen asthma may be merely a procedure of filtration to remove pollen grains or filtration and cooling for comfort. The commonest filtering machines are those that use "celotex" filters. Another uses the principle of electrical charge on particles. It filters by attracting charged grains of pollen to plates which have an opposite charge and which are coated with oil to which the grains of pollen adhere. These machines are designed for the average-sized sleeping room. The purpose is to deliver filtered air under slight positive pressure into the room so that there will not be any back leakage of unfiltered air into the room.

A number of manufacturers make air cooling apparatus which filter as well as cool the air.

The results that may be obtained from air filtration, with or without cooling, are unfortunately disappointing. As pointed out by some of the early workers in this field (B. Z. Rappaport, *Tell Nelson and W. H. Welker,* The Journal, *May 28, 1932,* p. 1961; Tell Nelson, B. Z. Rappaport and W. H. Welker, *ibid,* May 6, 1933, p. 1385) patients with hay fever obtain a variable degree of relief while in the air-filtered room. The symptoms, even if completely relieved, recur in fifteen to forty-five minutes after the patient leaves the room. Severe hay fever is not readily relieved unless the patient remains in the room for hours. The symptoms of asthma require residence in an air-filtered room for twenty-four hours to several days before relief is obtained. Asthma will recur if the patient is exposed to pollen for a short period (about one hour in the average case). Therefore, unless it is possible for the patient to remain in an air-filtered room constantly, filtration alone is not usually sufficient to afford relief, especially in asthma. Patients who respond to treatment by hyposensitization so that the residual symptoms are mild are made more comfortable if the sleeping quarters are free of pollen.

VENEREAL WARTS

To the Editor:—A woman aged 28 has "venereal warts," which are spreading rapidly despite treatment. I find nothing on this subject in the index of The Journal for the past year. I shall appreciate an outline of the most efficient treatment for this condition. The patient is otherwise in good physical condition, condition of the blood is normal, urinalysis is negative, smears from vagina and urethra are negative, and she has no history of infection.

M.D., Utah.

Answer.—An effective method of removing venereal warts is to apply to them a solution of podophyllin, 25 per cent, in either 90 per cent alcohol or compound tincture of benzoin. Each wart or cluster of warts should be painted with the solution at intervals of five days or one week. Two or three such treatments usually are sufficient to eradicate most venereal warts.

One must avoid irritation of the surrounding normal skin by the escharotic agent. The patient should remain in the office until the medicine has dried, and then a protective coat of talcum should be applied to the warts and adjacent area before the patient moves about.

If the warts are situated in an area that it not easily accessible, it is sometimes necessary to anesthetize the patient and then destroy the warts by means of electrosurgery.

PSORIASIS

To the Editor:—What, if anything, can be done in the treatment and cure of psoriasis involving the palms and soles? Is psoriasis communicable?

M.D., New York.

Answer.—The treatment depends on the types of lesions, for psoriasis of the palms and soles occurs in several forms: sharply localized papules and patches similar to psoriasis on the elbows; bright red, diffuse areas involving the entire surface of each palm and sole; superficial erythematous areas or much thickened patches, perhaps with deep fissures, or the so-called pustular psoriasis. The nosologic position of the latter (pustular) type is still debatable, for some dermatologists consider it to be not psoriasis but a recalcitrant eruption due often to a focus of infection elsewhere in the body.

The treatment of psoriasis of the palms is similar to that for psoriasis elsewhere—with ointments, sometimes roentgen therapy or ultraviolet light and diet. Ointments containing salicylic acid 2 to 5 per cent and ammoniated mercury 3 to 10 per cent, tar preparations 3 to 5 per cent or anthralin 0.1 to 0.25 per cent are most favored. Weaker concentrations are used for superficial patches, the stronger concentrations for deep-seated and thickened lesions. The pustular type is the most resistant to treatment. In this type it is sometimes well to macerate the areas first with cool wet packs of solutions of aluminum subacetate 0.5 per cent, boric acid or potassium permanganate 1:3,000.

Roentgen therapy, if the dosage is kept within safe limits, is often effective for all types of psoriasis. However, psoriasis is likely to recur, and if roentgen therapy is instituted for each attack there is some danger of permanent injury to the tissues from the cumulative effect of the roentgen rays. In addition, a diet low in fats benefits some patients with psoriasis. It is well also to eliminate all foci of infection. Psoriasis is not contagious or communicable.

PENICILLIN ENHANCEMENT FACTOR

To the Editor:—There is some discussion regarding therapeutic effectiveness of penicillin G (crystalline) as compared to that of amorphous penicillin. A recent article in a pharmacy journal (Flack, H. L.: Status of Penicillin and Penicillin Dosage Forms, *Am. Profess. Pharmacist* 13:830 [Sept.] 1947) emphasizes some of these differences. The conclusion is that although crystalline penicillin G is more convenient to use, in that the solutions do not require refrigeration, nevertheless such purified products are lacking in the X or "Enhancement Factor," which apparently potentiates the action of penicillin in certain infections. As Flack indicates, most penicillin presently employed is crystalline G. If his conclusions are accurate, there are many infections which should be treated with amorphous penicillin rather than with the crystalline form. I would appreciate an analysis of this problem.

Robert G. Lehman, M.D., San Pedro, Calif.

Answer.—The so-called "enhancement factor" in amorphous penicillin was first described by Welch and his associates of the Food and Drug Administration, although details of their work have not yet been published. Confirmation of this work has been published by Hobby and her co-workers (Hobby, G. L.; Lenert, T. F., and Hyman, B.: *J. Bacteriol.* 54:305, 1947). The enhancement factor has not been identified and does not appear to be antibacterial when used alone. Administered with penicillin, it increases the apparent potency of penicillin against experimentally induced infections up to as much as five times, depending on the infecting organism. It has been found that not all lots of amorphous penicillin contain the enhancement factor, and, in fact, there may be a number of dissimilar substances which possess this property. Adequate clinical data on the use of the enhancement factor have not been published, and it is not possible to predict the practical importance of this discovery. The division of penicillin control and immunology of the Food and Drug Administration has stated informally that they will certify lots of penicillin claiming therapeutic benefit due to the presence of the enhancement factor only if the factor is demonstrably present in effective amounts. It is not believed that any such lots of penicillin have been certified as yet.

CONDUCTION DEAFNESS

To the Editor:—I recently saw a patient with bilateral conduction deafness who on squatting with his head low, or bending at the waist, for a minute to a minute and a half would regain hearing enough to detect a soft whisper. Ear drums appear normal and voluntary insufflation of auditory tubes produces no change in hearing. I can find no explanation for this. Is it possible that there is a poor contact between the plate of the stapes and the fenestra cochleae and that when he raises his intracranial pressure he also raises the intracochlear pressure and makes a better contact?

R. J. Antos, M.D., Phoenix, Ariz.

Answer.—The accumulation of noninflammatory serum in the middle ear spaces may result in the symptom described—the change in position being sufficient to move the fluid away from the oval and round windows, permitting the normal conduction of sound. The ear drums may appear normal unless magnification is used, in which case a fluid level may be visible or bubbles may be seen after inflation of the tube. Paracentesis of the tympanic membrane followed by inflation to blow out the fluid should result in improvement of the impaired hearing, provided there is no chronic obstruction of the eustachian tube from hypertrophied lymphoid tissue or an associated nasal allergy.

PROPYLTHIOURACIL

To the Editor:—If there is swelling of the thyroid during administration of propylthiouracil is it an indication for reduction of the dose or can it be disregarded?

C. F. Noe, M.D., Amana, Iowa.

Answer.—The thyroid gland frequently becomes a little larger and usually becomes harder during the administration of propylthiouracil. These changes in the gland may be disregarded and are not indications for reducing the dose.

JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT, MAY—AUGUST 1948

Titles have been listed or abstracts made of important articles in the following journals in the Current Literature Department of THE JOURNAL during the past four months. Any of the journals, except those starred, will be lent by THE JOURNAL to subscribers in continental United States and Canada and to members of the American Medical Association for a period not exceeding three days. Three journals may be borrowed at a time. No journals are available prior to 1937. Requests for periodicals should be addressed to the Library of the American Medical Association and should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Thus most of these journals are accessible to the general practitioner

Acta chirurgica Scandinavica. Stockholm
Acta dermato-venereologica. Stockholm
Acta medica orientalia. Jerusalem
Acta medica scandinavica. Stockholm
Acta ophthalmologica. Copenhagen.
Acta radiologica. Stockholm
Acta Tuberculosea scandinavica. Copenhagen
American Heart Journal. St. Louis
American Journal of Clinical Pathology. Baltimore
American Journal of Digestive Diseases. Fort Wayne, Ind.
*American Journal of Diseases of Children. A. M. A., Chicago.
American Journal of Hygiene. Baltimore.
American Journal of the Medical Sciences. Philadelphia
American Journal of Medicine. New York.
American Journal of Obstetrics and Gynecology. St. Louis
American Journal of Ophthalmology. Cincinnati.
American Journal of Pathology. Ann Arbor, Mich.
American Journal of Physiology. Baltimore.
American Journal of Public Health. New York.
American Journal of Roentgenol. and Radium Therapy. Springfield, Ill.
American Journal of Surgery. New York.
American Journal of Syphilis, Gonor. and Venereal Diseases. St. Louis.
American Journal of Tropical Medicine. Baltimore.
American Practitioner. Philadelphia.
American Review of Tuberculosis. New York.
Anesthesiology. New York.
Annales paediatrici. Basel.
Annals of Allergy. Minneapolis.
Annals of Internal Medicine. Lancaster, Pa.
Annals of the Rheumatic Diseases. London.
Annals of Surgery. Philadelphia.
Annals of Tropical Medicine. Liverpool.
Annals of Western Medicine and Surgery. Los Angeles.
Archiv fur Dermatologie und Syphilis. Heidelberg.
Archives of Disease in Childhood. London.
*Archives of Internal Medicine. A. M. A., Chicago.
*Archives of Neurology and Psychiatry. A. M. A., Chicago.
*Archives of Ophthalmology. A. M. A., Chicago.
*Archives of Otolaryngology. A. M. A., Chicago.
*Archives of Pathology. A. M. A., Chicago.
Archives of Physical Medicine. Chicago.
*Archives of Surgery. A. M. A., Chicago.
Archivos argentinos de pediatría. Buenos Aires.
Archivos del Instituto de cardiología de México. Mexico, D. F.
Archivos de pediatría del Uruguay. Montevideo.
Arizona Medicine. Phoenix.
Australian and New Zealand Journal of Surgery. Sydney
Blood. New York.
Brain. London.
British Heart Journal. London.
British Journal of Dermatology and Syphilis. *London.*
British Journal of Experimental Pathology. London.
British Journal of Industrial Medicine. London.
British Journal of Ophthalmology. London.
British Journal of Radiology. London.
British Journal of Surgery. Bristol.
British Journal of Tuberculosis. London.
British Journal of Urology. London.
British Medical Journal. London.
Bulletin of the Johns Hopkins Hospital. Baltimore.
Bulletin of the New York Academy of Medicine. New York.
Bulletin of the U. S. Army Medical Department. Washington, D. C.
California Medicine. San Francisco.
Canadian Medical Association Journal. Montreal.
Cancer Research. Baltimore.
Cardiologia. Basel.
Chirurg. Würzburg.
Cincinnati Journal of Medicine. Cincinnati
Connecticut State Medical Journal. Hartford.
Delaware State Medical Journal. Wilmington.
Dermatologica. Basel.
Deutsche medizinische Wochenschrift. *Stuttgart.*
Diseases of Chest. Chicago.
Diseases of Nervous System. Chicago
Edinburgh Medical Journal. Edinburgh.
Endocrinology. Springfield, Ill.
Experimental Medicine and Surgery. Brooklyn.
Gastroenterologia. Basel.
Gastroenterology. Baltimore.
Geriatrics. Minneapolis.

Glasgow Medical Journal. Glasgow.
Gynaecologia. Basel.
Harefuah. Jerusalem-Tel Aviv.
Hawaii Medical Journal. Honolulu
Helvetica medica acta. Basel.
Illinois Medical Journal. Chicago
Indian Medical Gazette. Calcutta
Industrial Medicine. Chicago.
Journal of Allergy. St. Louis.
Journal of the Arkansas Medical Society. Fort Smith
Journal of Aviation Medicine. St. Paul.
Journal of Bacteriology. Baltimore.
Journal of Bone and Joint Surgery. Boston.
Journal of Clinical Endocrinology. Springfield, Ill.
Journal of Clinical Investigation. Boston.
Journal of Endocrinology. London.
Journal of Experimental Medicine. New York.
Journal of the Florida Medical Association. Jacksonville
Journal of Hygiene. London.
Journal of Immunology. Baltimore.
Journal of the Indiana State Medical Association. Indianapolis
Journal of Industrial Hygiene and Toxicology. Baltimore.
Journal of Infectious Diseases. Chicago.
Journal of International College of Surgeons. Chicago.
Journal of Investigative Dermatology. Baltimore.
Journal of the Iowa State Medical Society. Des Moines.
Journal of the Kansas Medical Society. Topeka.
Journal of Laboratory and Clinical Medicine. St. Louis
Journal of Laryngology and Otology. London.
Journal of the Maine Medical Association. Portland.
Journal of the Medical Association of the State of Alabama. Montgomery.
Journal of the Medical Association of Georgia. Atlanta.
Journal of the Medical Society of New Jersey. Trenton.
Journal de médecine de Lyon. Lyon.
Journal of Mental Science. London.
Journal of the Michigan State Medical Society. Lansing.
Journal of the Missouri State Medical Association. St. Louis.
Journal of the Mount Sinai Hospital. New York.
Journal of National Cancer Institute. Washington, D. C.
Journal National Malaria Society. Columbia, S. C.
Journal of Nervous and Mental Disease. New York.
Journal of Neurology, Neurosurgery and Psychiatry. London.
Journal of Neuropathology and Experimental Neurology. Baltimore.
Journal of Neurophysiology. *Springfield, Ill.*
Journal of Neurosurgery. Springfield, Ill.
Journal of Nutrition. Philadelphia.
Journal of Obstetrics and Gynaecology of the British Empire. Manchester.
Journal of the Oklahoma State Medical Association. Oklahoma City.
Journal of Pathology and Bacteriology. Edinburgh.
Journal of Pediatrics. St. Louis.
Journal of Pharmacology and Experimental Therapeutics. Baltimore.
Journal of the Philippine Medical Association. Manila.
Journal of the Royal Army Medical Corps. London.
Journal of the Royal Institute of Public Health and Hygiene. London.
Journal of the South Carolina Medical Association. Florence.
Journal of the Tennessee State Medical Association. Nashville.
Journal of Thoracic Surgery. St. Louis.
Journal of Tropical Medicine and Hygiene. London.
Journal of Urology. Baltimore.
Journal d'urologie médicale et chirurgicale. Paris.
Journal of Venereal Disease Information. Washington, D. C.
Journal-Lancet. Minneapolis.
Kentucky Medical Journal. Bowling Green.
Klinische Monatsblatter für Augenheilkunde. Stuttgart.
Klinische Wochenschrift. Heidelberg.
Lancet. London.
Laval médical. Quebec.
Lyon chirurgical. Paris.
Maandschrift voor Kindergeneeskunde. Leyden.
Medical Annals of the District of Columbia. Washington.
Medical Journal of Australia. Sydney.
Medicina. Buenos Aires.
Medicina. Mexico, D. F.
Medicine. Baltimore.
Military Surgeon. Washington, D. C.
Minerva medica. Turin.
Minnesota Medicine. St. Paul.
Monatsschrift fur Psychiatrie und Neurologie. Basel.
Nebraska State Medical Journal. Lincoln.
Nederlandsch Tijdschrift voor Geneeskunde. Amsterdam.
Nervenarzt. Heidelberg.

*Cannot be lent.

New England Journal of Medicine. Boston.
New Orleans Medical and Surgical Journal. New Orleans.
New York State Journal of Medicine. New York.
New Zealand Medical Journal. Wellington.
Nordisk medicin. Gothenburg.
North Carolina Medical Journal. Winston-Salem.
Northwest Medicine. Seattle.
*Occupational Medicine. A. M. A., Chicago.
Ohio State Medical Journal. Columbus.
Paris médical. Paris.
Pennsylvania Medical Journal. Harrisburg.
Philippine Journal of Surgery. Manila.
Physiological Reviews. Baltimore.
Plastic & Reconstructive Surgery. Baltimore.
Policlinico. Rome.
Practitioner. London.
Praxis. Bern.
Prensa médica argentina. Buenos Aires.
Presse médicale. Paris.
Proceedings of Royal Society of Medicine. London.
Proceedings of the Society for Experimental Biology and Medicine. Utica, N. Y.
Proceedings of the Staff Meetings of the Mayo Clinic. Rochester, Minn.
Progrès médical. Paris.
Psychiatric Quarterly. Utica, N .Y.
Psychiatry. Washington, D. C.
Psychoanalytic Quarterly. Albany, N. Y.
Psychosomatic Medicine. Baltimore.
Public Health Reports. Washington, D. C.
Puerto Rico Journal of Public Health and Tropical Medicine. San Juan.
Quarterly Journal of Medicine. Oxford
Quarterly Journal of Studies on Alcohol. New Haven, Conn.
Radiology. Syracuse, N. Y.
Review of Gastroenterology. New York.
Revista chilena de pediatría. Santiago.
Revista médica brasileira. Rio de Janeiro.
Revista médica de Chile. Santiago.
Revue médicale de Liège.
Rhode Island Medical Journal. Providence.
Riforma medica. Naples.
Rocky Mountain Medical Journal. Denver.
Sang. Paris.
Schweizerische medizinische Wochenschrift. Basel.
Semaine des hôpitaux de Paris. Paris.
South Dakota Journal of Medicine. Sioux Falls.
Southern Medical Journal. Birmingham, Ala.
Southern Surgeon. Atlanta, Ga.
Strasbourg Médical. Strasbourg.
Surgery, Gynecology and Obstetrics. Chicago.
Surgery. St. Louis.
Texas State Journal of Medicine. Fort Worth.
Transactions of the Royal Society of Tropical Medicine and Hygiene London.
Tubercle. London.
United States Naval Medical Bulletin. Washington, D. C.
Virginia Medical Monthly. Richmond.
Western Journal of Surgery, Obstetrics and Gynecology. Portland, Ore
West Virginia Medical Journal. Charleston.
Wiener klinische Wochenschrift. Vienna.
Wiener medizinische Wochenschrift. Vienna.
Wisconsin Medical Journal. Madison.
Yale Journal of Biology and Medicine. New Haven.

SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation; "E," Editorial; "C," Correspondence; "OS," Organization Section; "ab," abstracts; the star (*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths," "Medicolegal Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets, follows the subject entry.

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SOCIETIES AND OTHER ORGANIZATIONS

Acad.—Academy
Am.—American
A.—Association
Coll.—College
Commn.—Commission
Comm.—Committee
Conf.—Conference
Cong.—Congress
Dist.—District
Div.—Division
Found.—Foundation
Hosp.—Hospital
Indust.—Industrial
Inst.—Institute
Internat.—International
M.—Medical
Med.—Medicine
Nat.—National
Pharm.—Pharmaceutical
Phys.—Physicians
Soc.—Society
Surg.—Surgery
Surgs.—Surgeons
S.—Surgical

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